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Napolitano, Oreste

## Article

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## Article

# Are There Conditions That Can Predict When an M&A Works? The Case of Italian Listed Banks

Roberta Arbolino <sup>1,\*</sup>, Raffaele Boffardi <sup>1</sup>, Konstantinos Kounetas <sup>2</sup> , Ugo Marani <sup>1</sup> and Oreste Napolitano <sup>3</sup>

<sup>1</sup> Department of Human and Social Science, University of Naples L'Orientale, 80134 Naples, Italy; rboffardi@unior.it (R.B.); umarani@unior.it (U.M.)

<sup>2</sup> Department of Economics, University of Patras, 26504 Patras, Greece; kounetas@upatras.gr

<sup>3</sup> Department of Business and Economic Studies, University of Naples Parthenope, 80132 Naples, Italy; oreste.napolitano@uniparthenope.it

\* Correspondence: rarbolino@unior.it

**Abstract:** This paper investigates the impact in the short/medium term of M&As made by 14 Italian banks quoted on the stock exchange for the period 1999–2016. After dividing the banks into two groups by size and degree of internationalisation, we sought to ascertain whether different initial conditions produce different final effects. Based on three assumptions, supported by three separate econometric approaches, our empirical analysis shows that the stronger banks increased their competitiveness while the weaker banks did not achieve the same results since they were motivated to grow “by desperation”.

**Keywords:** M&A; bank lending; listed banks; bank shocks; Italy



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## 1. Introduction

Although the economic literature supports the thesis according to which mergers and acquisitions (both domestically and across borders) are a useful tool for achieving the consolidation of banks (or a reduction in the overall number of them), there is no agreement on the effects that such action entails (Zhang and Zhang 2015; Kandilov et al. 2017). The main objective of the consolidation process is to boost profits: this can be reached according to reductions in expenses, increasing market power and decreasing the volatility of revenue (Pathak 2016) or eliminating unnecessary managerial positions and closing overlapping branches of banks, which may reduce expenses (Rahman et al. 2018). Thus, recombining existing assets with the complementary ones of an acquired bank or successfully rearranging its assets to enter new markets appears to be a suitable strategic change in order to reinvigorate a bank's assets (Yang et al. 2019). This change is mainly linked to a bank in search of quick growth (Kim et al. 2015).

According to this notion, several research works show that acquisitions often fail to create value for shareholders (Friedman et al. 2016). The high premium required for acquisition implies that the acquiring bank must achieve a higher value to amortise the expenditure incurred (Haunschild 1994). High acquisition premiums are frequently cited as one of the leading causes of acquisition failure (Uhlenbruck et al. 2017).

In the last twenty years, as in many other countries, Italian listed banks have experienced successive waves of M&As (Mastromatteo and Esposito 2016). Since the banks themselves are heterogeneous, M&As cannot be analysed as if both the main Italian groups and the smallest banks were part of the same strategic action. For instance, the rationale behind the creation of Intesa or the UniCredit group, which compete at the continental level, is different from the aggregation of medium-size banks. M&As have been designed by some stronger listed banks to cope with the limited banking concentration, which is lower in Italy than in most other European countries. By contrast, others, on a less firm financial footing, have mainly resorted to M&As to solve their “weak profitability”, thereby

partly resolving the problem in the short run by their increasing market power and share value. In the latter case, the motivation moving the managers toward inappropriate and often risky actions is what is called “desperation” (Kim et al. 2011). This desperation, in turn, makes managers prone to high-risk strategies, being particularly motivated to seize growth opportunities. This risk can also mean paying a much higher price for a target bank than its market value.

Starting from this *de facto* situation, the present research aims to test the behaviour of Italian banks during the successive waves of M&As in order to capture the rationale driving banks’ behaviour in the process. It pursues the goal of understanding whether there are conditions that can predict when an M&A has positive effects on banks and when it does not. To achieve this goal, we test three different research hypotheses, referring to different aspects related to the decision of performing mergers and acquisitions.

The first one (Hypothesis 1—H1) studies the preconditions leading banks to the decisions to make M&As, i.e., the more negative/positive the initial condition of Bank  $j$ , the more likely it is that Bank  $j$  will undertake M&A activities with Bank  $i$ . The second one (H2) studies the short-term effects of M&As on banks as follows: the effect of the M&A operations performed by Bank  $j$  increases the market value of Bank  $j,i$  in the short term. Finally, H3 focuses on the structural impact of M&As on banks’ financial indicators in the long term: the effect of M&A operations undertaken by Bank  $j$  decreases/increases the structural indicators of Bank  $i,j$  in the long term.

Hence, the present work offers an overview of the phenomenon of mergers and bank acquisitions in Italy. We focus on strategies for researching the competitive advantage in external growth processes and on an analysis of the characteristics of M&A operations in recent years, also examining the implications as part of the delicate post-M&A phase. The M&A market has developed considerably in recent years at a global scale. Mergers and acquisitions, which traditionally were considered to be strictly extraordinary in character, have become a common phenomenon. Studying the Italian case is quite interesting because of the historical evolution of the Italian M&A market, which can be divided into two major periods: the first, before the euro, between 1988 and 1998, linked to the start of privatisation, and the second (1999–2016), marked by Italy’s entry into the euro and by globalisation processes and major global economic and financial crises. The ever-increasing European economic integration, the globalisation of markets and the development of information technology pushed lenders to research new strategies for achieving and maintaining a competitive advantage.

Therefore, the Italian banking system underwent a profound transformation, which influenced the management, organisational and operational strategies of credit companies. This work tries to interpret M&A processes in selected Italian listed banks by studying their characteristics and how M&As have changed their structure and size. We will then analyse the problems that characterised the poor effective returns of M&As for 29 Italian listed banks, such as managers’ desperation to grow and overconfidence, highlighting how these operations are very complex and should be managed with the maximum attention according to a well-defined strategic plan.

Our research suggests that M&As undertaken by listed banks with different initial conditions have different final effects, which may be sequentially listed as follows: (i) several motivations encourage managers to implement the M&A process; (ii) this M&A process generates its effect (share market value) in the short run for the entire sample of listed banks, while (iii) in the medium/long run, the final effect is different because of the weaknesses/strengths of the banks’ financial structures.

This study confirms the importance of the initial conditions in achieving the objectives (Hassan et al. 2018) and introduces an important new outlook to the economic literature: the role of bank-level “desperation” in the M&A process (Kim et al. 2011). Desperation occurs when there is a perception by managers that their banks are less profitable than others in an international context.

The paper is structured as follows. Section 2 explains the reasons to pursue M&As. Section 3 describes the features of the Italian listed banks. Sections 4 and 5 show our hypotheses, data and the methodology used. The empirical findings are presented in Section 6, while conclusions are drawn in Section 7.

## 2. Literature Review on Mergers and Acquisitions

Several explanations have been offered to explain why banks undertake M&As. The determinants of this process of the aggregation of the banking sector are manifold, and it is difficult to establish a specific classification (Badik 2007).

In general, such operations respond to economic motivations concerning improvements in performance, growth and the creation of value for shareholders, increasing market power, economies of scale and synergy between the merged banks (Chu 2010).

Asimakopoulos and Athanasoglou (2013) state that a willingness to increase in size, obtain value and enhance efficiency is the key to understanding banks'—especially small ones—decisions to undertake M&As. Zhang et al. (2018) claim that the value maximisation (VM) of the acquiring bank leads to improvements in its efficiency and profitability. Some of these topics belong to the neoclassical theory (Novickyte and Pedroja 2015). Among these, merged institutions can increase their income according either to economies of scale or economies of scope (Dymski 2016). Economies of scale are achieved by decreasing the branch network and staff overhead and also by implementing information technology and risk management systems (Sharma 2013). Economies of scope can be obtained by increasing sales of services or placing emphasis on financial diversification, providing better services to consumers (Renaud 2016). Reducing operating costs, by merging branches and centralising back-office operations, is also included in VM (Kyriazopoulos and Drymbetas 2015). Moreover, M&As allow banks to (i) boost revenue—through network externalities and increased market power—(ii) reduce operation costs—saving costs related to marketing and distribution and human resource hiring—and (iii) create new growth opportunities—new markets and increased delivery channels (Fiordelisi 2009). Recently, the literature on banking sector businesses has shown that diversification is a central asset for increasing banks' resilience to external factors (Ayadi et al. 2016; Michie and Oughton 2013; Ferri 2017).

According to Badik (2007, p. 59), further external reasons are “globalization, deregulation, technological progress, introduction of Euro to name a few, that significantly affected the structure of the banking sector, creating pressures for change in the banking industry which might explain the recent pace of M&As activities”. With reference to the external factors leading to the development of M&As, the literature has also stressed the role of technological improvements, strengthened supervision of the banking system, increased integration and the globalisation of financial markets and—with reference to the EU context—the creation of a single market with a common currency (Asimakopoulos and Athanasoglou 2013).

From a different perspective, it is often advocated for that diversified banking activities do not necessarily reduce the overall costs and risks associated with their activities (Goetz et al. 2016). Although banks emphasise several advantages of M&As (in terms of growth, the attainment of economies of scale and an increase in profitability), in practice, various operations may be referred to as motivated by non-value-maximisation (NVM) reasons.

Behavioural theories classify the NVM motives into agency motives and hubris, which are, respectively, characterised by the rational or non-rational behaviour of managers. The main problem arises under the agency motives because managers do not represent shareholders' interests and thus do not maximise profits for the shareholders.

Dependency theory stresses the need for capital requirements to give stability to the banking system and manage the liquidity risk (Himalayan News Service 2015).

Finally, agency theory supports market power synergy as a determinant of M&As, i.e., obtaining a stronger position in the market or better branding (Novickyte and Pedroja 2015). Overall, agency theory seeks to explain the risk-taking behaviours of corporate strategic management and decision-makers (Hoskisson et al. 1993). This view has been

applied to the finance sector, with the literature spending relevant efforts on developing models to explain risk-taking in the banking sector (Donnellan and Rutledge 2016; Palia and Porter 2007; Berger and Di Patti 2006).

According to Jensen and Meckling (1976), agency problems can arise when the share of the bank owned by each shareholder is small and thus the incentive to monitor the behaviour of managers is missing. As regards hubris, a manager's non-rational behaviour or overconfidence concerning the expected interplay resulting from M&As might carry to overpay the acquired bank. Thus, the buyers may achieve negative profits whereas the stockholders of the target bank might see value creation. The hubris hypothesis, proposed by Roll (1986), is based on the assumption that managers follow their personal benefits in term of power, wages and prestige, but to this end, they act against the owners' interests. However, the priorities and interests of the managers often cause the acquisition to fail. In an agency-based theoretical framework, Milbourn et al. (1999) identifies two contrasting rationales driving managers to merge. First, managers decide to merge in order to increase their reputation or obtain higher compensation, at the cost of the shareholders. Secondly, uncertain future market opportunities and low levels of competition lead managers to expand their market power in order to create a competitive advantage, for the benefit of the shareholders.

In conclusion, the literature has widely addressed the external factors and short- and long-term objectives leading banks to undertake M&A. However, as far as we know, a gap lies in the absence of studies aiming at the identification of the preconditions leading banks to the decision to merge with or acquire other banks.

Moreover, another clear gap refers to literature studying the process of M&As happening in Italy. Among others, Focarelli et al. (2002) analysed the Italian banking system's M&As between 1984 and 1996, finding that merging decisions were derived from a willingness to expand the customer base (i.e., achieve a larger market power), while acquisitions were mainly aimed at enhancing the value of the acquired bank. More recently, Coccoresse and Ferri (2020) studied the wave of M&As undertaken by Italian mutual cooperative banks by focusing on their effectiveness in increasing the system efficiency. They found a relatively small increase in banks' efficiency and conjectured that there were adverse effects on development and inequality. Indeed, it is timely to fill this gap, especially considering that, when compared with its main European competitors, the Italian banking system has several distinctive features due to its particular economic conditions and policies, which date back to the last century (Zedda 2016).

By aiming to study the behaviour of Italian banks to understand the preconditions, effects and rationale driving banks' behaviour in the M&A process, the present research tries to fill the gaps identified in the literature.

### 3. M&A Italian Listed Banks versus M&A European Listed Banks

The Italian banking system presents strong differentiation points in comparison with other ones, which are mainly derived from its peculiar economic conditions and policies characterising the end of the 1990s (Zedda 2016). The troubled harmonisation process regulating both the banking sector and market integration led Italian banks to experience a delay in the consolidation process. This delay was mainly due to both the policy of the supervisory authorities, a low degree of competition and the presence of inefficient banks (Pannetta 2017). In fact, until the 1990s, the Italian banking system was still largely dominated by government-owned entities, while it managed to open up competition, becoming dynamic and efficient, in more recent times (Hagendorff et al. 2007).

Italian institutions (banks) differ considerably, which is why the average data may mask the persistence of critical situations, and this is one of the most critical issues in the Italian banking sector (Bank of Italy 2019b). Indeed, according to the institutional classification of the Bank of Italy (2019a), the Italian banking system is highly heterogeneous: it comprises listed banks, cooperative banks (*banche popolari*), small cooperative (mutual) banks and subsidiaries of foreign banks. There emerges a puzzling framework in which the



concentration level of Italian banks is lower than in other European countries; the number of non-performing loans (NPLs) is large, and profitability is weak, linked to poor asset quality (Weber 2017). In the last thirty years, in order to improve its competitiveness on European and international markets, fundamental changes have been made to organise the banking system more efficiently. Among such changes, stronger banks have started a privatisation process. There are currently 29 listed banks on the stock exchange out of a total of 493 (enrolled in the Register of Italian banks), in turn clustered into 53 banking groups (Bank of Italy 2019b). In order to solve the low level of concentration and overcapacity, some of the listed banks have launched a growth and aggregation process by implementing M&As (Baglioni et al. 2018)<sup>1</sup>. Due to the lack of available data, we considered 14 banks listed before 2010 that undertook the M&A process from 2010 to 2016. In order to understand the M&A process undertaken by the 14 Italian listed banks, which own about 97% of the total assets of all the listed banks, an analysis of the main operations was implemented.

Due to the heterogeneous nature of the banks in question, differing in their international presence and strategic objectives, it does not make sense to lump them together as if they were part of some common trend (Esposito 2014). According to the Bank of Italy's classification (2017), we clustered the listed banks into two groups according to their size (assets below /above €30 million) and degree of international openness (<4 foreign bank branches versus >4 foreign bank branches). The idea is that when Italian banks are solid, they go abroad (Paladino 2007; Esposito 2014). The details of this classification are reported in Appendix A (Table A1). Table 1 shows, for each group, the M&As undertaken by the main listed banks in Italy from 2011 to 2016<sup>2</sup>.

**Table 1.** M&As undertaken by Italian listed banks (group 1 and group 2); 2011–2016.

Group 1		2011	2012	2013	2014	2015	2016
1	BPER Banca SpA (BPER)	0	0	0	1	1	0
2	Banca Mediolanum SpA (Medionalum)	0	0	0	0	0	1
3	Credito Emiliano SpA (CREDEM)	1	1	0	0	0	0
4	Banca Piccolo Credito Valtellinese (CREVAL)	0	1	1	1	1	0
5	Banca Carige SpA (Carige)	1	0	0	0	0	1
6	Banco di Desio e della Brianza (DESIO)	0	1	1	0	0	0
7	Banca Generali SpA (Generbanca) (BG)	0	0	1	0	0	0
Group 2		2011	2012	2013	2014	2015	2016
1	Banca Monte dei Paschi di Siena SpA (MPS)	0	0	0	1	0	0
2	Banca Popolare di Sondrio, Società Cooperativa per Azioni (popso)	1	0	0	0	0	0
3	Banco Popolare di Milano (BPM)	1	0	0	1	1	0
4	Intesa Sanpaolo (Intesa)	0	1	1	1	1	1
5	Mediobanca SpA (Mediobanca)	0	0	1	0	0	1
6	UniCredit SpA (UniCredit)	1	1	1	0	0	0
7	Unione di Banche Italiane SCpA (UBI)	1	1	1	0	0	0

In order to verify the results obtained by the banks subsequent to the M&As, the main banking indicators were analysed. According to the classification by KPMG (2017), we chose five main classes of indicators describing the various aspects characterising each bank from 2011 to 2016 (Tables 2 and 3). Each class of indicators shows the following features:

- Liquidity: A bank's ability to quickly convert assets into cash. (Federal Reserve 2014; Chen et al. 2018);
- Performance: A bank's ability to provide its services to consumers and businesses while generating sustainable profitability (Anbar and Alper 2011);
- Profitability: A bank's ability to generate revenue that can cover costs, thus being profitable. This result is crucial for both the ongoing activity of the bank and its investors to obtain fair returns. Moreover, this index is carefully observed by the

supervisory authorities, as it ensures more resilient solvency ratios, particularly in the context of a riskier entrepreneurial environment (Abdul 2017; Athanasoglou et al. 2008);

- Quality: This set of indicators analyses the quality of the customer portfolio based on the quality of non-performing loans (Chiorazzo et al. 2008);
- Structural/Capital ratio: This indicates the level of capitalisation of the banks and their ability to cope with lean periods using their own resources. Capital takes on the role of a financial cushion to tackle unexpected losses. (Posner 2015).

A full description of the variables is set out in Appendix A (Table A2). To gauge the growth of the Italian listed banks, by using the Bureau van Dijk Orbis dataset, we calculated the trends in the main indexes of not only the banks in the sample, clustered into groups 1 and 2, but also compared all the listed banks in the EU operating during the study period. Our analysis is twofold: the first part compares the averages of the indexes achieved by each group with those attained by the 96 listed banks in the 27 EU countries which undertook M&As; the second part duplicates the analysis by referring to the 52 listed banks belonging to the top five countries in the Euro Area (France, Germany, the Netherlands, the UK and Spain). The results obtained by each bank are reported in Appendix A (Tables A3–A17).

A comparison with the averages of both European countries and the top five is useful to understand the nature of the specific fragility of the Italian listed banks. Overall, the results show that both groups achieve below-average results, both compared to the whole European area and the top five countries. However, significant evidence can be highlighted in the magnitude of the data: group 1 shows lower values than group 2. These findings underline that group 1 is less sound compared with the stronger banks.

In general, it may be observed that the weakness of the Italian system was aggravated by the long recessionary phase during the years 2008–2013, which made the banks even more fragile (Engler and Klein 2017; Farinha et al. 2019). Nevertheless, the impact of the crisis was amplified by elements of deep-rooted structural vulnerability (Borio and Gambacorta 2017).

This applies to the main indexes belonging to the two groups, from which a strong discrepancy originates *vis à vis* the European average: liquidity, profitability and performance indexes (Mastromatteo and Esposito 2016). An important consideration must be made in terms of the quality indexes that are mainly explained by the presence of NPLs. The findings within group 2, being above average (except for Mediobanca and Banca Popolare del Sondrio), highlight the presence of a large quantity of insolvent loans that generate disruption in the system; in contrast, group 1 shows lower values of NPLs than those found Europe-wide.

Indeed, in the years following the crisis, the trend in NPLs (Appendix A (Tables A11 and A12)) was due to the length and ineffectiveness of the procedures used to recover guarantees. Furthermore, up to 2015, the fiscal regulations discouraged banks from making suitable changes or writing off deteriorated credit (Jassaud and Kang 2015).

The indicators describing the liquidity of the banks show persistently inefficient values when compared to the international context (with the exception of Mediolanum in group 1). However, an improvement in the liquidity index occurred in 2012 when compared with EU\_27 and in 2014 when compared with the top five countries (cfr. Appendix A (Table A4)). This highlights the role played by the economic crisis in the performance of the banking system, during which convergence to a lower similar value occurred (Zedda 2016).

**Table 2.** Group 1—comparison between Italian banks and European top 5 banks.

Index Class	Indicator	Average Europe 27							Average Europe 5 = 100						
		BPER	Mediolanum	CREDEM	CREVAL	Carige	DESIO	BG	BPER	Mediolanum	CREDEM	CREVAL	Carige	DESIO	BG
Liquidity	Liquid assets/deposits and short-term funding ratio	22.8	115.9	28.9	18.5	28.2	23.5	31.4	18.9	94.5	24.0	15.4	23.7	20.6	26.3
	Liquid assets/Total deposits and loans ratio	20.1	103.0	25.1	17.3	21.6	21.9	37.0	16.7	77.0	20.0	14.3	17.6	17.7	30.5
Performance	ROAA	0.6	469.8	111.2	−255.7	−180.5	336.8	312.9	8.0	607.3	139.5	−315.3	−137.6	548.8	802.0
	ROAE	68.3	386.7	101.3	171.6	−204.3	374.0	524.1	30.3	225.4	63.5	−4.4	−264.6	223.1	320.8
	RoRWA	7.0	468.2	76.8	−64.0	−148.2	379.1	487.9	15.5	374.5	67.2	−37.8	−105.5	294.2	400.2
Profitability	Operating profit/average equity	36.3	282.7	110.7	−58.6	−327.8	461.5	387.2	37.8	229.9	93.9	−62.8	−167.9	396.5	317.4
	Operating profit/total deposit	60.9	284.9	124.6	−0.6	−113.8	159.3	347.2	12.6	262.8	89.7	−33.6	−192.5	137.8	297.2
	Profit before tax/total deposit	50.7	248.1	133.8	−74.5	−296.4	150.3	324.1	11.3	366.2	164.3	−216.0	−400.1	190.9	415.1
Quality	Impaired/NPL/equity	316.2	28.5	100.2	319.3	359.2	277.1	24.5	418.4	22.2	124.1	467.1	557.9	315.2	24.3
	Impaired/NPL	131.8	1.4	16.5	54.8	72.8	10.3	0.7	90.6	1.0	11.3	38.0	50.6	7.3	0.4
Structural	Equity/total assets	76.5	46.8	59.0	67.0	60.4	56.0	66.6	70.7	44.1	54.7	62.2	56.7	49.8	60.2
	Net profit/(loss) for the year from discontinued operations	−2.1	0.0	2.2	1.4	19.5	0.0	0.4	−0.6	0.0	0.7	0.1	7.5	0.0	0.1
Capital Ratio	Tier 1 ratio	61.1	94.3	65.4	59.9	52.5	80.9	79.3	72.3	110.2	78.0	70.7	61.3	97.5	95.6
	Equity/net loans	35.7	71.6	32.4	32.0	32.2	50.1	99.0	24.4	49.1	22.2	21.9	22.0	34.4	67.8
	Total capital ratio	59.9	81.3	63.1	61.0	53.2	65.3	70.6	60.0	80.6	63.4	60.7	52.3	65.1	70.3

Source: Bureau van Dijk Orbis.



**Table 3.** Group 2—comparison between average value of each Italian listed bank and EU\_27 bank.

Index Class	Indicator	Average Europe 27							Average Europe 5 = 100						
		UniCredit	Intesa	BPM	MPS	UBI	Mediobanca	Popso	UniCredit	Intesa	BPM	MPS	UBI	Mediobanca	Popso
Liquidity	Liquid assets/deposits and short-term funding ratio	68.9	90.4	7.5	50.8	28.0	79.2	35.9	52.9	58.2	5.2	39.0	20.0	39.1	37.2
	Liquid assets/total deposits and loans ratio	52.9	58.2	5.2	39.0	20.0	39.1	37.2	41.7	46.1	3.7	31.7	16.5	29.7	29.9
Performance	ROAA	−15.1	56.5	−10.5	−411.3	−18.7	73.0	54.5	−29.0	25.2	−10.2	−556.4	−64.7	68.8	66.3
	ROAE	−200.6	−233.8	16.0	1382.6	−122.7	−27.7	−49.9	−92.8	−61.7	13.4	−424.5	−73.8	28.7	50.0
	RoRWA	−61.6	−2.7	−16.7	−139.3	37.9	23.6	−53.3	−30.1	23.7	−16.2	−183.2	−6.1	19.9	30.5
Profitability	Operating profit/average equity	−93.8	−6.6	−22.9	−520.4	−9.0	39.9	76.0	−54.2	22.5	−31.1	−393.1	−22.7	30.5	62.8
	Operating profit/total deposit	−10.0	62.9	10.0	−163.7	4.5	52.6	52.6	−27.5	59.7	3.7	−174.2	15.6	67.3	35.7
	Profit before tax/total deposit	−127.6	−170.0	10.7	−396.3	−117.1	21.2	50.5	−70.5	45.0	3.9	−456.1	4.1	92.3	51.4
Quality	Impaired/NPL/equity	255.9	193.4	136.5	789.3	192.0	23.5	186.1	1042.6	743.8	141.0	500.1	156.5	19.5	39.1
	Impaired/NPL	1042.6	743.8	141.0	500.1	156.5	19.5	39.1	710.6	509.9	103.1	345.4	107.3	13.6	27.2
Structural	Equity/total assets	57.9	67.7	16.9	36.1	77.2	76.3	61.6	229.2	515.8	0.2	0.7	0.1	0.0	0.0
	Net profit/(loss) for the year from discontinued operations	229.2	515.8	0.2	0.7	0.1	0.0	0.0	−2.1	46.1	−0.2	−0.2	0.0	0.0	0.0
Capital Ratio	Tier 1 ratio	61.6	76.9	26.2	59.6	68.2	58.6	54.3	75.3	92.9	27.0	73.6	82.4	67.6	64.9
	Equity/net loans	34.3	42.6	10.9	19.2	37.1	54.8	29.6	23.4	29.1	7.6	13.1	25.4	37.9	20.3
	Total capital ratio	64.0	74.7	20.3	67.1	74.1	59.1	55.1	65.0	74.5	16.0	68.4	75.7	58.7	54.8

Source: Bureau van Dijk Orbis.

Consistent with these findings are other results showing lower values both in the performance and profitability indexes (Montanaro and Tonveronachi 2017). However, while it is possible to stress some discrepancies within group 1 (Mediolanum, Banco di Desio e della Brianza and Banca Generale) showing a better positive scenario, group 2 underlines the heavy losses that increased from 2011 with the sovereign debt crisis. Although various factors contributed to the latter result, it was mainly due to the policy of “cleansing” the budgets drawn up by some banking groups, in addition to other difficulties that affected certain primary Italian institutions: the tensions on interest rates, the question of credit quality, the efforts towards efficient structures and the requirement of capital strength on the part of the supervisory authority (KPMG 2017). Equally, both Italian banking groups recorded a general worsening of their capital indicators, due mainly to the contraction of their own funds, while risk-weighted activities slowly declined.

#### 4. Theoretical Assumptions, Modelling and Econometric Issues

##### 4.1. Theoretical Framework

Starting from the evidence given in Section 3, the idea behind our research was that under different terms or conditions of the listed banks, the M&As undertaken had different effects on the main structural indicators. Such effects could be justified by the different reasons prompting the managers to undertake them (Coccorese and Ferri 2020).

To ascertain whether different initial conditions can predict when an M&A works and when it does not, we constructed three hypotheses concerning the effects in the short–medium and long term of M&As on 14 listed banks, assembled into two clusters based on their size and degree of internationalisation. In order to evaluate the three hypotheses, we implemented a simple two-bank model. The quantitative measures which capture the level of the banks’ activity according to their strategic behaviour of participating in an M&A project are the outcome of a simple mathematical model which encapsulates the bank’s attitude to participating, or not participating, in an M&A. Thus, we can consider two different banks,  $Bank_i$  and  $Bank_j$ , at a specific time, which can create two different states.

Thus, the conditions of the two groups are presented according to the following three assumptions, which strictly depend on the initial conditions, explained by means of the main outcome indicators of the banks.

The first one refers to the preconditions characterising the banks deciding to implement M&As to identify whether these differences might explain different approaches to this decision. In greater detail, we assume that size and internationalisation are key drivers in explaining the rationale behind behaviour in bank management. Banks benefitting from a higher degree of internationalisation and larger assets do not undertake M&As in order to grow but, most importantly, they look for value maximisation. We formalise these issues as follows:

**H1.** *The more negative/positive the initial condition of  $Bank_j$ , the more likely it is that  $Bank_j$  will undertake M&A activities with  $Bank_i$ .*

The second hypothesis studies the impact of banks’ M&A activity on the banks’ short-term indicators, proxied by the banks’ market value. We argue that undertaking M&As positively affects the value of  $Bank_{j,i}$  on the market, measured as the share prices of the banks. As for the previous assumption, we consider that different conditions might lead to different short-term trends in banks’ market value. Banks presenting lower internationalisation levels and smaller assets are likely to present shorter-term impacts on their market values, in comparison with banks that are well consolidated even before M&A operations. This assumption is formalised as follows:

**H2.** *The effect of the M&A operations performed by  $Bank_j$  increases the market value of  $Bank_{j,i}$  in the short term.*

Finally, the third hypothesis aims to test the consequences of M&As on the trends in banks' structural indicators in the long run. Similarly, the assumption leading to the formalisation of H3 is that, in our opinion, banks with a more solid performance at the time of an M&A are more likely to see the positive impact of the M&A in the medium–long run.

**H3.** *The effect of the M&A operations undertaken by Bank  $j$  decreases/increases the structural indicators of Bank  $i,j$  in the long term.*

#### 4.2. Modelling and Econometric Issues

**H1.** *The more negative/positive the initial condition of Bank  $j$ , the more likely it is that Bank  $j$  will undertake M&A activities with Bank  $i$ .*

The first state considers the case where  $Bank_i^t \cup Bank_j^t = Bank_{i,j}^t$  and the second where  $Bank_i^t \cup Bank_j^t = \emptyset$  and no M&A activity is undertaken. Accordingly, we can create a dichotomous variable that indicates whether or not a bank is merged. That is,

$$Bank_{i,j}^t = \begin{cases} 1, & \text{if the Bank}_i \text{ is merged with Bank}_j \\ 0, & \text{Otherwise} \end{cases} \quad (1)$$

Recognising the fact that the outcome here is a probability, we proceed with a model motivated by the assumption that participation is determined by a latent variable  $Bank_{i,j}^{*,t}$  that satisfies:

$$Bank_{i,j}^{*,t} = \beta_0 + \beta_1 X_{i,j}^{*,t} + v_{i,j}^t = \beta' X_{i,j}^{*,t} + v_{i,j}^t \quad (2)$$

Given the latent index model  $Bank_{i,j}^t = 1 [Bank_{i,j}^{*,t} > 0]$ , the CEF can be presented as  $E[Bank_{i,j}^t | X_{i,j}^t] = \Phi[\frac{\beta_0 + \beta_1 X_{i,j}^t}{\sigma}]$  with  $\Phi = [\cdot]$ , the normal CDF (Greene 2003).

For our random sample, the likelihood function is written in the general form as:

$$L = \prod_{i=1}^N F(\beta' X_{i,j}^t)^{y_{i,t}^t} [1 - F(\beta' X_{i,j}^t)]^{1-y_{i,t}^t}, \quad y_{i,t}^t = Bank_{i,j}^t \quad (3)$$

In our model, the marginal changes in the expected probability  $\partial / E[Bank_{i,j}^t | X_{i,j}^t]$  are equal to

$$\partial / E[Bank_{i,j}^t | X_{i,j}^t] = f[\beta' X_{i,j}^t] \beta \quad (4)$$

where  $f$  is the corresponding probability density function.

**H2.** *The effect of the M&A operations performed by Bank  $j$  increases the market value of Bank  $j,i$  in the short term.*

The idea behind this second step in the analysis is to estimate the parameters of the banks' M&A activity using a model across different sampling periods. Moreover, and following Pascual (2003), we argue that, as our sample size increases recursively, the estimated coefficients of the explanatory variables converge to the true values. As a result, using a window size of  $n < T$ , in our case,  $k$ , we would consider the following linear model:

$$Bank_{i,j}^t = X^t(n) \varphi^t(n) + v^t(n) \quad (5)$$

where  $Bank_{i,j}^t$  is the vector of observation of the response variable,  $t = n, \dots, T$  is time,  $X^t(n)$  is an  $(n \times K)$  matrix of independent variables,  $\varphi^t(n)$  is a  $(k \times 1)$  vector of the error terms and  $n$  greater than the number of parameters.

**H3.** *The effect of the M&A operations undertaken by Bank<sub>j</sub> decreases/increases the structural indicators of Bank<sub>i,j</sub> in the long term.*

Finally, following the basic theoretical argument introduced above, we investigate our model in the framework of a long-term relationship (Wooldridge 2015). To be precise:

$$Bank_{i,j}^t = \alpha_i + \Gamma X_{i,j}^t + u_{i,j}^t \quad (6)$$

where  $X_{i,j}^t$  is a matrix of the exogenously determined bank level, the variables  $\Gamma$  are the vectors of the parameters to be estimated and  $u_{i,j}^t$  the additional unobserved factors for each specification. This model allows  $\alpha_i$  to be correlated with the regressor matrix  $X_{i,j}^t$ . Strict exogeneity with respect to the idiosyncratic error term  $u_{i,j}$ , however, is still required. Since  $\alpha_i$  is not observable, it cannot be directly controlled. This model eliminates  $\alpha_i$  by demeaning the variables using “within” transformation.

## 5. Methodology

In this section, a brief description of the econometric approaches to each hypothesis is provided. Thus, we proceed with the probit model adopted for H1 and a rolling regression model (Tang 2009) for H2 to show the short-run effect. Finally, we conclude with a panel fixed-effects model that is able to capture the medium/long-run relationship between the (M&A) banks’ performance and their main structural indicators. In order to correct any endogeneity problems potentially arising, an instrumental variable approach is finally adopted. All the estimates are computed using the software Stata15.

### 5.1. The Probability of Increasing M&A Activity

Using empirical investigation, we start by testing the theoretical statement mentioned above about the probability of increasing M&A activity, which may be strictly related to the values of the main banking indicators. For each variable, we collected annual data from 2010 to 2016 (98 total observations). We assume a negative relationship between them. In the process, we apply a simple probit model. The objective is to gain insight into the causes that can impact a particular type of economic choice. A general functional form of this choice relationship can be written as follows:

$$B_i = f(X_1, X_2, \dots, X_k, \mu) \quad (7)$$

A discrete random variable that represents the dependent variable can take only two values, and the subsequent discrete probability distribution is:

$$B_{M\&Ai} = P^B(1 - P)^{1-B} \text{ for } B_{M\&Ai} = 0, 1 \quad (8)$$

where  $B_{M\&Ai}$  is a binary variable used to explain this phenomenon. Available for each of the listed banks from 2010 until 2016, the dummy is equal to 1 when  $bank_i$  carries out merger and acquisition activities and 0 otherwise. According to this information, our dependent variable allows us to determine the shocks during  $bank_i$ ’s life.  $X$  is a vector of variables constructed using one index for each class of indicators. The list of the indexes is described in Appendix A (Table A2). Due to the high correlation between the variables, for H1 and H3, we choose a vector consisting of one index for each class of indicators, that is, the one that has the lower correlation value.

### 5.2. Short-Run Analysis

In this second step, we investigate whether M&As have had a short-run impact on the market values of the Italian banks by considering the period 2000–2016. The database varies according to the bank, with the first M&A settled ranging from a minimum number of observations of 2874 for Banca Generali to a maximum number of observations of 8379 for Banca Intesa. By using rolling regression analysis, we implement a linear multivariate

rolling window regression model. Hence, many regressions will be estimated as the window is rolled forward.

The functional form of this relationship can be written as follows:

$$B_{V\_M_{i,j}} = \alpha_0 + \alpha_1 B_{V_{M_{i,j,t+5}}} + \alpha_2 D_{M\&A} + \alpha_3 D \times B_{i,j,t} + \varepsilon_t \quad (9)$$

The dependent variable  $B_{V\_M_{i,j}}$  is defined by the market value of  $bank_i$  merged/acquired with  $bank(s)_j$ .  $B_{V_{M_{i,j,t+5}}}$  is the market value of  $bank_{i,j}$  considering the window is 5 and the explanatory variables are  $B_{i,j,t+5}$ , that is, the closing price at five days<sup>3</sup> and the interaction variables are implemented.  $D_{M\&A}$  is the dummy variable: it assumes a value of 1 when  $bank_i$  carries out an M&A with  $bank_j$ ;  $D \times B_{i,j,t}$  is the interaction variable.

### 5.3. From Short-Run to Medium/Long-Run Analysis

In order to evaluate the impact of the M&As in the medium–long run, we apply panel regression. The database is the same as for the probit model (98 observations). The main benefit of using panel data is that better parameter estimates can be obtained. There are two main reasons: more precise and unbiased estimates are likely to be obtained. The estimates are more precise because more data are available with more variation and more information.

Let us assume an economic relationship that involves a dependent variable,  $Y$ , a vector of several observable explanatory variables,  $X_{i,t}$ , and one unobservable confounding variable. The panel data consist of  $N$  units and  $T$  time periods; therefore,  $N$  times  $T$  observations are obtained. The standard linear regression model with no intercept is given as follows:

$$S\_index_{it} = \beta_1 X_{it1} + \mu_{it} \text{ for } i = 1, 2, \dots, N \text{ and } t = 1, 2, \dots, T \quad (10)$$

where  $S\_index_{it}$  is the structural index defined using the Tier 1 ratio for the  $i$ -th unit and for the  $t$ -th time period. The dependent variable indicates the level of capitalisation of the banks and their ability to cope with stressful periods using their own resources (EBA 2018). The EBA's announcement of changes in the minimum Core Tier 1 ratio would affect banks, especially if they were forced to adjust their international exposures (Serena and Tsoukas 2020).  $X_{it}$  is the same vector of variables used in H1, to which we added the dummy variables  $D_{M\&A_i}$  for the  $i$ -th unit and the  $t$ -th time period, and  $\mu_{it}$  is the disturbance term for the  $i$ -th unit and the  $t$ -th time period.

## 6. Results

### H1. Desperation to grow leads to M&A.

In order to test the first of our three hypotheses, we need to check the probability of a bank being merged or acquired (Table 4). It is estimated using the maximum likelihood estimation technique. In this study, the suitable maximum likelihood estimation technique for binary choice problems is the probit model. This method overcomes the adverse properties of the ordinary least squares estimators when the dependent variable is binary. The model aims to determine the probability that an M&A will be implemented given a set of data. This probability is assumed to be a linear function of a set of explanatory variables, based also on the cumulative normal probability function. We estimated all the regressions with robust standard errors, allowing for the possibility that the observations for the banks may not have been independent. For the two groups of listed banks, we test the effect of a set class of indicators on the variable “merger”<sup>4</sup>. Most of the coefficients have the expected negative or positive relationships, although few of them are statistically significant.

**Table 4.** Results of Pesaran’s CIPS panel unit root test (second-generation).

Method	CIPS-Test
Pesaran’s CIPS test (2007) Level	
1 Merger	−0.734
2 Tier1_ratio	−2.106
3 Liquidass_Dep_Bor	−1.925
4 Oper_profit_avg_equit	−2.026
5 Impaired_npl	−1.269
6 Roae	−0.951
Pesaran’s CIPS test (2007) 1st Diff.	
1 Merger	2.610 **
2 Tier1_ratio	2.814 ***
3 Liquidass_Dep_Bor	2.527 **
4 Oper_profit_avg_equit	2.901 ***
5 Impaired_npl	2.687 ***
6 Roae	2.419 **

Critical values at −2.22 (10%), −2.37(5%), −2.66 (1%); \*\* and \*\*\* symbolise significance at the 5% and 10% level, respectively.

The findings show that the probability of increasing M&A activity differs according to the group to which the bank belongs. In general, it should be higher when the values of the main banking indicators increase (Cornaggia and Li 2019).

Among the main indexes, except for the quality index, which has a positive sign, the liquidity, performance and structural/capital ratio are diametrically which has a positive sign. In particular, the liquidity and quality indexes are not significant for both groups, albeit with different relationships. Moreover, they can change quickly, necessitating frequent updates to the relevant indicators. Hence, our results show that these two indicators, even if extremely important, did not play a major role in determining the probability of M&A activity for the Italian listed banks. Solvency problems are evaluated using a profitability indicator that shows a negative relationship but is not significant (group 1). Group 2, instead, shows the significant and positive relationship of this indicator. Hence, for these listed banks, a rise in this index increases the probability of M&A activity since these banks could operate in order to both consolidate and strengthen their market position to cope with international competition.

A specific performance indicator called the return on average equity (ROAE) offers a measure of the reliability and efficiency of banking institutions. The ROAE coefficient is negative and significant for group 1, implying that the performance of a bank, in quantitative terms, combining both the size of the financial statements and the strictly related income statement (costs and revenues), can affect the probability of generating an M&A process. For group 2, even if the sign is corrected, the coefficient is not statistically significant.

The last indicator is “tier1\_ratio”, a capital ratio index able to measure the credit risk performance, which has the expected relationship and is significant for group 2. All things considered, the greater the ratio for the bank, the higher is its capacity to merger other banks. By contrast, group 1 presents a negative coefficient: when losses rise, the ratio decreases, and the probability of activating an M&A process could increase. This means that, for this group, M&As may have not resulted from the banks’ aim to improve their financial structure but from a “desperation to grow”, linked to various contingent factors, such as the company composition and management and cash flow problems (Venanzi 2019). By contrast, for group 2, in line with the above general assumption, the relationship is positive and also statistically significant because it responds to the value maximisation motive (Trocino 2016). These findings confirm that H1 impacts differently the two groups of listed banks since the different behaviour in each indicator for each group explains the likelihood of implementing M&As differently on the basis of different motivations.

**H2.** *M&As have a short-run impact on the market value of the banking system analysed.*



In this second step, we test whether the M&As had a temporary or permanent short-run impact on the market values of the Italian banks. The relationship between market value and M&As was evaluated using a rolling regression analysis and increasing the windows (samples) of data for estimation. There were two main reasons for using this model. By using fixed windows in the following equation,

$$BV_{M_{i,j}} = \alpha_0 + \alpha_1 BV_{M_{i,j,t+5}} + \alpha_2 D_{M\&A} + \alpha_3 D \times B_{i,j,t} + \varepsilon_t \quad (11)$$

We allow the possibility that the system may be evolving over time, evaluating its stability and predictive accuracy. We set the window to 5, and the explanatory variables are  $B_{i,j,t+5}$ , that is, we set the closing price to five days and include the interaction variables.

The functional form of this relationship is given using Equation (8), and the graphical results are presented in Figures 1 and 2. Figure 1 shows the graphical results of the coefficients of the interaction variable  $D \times B_{i,j}$  obtained using rolling regression analysis for group 1.

The results can be summarised as follows: (1) in most of the M&A transactions carried out by the group 1 banks listed on the stock exchange, the impact that these operations had (measured according to the time-varying coefficient of the interaction variable) on the market value of the bank was short-lived. Each of these coefficients' behaviours showed a short-run process, returning at a different speed to the value of zero; (2) two banks, namely Generali and Mediolanum, exhibited for very early M&As the persistent effect of the coefficients. This long-run impact of the M&As is particularly evident for the first two M&As made by Banca Generali.

In line with the results obtained for group 1, the behaviour of the share prices of the Italian banks in group 2 shows a similar path: a short-run process for almost all the banks. However, UBI and Monte dei Paschi with their first M&As show persistent effects, particularly for UBI.

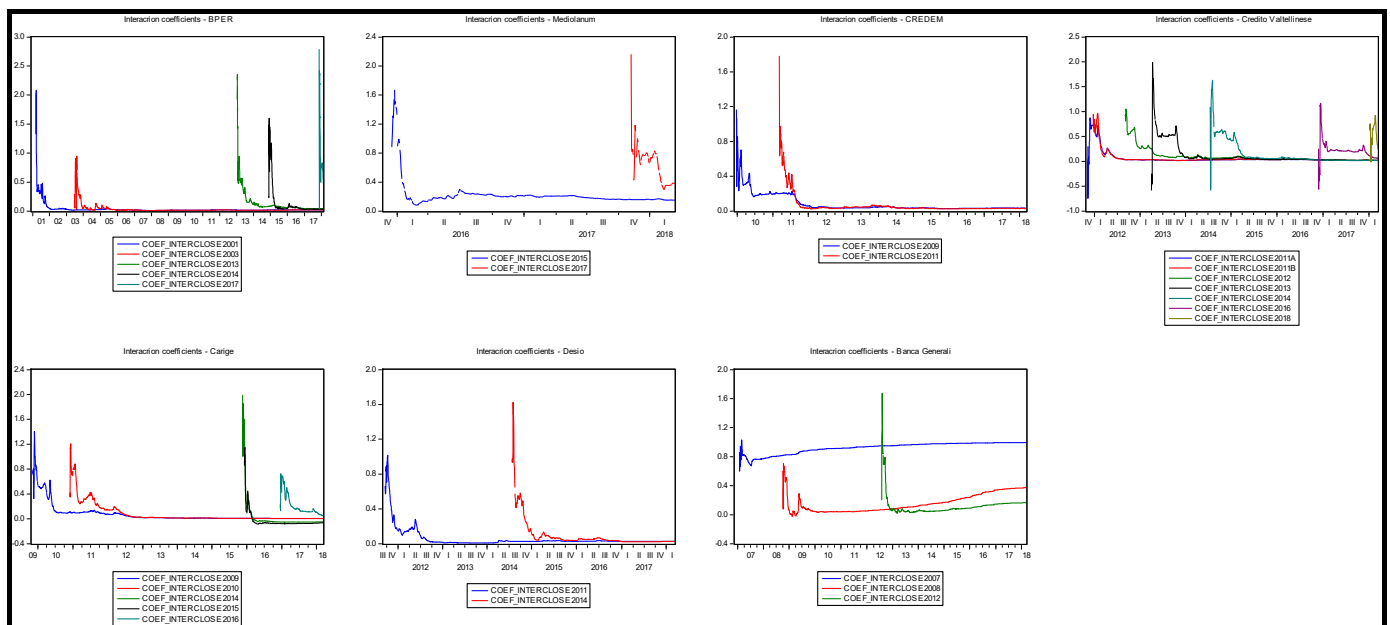
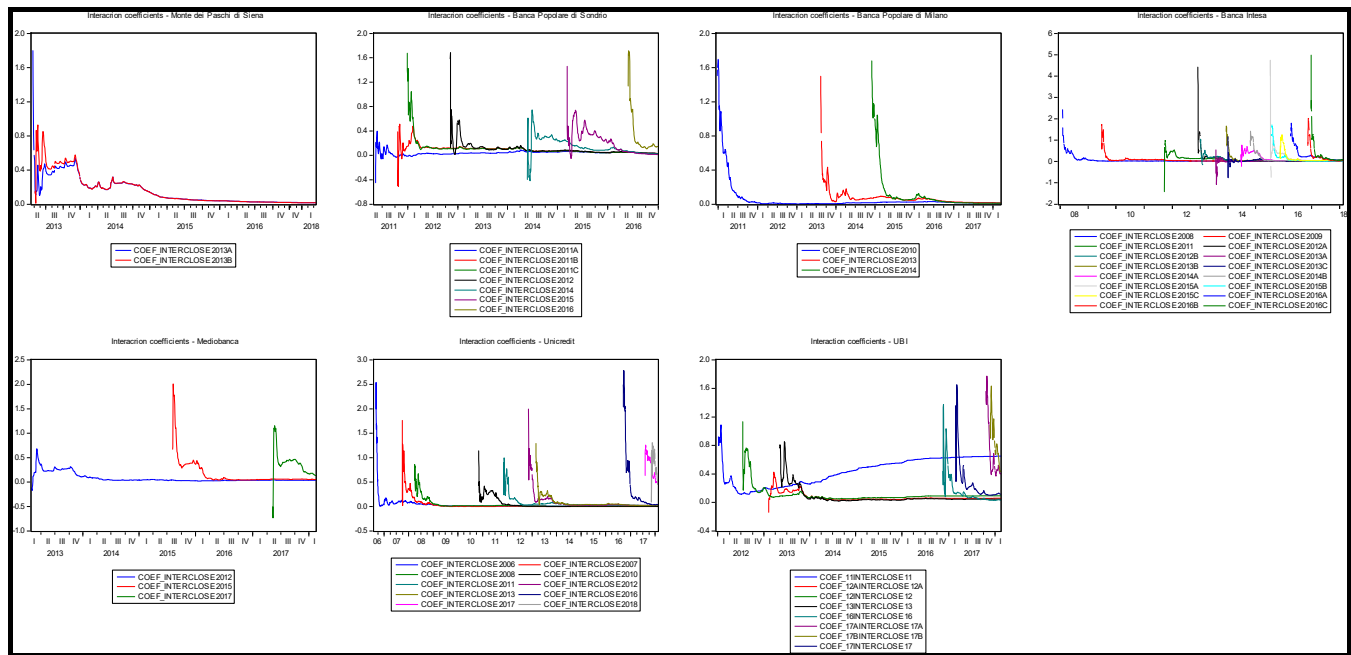


Figure 1. Behaviour of the interaction coefficients with rolling regressions for group 1.



**Figure 2.** Behaviour of the interaction coefficients with rolling regressions for group 2.

A consideration that concerns all groups is that the impact that the M&As had on the share prices of the banks was always short-term. More detailed analysis shows that the groups with a high performance experienced a shorter effect than groups with a low performance. Since it is beyond the scope of this study to identify the determinants of the share price of the banks, the rolling analysis only allowed us to isolate and quantify the impact of the M&As on the value of the Italian banks. From this point of view, we can therefore hypothesise that the impact of the M&As that presented a low performance may have been amplified solely by the additional difficulties that these banks had to face, while, for the other two groups, such difficulties may have been neutralised, in these cases, by other confidence factors. These findings confirm H2.

**H3.** *The effect of the M&A operations performed by Bank  $j$  decreases the structural indicators of Bank $_{ij}$  in the long term.*

To determine the relationship in the long run between the M&A and the vector of the explanatory variables, we tested two different cases: OLS-FE and FE-DK. As the first step, we implemented the standard Hausman test (see the results in Table 3). The null hypothesis of the test is rejected. The bank-specific effects are correlated with the regressors. Since the random effects estimator is inconsistent, the appropriate model is a fixed-effects model, and, consequently, it is applied to test H3. With the fixed-effects model, we assessed the impact of the main financial statement/management indicators on the bank's assets, as well as the M&A activity repeated by the banks.

As a preliminary diagnostic, test for the model assumptions must be implemented. The three most essential assumptions of the fixed-effects estimator are no serial correlation, no contemporaneous correlation and homoscedasticity. Testing for the latter is performed using the modified Wald test for the null hypothesis of homoscedasticity, while Wooldridge's serial correlation test is used for serial correlation. Testing for the absence of the contemporaneous correlation assumption, Pesaran's CD test is performed.

However, since the model has cross-sectional dependence, we cannot use the standard first-generation tests to check for a panel unit root because it could increase the probability of the existence of a spurious unit root. Thus, to overcome this problem, Pesaran proposed the CIPS test for the unit root test in the presence of heterogeneous cross-sectional dependence.

Together, with the uniform results obtained from the first-generation unit root tests, in Table 5, the results of the CIPS test, with the selected average lag length of 1, show that our prior suspicion regarding the order of integration of the series in question still holds if we also account for cross-sectional dependencies. Finally, since the panel models could suffer from endogeneity problems, as the Tier 1 ratio could affect the merger decision, we then test for endogeneity. However, due to the small sample, we cannot apply the Wu–Hausman test. In fact, this test is only as good as the instruments used and is only valid asymptotically. This may be a problem in small samples, and so it should generally be used only with sample sizes well above 100. Therefore, we move to the two-step test. First, we regress the suspected endogenous variable (merger) using the instrument(s). We save the residuals as RES, and after, we include this residual as an extra term in the original model. In this new estimation, if we test whether the coefficient of RES is equal to zero (using a t-test). If it is, we can conclude that merger and error term are indeed correlated, that is, there is endogeneity in the model. Our results show that the t-stat of the RES coefficient is  $-0.37$ ; therefore, it is not statistically significantly different from zero, so we conclude that there is no endogeneity bias of the merger in the model.

**Table 5.** Probit model.

	Group 1	Group 2
merger		
tier1_ratio	$-0.1072^*$ (0.0647)	$2.02 \times 10^{-8}^{**}$ ( $7.64 \times 10^{-9}$ )
liquidass_Dep_Bor	0.0197 (0.0383)	$-0.0419$ (0.0335)
oper_profit_avg_equity	$-7.3794$ (7.1516)	$46.209^{**}$ (22.508)
impair_npl_equ	$-0.0650$ (0.2271)	$-0.0835$ (0.2262)
roae	$-0.07937^*$ (0.04418)	$-0.2432$ (0.24001)
_cons	$-5.0586^{**}$ (2.0180)	$-5.3382^{**}$ (2.1117)
N	42	42
pseudo $R^2$	0.154	0.160

Robust standard errors in parentheses.  $^{**} p < 0.05$ ;  $^* p < 0.1$ .

Table 6 presents the outcomes of the panel estimations of the two groups. The first and most important result is that the impact of the M&As in the medium–long run is positive and significant only for group 2 when Panel OLS<sub>b</sub> is applied. The effect of the M&A operations performed by  $Bank_j$  increases the structural indicators of  $Bank_{i,j}$  in the long term for group 2, while for group 1, the sign of the coefficient is negative and significant, implying (when Panel OLS<sub>b</sub> is applied) the relevant negative role of M&As for the weaker listed banks. These findings confirm that M&As in Italy have played an ambiguous role. The structural indicator of all listed banks that merge in the short/long term shows that the main banking indexes (with the exception of the profitability index of group 1) contribute positively to the level of capitalisation of the banks and their ability to cope with stressful periods using their own resources.

Table 6. Rolling regression coefficients.

Group 1		$\alpha_1$	Std. Error	t-Statistic	Obs
1	BPER Banca SpA (BPER)	0.996381 ***	0.000913	1090.845	7351
2	Banca Mediolanum SpA (Medionalum)	0.990958 ***	0.001742	568.8754	5409
3	Credito Emiliano SpA (CREDEM)	0.987000 ***	0.003474	284.1477	2346
4	Banca Piccolo Credito Valtellinese (CREVAL)	0.970691 ***	0.001068	933.6389	7895
5	Banca Carige SpA (Carige)	0.998903 ***	0.000804	1242.504	5862
6	Banco di Desio e della Brianza (DESIO)	0.995733 ***	0.001167	853.4398	5708
7	Banca Generali SpA (Generbanca) (BG)	0.00732 ***	0.001792	4.087185	2868
Group 2		$\alpha_1$	Std. Error	t-Statistic	Obs
1	Banca Monte dei Paschi di Siena SpA (MPS)	0	0	0	
2	Banca Popolare di Sondrio Societa Cooperativa per Azioni (popso)	0.998439 ***	0.000997	1001.880	4702
3	Banco Popolare di Milano (BPM)	0.006593 ***	0.038765	0.170079	5013
4	Intesa Sanpaolo (Intesa)	0.995146 ***	0.000981	1014.899	8379
5	Mediobanca SpA (Mediobanca)	0.992721 ***	0.001235	803.9053	8376
6	UniCredit SpA (UniCredit)	0.997471 ***	0.000772	1291.868	8374
7	Unione di Banche Italiane SCpA (UBI)	0.998719 ***	0.009735	102.5855	1561

\*\*\*  $p < 0.01$ .

These findings confirm the claim of H3 that the effect of the M&A operations undertaken by  $Bank_{i,j}$  decreases or increases the structural indicators in the long term on the basis of its initial conditions, following the logic of “consolidation” or “desperation to grow”.

#### Instrumental Variable Approach

In Table 5, the use of the covariates describing the index “tier1\_ratio” is likely to produce endogeneity problems, which mainly arise from reverse causality and omitted variables since the index selected can include factors that have been omitted from the regression (Efendic et al. 2011). Furthermore, the data referring to the structural indicators, especially those used for the construction of the ROAE, could be affected by measurement errors. Indeed, being based on the average shareholders’ outstanding equity, such data could clearly have a direct effect on the dependent variable (Pinotti 2015). In order to test the robustness of our results and obtain results that were unaffected by endogeneity, we had to use alternative econometric methods. We adopted an instrumental variable (IV) strategy where the indexes assessing the lagged independent variables are used as instruments. Indeed, the lagged IV method is considered acceptable and helpful for mitigating endogeneity, since they derive from consistent estimates that are less biased than OLS ones (Wang and Bellemare 2019). This approach has been exploited by the literature applying the IV approach to addressing endogeneity (e.g., Keong et al. 2003; Canale et al. 2018; Bonasia et al. 2022).

The instruments should affect the dependent variables only indirectly, namely through their correlation with the variables identified as endogenous. In this framework, lagged independent variables might be correlated with the current value of the instruments—but not with the outcome. Indeed, the selected instrumental variables show a low correlation with the independent variables and a stronger correlation with the instrumented variables. IV estimation proceeded as follows.

We pooled our panel and estimated an IV fixed-effects model with heteroscedasticity-robust and panel-corrected standard errors. The choice of pooling the data is justified by the fact that we mainly exploit cross-section variations among the Italian banks, and the pooled approach can also control for additional reverse causality. Application of the fixed-effects IV approach produces more consistent results in the presence of heteroscedasticity and cross-sectional dependence (Baltagi et al. 2016). The regression was estimated once by using the dependent variable “Tier 1 ratio”; a second regression was estimated for the robustness check by using a different dependent variable, called equity/net loans.

Table 7 shows the panel IV results for the group 1 and group 2 specifications that also include a different dependent variable (Equity/net loans). The first important result we can draw from both groups of regressions is that our analysis holds even once the endogeneity problem is accounted for. The validity of the instruments is set by the value of the Wald statistic. The correct interpretation for the Wald test is a test of the specified null hypothesis, namely that all coefficients are zero. Moreover, the value of the coefficient of the endogenous variable lies within the confidence region obtained after applying the conditional likelihood ratio test statistics (Moreira 2009), supporting the robustness of the results to weak instrument issues. In each specification, the null hypothesis of Sargan–Hansen’s J statistic that the instruments are valid is not rejected.

**Table 7.** Results from the IV model.

	tier1_ratio (Group 1)	Equ_netloans (Group 1)	tier1_ratio (Group 2)	Equ_netloans (Group 2)
Merger	−1.73094 * (0.98707)	−1.425071 (1.35475)	1.70926 ** (0.85347)	0.420315 * (0.230402)
Roae	−0.354115 (0.49284)	2.81872 ** (1.21779)	7.28038 *** (1.58717)	5.4082 ** (2.41192)
Liquidass_Dep_Bor	0.13297 *** (0.049761)	0.04796 ** (0.022295)	−0.07212 (0.126673)	0.256082 * (0.136152)
Impaired_npl	$3.36 \times 10^{-7}$ ( $2.74 \times 10^{-7}$ )	$3.49 \times 10^{-7}$ *** ( $5.59 \times 10^{-8}$ )	$6.98 \times 10^{-8}$ *** ( $2.36 \times 10^{-8}$ )	$3.74 \times 10^{-8}$ ** ( $1.79 \times 10^{-8}$ )
Oper_prof_avg	0.14014 * (0.08072)	0.136591 (0.19947)	0.738308 (2.19074)	0.231248 * (0.227972)
_cons	7.31211 *** (1.56646)	4.81130 *** (0.70399)	9.25188 *** (1.62849)	6.97251 * (3.72589)
N	35	35	35	35
pseudo R <sup>2</sup>	0.30	0.41	0.37	0.64
Wald $\chi^2$ (5)	14.97	23.22	38.74	12.37
P-Val	0.0105	0.0003	0.0000	0.0300

Robust standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ . Instruments: lagged independent variables.

It is worth emphasising that the estimation results have a rather high explanatory power considering the reported values of the pseudo R<sup>2</sup>. Of the two models, the first (group 2) has more explanatory power. Almost all the coefficients of the explanatory variables are significant and have the correct relationships. A comparison of the results obtained in Table 5 regarding the role of the M&As in the structural indexes is substantially confirmed according to the IV analysis on the relationships of the coefficients but with different magnitudes. These results support the goodness of our approach. To sum up, from the panel fixed-effects model and panel IV method estimations, the effect of the M&A operations undertaken by the two groups of listed Italian banks in the last 15 years has increased their structural indicators in the long term. However, the M&As for group 1 have had a negative effect on the tier1\_ratio. That is, for group 1, the M&As follow the logic of “desperation to grow”. Conversely, the estimates for group 2 (Panel and IV) confirm the intuition that, for group 2, the M&As have instead followed the logic of “consolidation”. A remarkable extension of the present work would be a more complete investigation into this practice, looking for the determinants of M&As for single banks. However, this would require a more meticulous dataset containing the specific characteristics of the individual banks.

## 7. Discussion and Conclusions

The profitability gap of these Italian listed banks reflects several characteristics, such as the macroeconomic context, the banks’ business model and their policies (Albertazzi et al. 2016). The macroeconomic context in Italy, as in other countries, has been affected by

a period of recession due to both the financial crisis and sovereign debt crisis, which has worsened the quality of bank credit, creating a huge number of NPLs (around 21 percent of GDP) (Weber 2017) and a corresponding fall in bank profits. The policies, interacting within a competitive system, followed the trend imposed by the European Banking Authority (EBA) toward both a more consolidated banking system and strict constraints concerning capital requirements. These directives arising from Basel 3 imply that banks' profitability is bound to become even more an important component of financial.

Finally, the focus of the bank business model in Italy is more on lending to households and firms compared to other EU countries (Weber 2017). Moreover, Italian banks show a significant degree of heterogeneity. Although the Italian authorities have passed a number of reforms both to transform banks' governance structures and boost banks' competitiveness, the results of the main banking indicators show lower values than the EU average. Indeed, some of them still have a certain degree of competitiveness on domestic and international markets compared with others that could be considered weaker concerning their assets and level of internationalisation.

This paper highlighted the peculiarity of the Italian case, which needs to be considered when assessing the effects of the M&A process. We analysed the process of the mergers and acquisitions of the Italian listed banks, finding a conflicting situation in which banks with different initial conditions were driven by different motives with respect to those proposed in the conventional economic literature.

Due to the fact that different initial structural conditions might have different impacts on the structural indexes, this study used a miscellaneous approach to ascertain whether the Italian M&A process has experienced different impacts depending on timing. Using several econometric models, our empirical analysis showed that the process of bank acquisitions in Italy is derived paradoxically from a situation of strength vs. weakness, with weak buying banks that struggle to become stronger. The initial condition of the strength of a bank leads to the strengthening of the bank itself; yet, starting from a weaker condition, its structural position become even more impaired.

Specifically, even if, in the short term, the impact of the implemented policies shows the same results for both groups of banks, the initial differences influence the final effect when observed in the long term, highlighting the very limited and short-lasting effects for the weaker banks.

Thus, the banks belonging to group 2, the stronger ones, present a behaviour consistent with theoretical and empirical analysis of M&A processes, showing that the process of banking concentration has lasting effects since the management of the merging banks is able to trigger real effects, i.e., the improvement of the structural indicators (Badik 2007).

In contrast, the consolidation and concentration processes of the weaker Italian listed banks were partial, and their strengthening seems desirable to overcome the problems of efficiency and profitability, as emerges from the comparison with the European listed banks. Our empirical analysis for group 1 appears to support the existence of causal links according to which (i) the propensity to undertake mergers is positively correlated with the weakness of the starting conditions; (ii) equity capital gain is a short-term phenomenon; (iii) the subsequent profitability conditions do not improve; rather, they tend to worsen. Indeed, from the panel fixed-effects model and panel IV method estimations, the impact of the M&A operations undertaken by seven weaker Italian banks lowered their structural indicators in the long run. Frequently, a quick way a bank can capitalise on growth opportunities is through an acquisition by expanding into new geographic markets (Ullah et al. 2015).

Consequently, the acquisition activity of banks that are in search of quick development can be stimulated by low economic growth. Even though acquisitions can be considered an effective business policy because they are considered a growth vehicle, they are essentially risky because they are related to significant uncertainty and potential financial loss (Raven-scraft and Scherer 1989; Kravet et al. 2018). Our research confirms the hypotheses of prior studies indicating that acquisitions often fail to create value for shareholders in the long



term (Friedman et al. 2016). Finally, some of the M&As in Italy did not work in the way the standard literature has suggested.

These conflicting results show an overall condition of the structural vulnerability of the Italian listed banks, which appear even weaker in comparison with the universe of the European banking system, highlighting the importance of clustering banks into homogeneous groups.

Despite presenting useful results, the research shows some limitations which might pave the way for future research avenues. First, our estimation approach allows us to capture the effects of the M&As on both the short-term share value and long-term structural indicators of the banks, but it does not fully consider other determinants of these features. The second limitation concerns the time span analysed. Indeed, the recent trends characterising the Italian banking industry (such as the Cooperative Bank reform of 2015) cannot be not fully captured by our analysis. In addition, recent international crises (such as the COVID-19 shock or the Russo-Ukrainian war, with the sanctions imposed on Russian banks) have affected Italian banks' operations. Subsequently, expanding the time coverage of the data might provide more insightful results. Third, the sample of banks analysed does not include Italian cooperative banks, which have undergone a strong reform process. Considering these banks in the analysis might provide evidence on a peculiar typology of banks that plays a non-negligible role in the Italian credit market. Finally, as far as data are available, expanding this analysis to other EU banks might provide an interesting comparative assessment of Italian banks' performance.

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## Appendix A

**Table A1.** Classification of Italian listed banks by assets, year 2017.

	Bank Name	City	Country Code	Total Assetsm USD	Country Rank	World Rank
1.	UniCredit SpA	MILAN	IT	1,003,562	1	30
2.	Intesa Sanpaolo	TURIN	IT	955,675	2	36
3.	Banco BPM SpA	MILAN	IT	193,335	3	142
4.	Banca Monte dei Paschi di Siena	SIENA	IT	166,888	5	154
5.	Unione di Banche Italiane SpA	BERGAMO	IT	152,762	6	167
6.	BPER Banca SpA	MODENA	IT	85,557	8	278
7.	Mediobanca SpA (Mediobanca)	MILAN	IT	84,288	9	285
8.	Banca Mediolanum SpA	BASIGLIO	IT	51,890	13	426
9.	Banca Popolare di Sondrio	SONDRIO	IT	49,920	14	448
10.	Credito Emiliano SpA (CREDEM)	REGGIO-EMILIA	IT	49,872	15	449
11.	Banca Piccolo Credito Valtellinese	SONDRIO	IT	29,931	20	673
12.	Banca Carige SpA	GENOVA	IT	29,886	21	675
13.	Banca di Desio e della Brianza	DESIO	IT	16,785	31	1036
14.	Banca Generali SpA (Generabanca)	TRIESTE	IT	10,783	43	1363
A	Total assets of 14 listed banks			2,956,461		
B	Total assets of all listed banks			3,040,606		
C	A/B			0.97		

**Table A2.** Description of the variables.

Macroarea	Description	N.	Indicator	Label
Liquidity	The extent to which banks have liquidity on hand and are funded by relatively stable and predictable (mainly retail) deposits, rather than by potentially more volatile wholesale debt funding	1	Liquid assets/total deposit and borrowing	liquidass_Dep_Bor
		2	Liquid assets/deposits and short-term funding	liquidass_Dep_stfunding
Performance	The bank's ability to provide its services to consumers and businesses	3	Return on average assets (ROAA)	Roaa
		4	Return on average equity (ROAE)	Roae
		5	Return on risk-weighted assets (RORWA)—operating profit/RWA	Rorwa
Profitability	The bank's ability to generate revenue that can cover costs, thus being profitable	6	Operating profit/average equity	oper_profit_avg_equity
		7	Operating profit/total deposit	operpro_tdep
		8	Profit before tax/total deposit	prof_bef_tax_totdep
Quality	Analyses the quality of the customers' portfolio based on the quality of non-performing loans present	9	Impaired/non-performing loans/equity	impair_npl_equ
		10	Impaired/non-performing loans	impaired_npl
Structural/capital ratio	Indicates the level of capitalisation of the banks and their ability to cope with stressful periods using their own resources	11	Equity/total assets	equity_totassets
		12	Net profit/(loss) for the year from discontinued operations	Netprofit_disc
		13	Total capital ratio	tot_capital_ratio
		14	Tier 1 ratio	Tier_1
		15	Equity/net loans	equ_netloans

**Table A3.** Liquidity indicators.

Liquid Assets/Deposits and Short-Term Funding Ratio							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	28.5	29.7	28.2	25.7	25.1	23.5
2.	Intesa Sanpaolo	38.2	37.6	35.0	32.0	33.4	33.5
3.	Banco BPM SpA	9.9	9.3	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	13.5	20.9	15.8	17.6	19.9	28.8
5.	UBI Banca SCpA	6.5	7.0	7.6	11.5	15.0	14.4
6.	BPER Banca SpA	4.7	5.2	7.6	7.6	10.6	14.9
7.	Mediobanca SpA	32.9	39.4	42.2	40.3	34.7	n.a.
8.	Banca Mediolanum SpA	97.8	77.5	73.6	8.0	11.2	21.3
9.	Banca Popolare di Sondrio SCpA	12.0	12.7	13.0	15.4	13.2	15.9
10.	CREDEM SpA	14.4	11.9	9.9	9.3	10.0	11.2
11.	Banca Piccolo Credito Valtellinese	5.1	4.8	5.4	6.0	9.5	10.2
12.	Banca Carige SpA	13.1	8.4	5.7	8.2	12.2	14.7
13.	Banca di Desio e della Brianza SpA	25.1	1.6	3.6	3.8	7.1	8.6
14.	Banca Generali SpA	12.7	8.9	7.4	9.1	16.0	15.1
	Average	21.6	18.9	18.7	15.0	16.8	17.7

Source: Bureau van Dijk Orbis.

**Table A4.** Liquidity indicators.

Liquid Assets/Total Deposits/Loans Ratio							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	21.1	21.5	19.2	17.7	16.2	14.9
2.	Intesa Sanpaolo	24.4	22.5	19.7	18.1	17.9	17.8
3.	Banco BPM SpA	7.4	6.4	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	10.7	14.3	11.0	11.5	12.1	16.9
5.	UBI Banca SCpA	4.5	4.5	4.6	6.9	8.8	8.0
6.	BPER Banca SpA	4.0	4.1	5.8	5.8	7.6	9.9
7.	Mediobanca SpA	16.7	20.4	19.4	17.9	14.3	n.a.
8.	Banca Mediolanum SpA	77.5	66.0	66.3	7.8	10.8	20.2
9.	Banca Popolare di Sondrio SCpA	10.8	11.4	11.6	13.8	11.9	14.2
10.	CREDEM SpA	11.2	9.2	7.6	7.3	7.8	8.4
11.	Banca Piccolo Credito Valtellinese	4.4	3.9	4.2	4.8	7.3	7.5
12.	Banca Carige SpA	9.7	5.9	3.8	5.5	7.9	8.9
13.	Banca di Desio e della Brianza SpA	19.7	1.6	3.6	3.8	7.1	8.6
14.	Banca Generali SpA	12.7	8.9	7.4	9.1	16.0	15.1
	Average	16.2	13.9	13.7	10.0	11.2	12.5

Source: Bureau van Dijk Orbis.

**Table A5.** Performance indicators.

Return on Average Assets (ROAA)							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	−1.3	0.2	0.3	−1.5	0.1	−1.0
2.	Intesa Sanpaolo	0.5	0.4	0.2	−0.7	0.3	−1.3
3.	Banco BPM SpA	−1.0	0.4	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	−2.0	0.2	−2.9	−0.7	−1.4	−2.0
5.	UBI Banca SCpA	−0.7	0.1	−0.6	0.2	0.1	−1.4
6.	BPER Banca SpA	0.0	0.4	0.1	0.0	−0.1	0.4
7.	Mediobanca SpA	0.9	0.8	0.6	−0.2	0.1	n.a.
8.	Banca Mediolanum SpA	0.9	1.0	1.0	1.8	2.0	0.8
9.	Banca Popolare di Sondrio SCpA	0.3	0.4	0.4	0.2	0.1	0.3
10.	CREDEM SpA	0.3	0.5	0.5	0.4	0.4	0.3
11.	Banca Piccolo Credito Valtellinese	−1.3	0.4	−1.2	0.1	−1.1	0.2
12.	Banca Carige SpA	−1.1	−0.3	−1.4	−3.9	−0.1	0.4
13.	Banca di Desio e della Brianza SpA	8.9	2.1	1.0	0.9	1.3	0.7
14.	Banca Generali SpA	2.2	3.3	2.5	2.1	2.2	1.7
	Average	0.5	0.7	0.1	−0.1	0.3	−0.1

Source: Bureau van Dijk Orbis.

**Table A6.** Performance indicators.

Return on Average Equity (ROAE)							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	−23.4	3.9	4.6	−23.3	2.0	−16.1
2.	Intesa Sanpaolo	6.5	5.8	2.9	−9.6	3.4	−17.0
3.	Banco BPM SpA	−13.0	5.3	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	−40.2	5.1	−90.4	−22.8	−36.6	−42.7
5.	UBI Banca SCpA	−8.6	1.4	−6.5	2.5	0.9	−18.9
6.	BPER Banca SpA	0.3	3.9	0.6	0.3	−0.7	5.1
7.	Mediobanca SpA	6.8	7.1	6.2	−2.7	1.2	n.a.
8.	Banca Mediolanum SpA	18.7	22.6	21.4	29.8	39.0	22.5
9.	Banca Popolare di Sondrio SCpA	3.8	5.4	5.6	3.1	2.1	4.1
10.	CREDEM SpA	5.3	6.8	6.7	5.6	6.7	5.9
11.	Banca Piccolo Credito Valtellinese	−16.7	5.8	−16.4	0.7	−15.4	3.1
12.	Banca Carige SpA	−12.8	−4.8	−31.6	−66.8	−1.9	6.6
13.	Banca di Desio e della Brianza SpA	77.4	32.0	23.4	24.6	30.9	13.5
14.	Banca Generali SpA	24.3	34.7	32.0	33.8	40.5	29.5
	Average	2.8	9.9	−1.9	−1.9	5.5	−0.4

Source: Bureau van Dijk Orbis.

**Table A7.** Performance indicators.

Return on Risk-Weighted Assets (RoRWA)—Operating Profit/RWA							
N.	Bank Name	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	−3.0	0.4	0.7	−1.8	−0.1	0.2
2.	Intesa Sanpaolo	1.0	1.3	1.0	−0.9	1.0	0.3
3.	Banco BPM SpA	−3.1	0.6	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	−5.1	0.2	−9.7	−2.5	−2.3	−0.5
5.	UBI Banca SCpA	−2.0	0.4	0.2	0.3	0.2	−0.3
6.	BPER Banca SpA	0.1	0.5	0.2	0.2	−0.1	1.1
7.	Mediobanca SpA	0.9	0.9	0.4	0.3	0.3	n.a.
8.	Banca Mediolanum SpA	5.4	7.1	6.2	10.2	8.8	3.2
9.	Banca Popolare di Sondrio SCpA	0.5	0.8	0.8	0.5	0.4	0.6
10.	CREDEM SpA	1.5	1.8	1.5	1.3	1.0	1.2
11.	Banca Piccolo Credito Valtellinese	−2.5	−1.1	−1.9	0.2	−0.7	0.6
12.	Banca Carige SpA	−2.5	−1.0	−2.8	−4.7	−1.4	1.2
13.	Banca di Desio e della Brianza SpA	10.4	7.5	5.2	5.9	5.6	2.2
14.	Banca Generali SpA	7.4	8.9	7.9	9.2	8.0	4.8
	Average	1.1	2.3	0.7	1.4	1.6	1.2

Source: Bureau van Dijk Orbis.

**Table A8.** Profitability indicators.

Operating Profit/Average Equity							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	−24.0	3.1	5.2	−12.9	−0.8	2.0
2.	Intesa Sanpaolo	5.6	8.0	5.7	−5.2	6.3	1.7
3.	Banco BPM SpA	−18.2	3.8	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	−41.5	2.2	−123.5	−33.8	−24.6	−4.7
5.	UBI Banca SCpA	−12.4	2.3	1.3	1.7	1.1	−2.8
6.	BPER Banca SpA	0.6	3.8	1.2	1.7	−0.5	10.9
7.	Mediobanca SpA	5.2	6.3	3.4	2.6	2.8	n.a.
8.	Banca Mediolanum SpA	20.0	27.8	29.0	43.0	54.0	25.7
9.	Banca Popolare di Sondrio SCpA	4.4	7.2	8.9	6.3	5.3	7.6
10.	CREDEM SpA	8.3	9.7	10.9	10.2	8.9	12.6
11.	Banca Piccolo Credito Valtellinese	−18.5	−7.9	−16.4	1.3	−6.7	5.6
12.	Banca Carige SpA	−18.0	−9.6	−32.8	−38.4	−10.6	9.6
13.	Banca di Desio e della Brianza SpA	81.1	48.6	35.4	41.6	48.6	21.3
14.	Banca Generali SpA	28.8	40.6	40.2	45.1	51.7	33.9
	Average	2.7	11.2	−0.4	4.9	10.4	10.3

Source: Bureau van Dijk Orbis.

**Table A9.** Profitability indicators.

Operating Profit/Total Deposits							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	0.0	0.0	0.0	0.0	0.0	0.0
2.	Intesa Sanpaolo	0.0	0.0	0.0	0.0	0.0	0.0
3.	Banco BPM SpA	0.0	0.0	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	0.0	0.0	−0.1	0.0	0.0	0.0
5.	UBI Banca SCpA	0.0	0.0	0.0	0.0	0.0	0.0
6.	BPER Banca SpA	0.0	0.0	0.0	0.0	0.0	0.0
7.	Mediobanca SpA	0.0	0.0	0.0	0.0	0.0	n.a.
8.	Banca Mediolanum SpA	0.0	0.0	0.0	0.0	0.0	0.0
9.	Banca Popolare di Sondrio SCpA	0.0	0.0	0.0	0.0	0.0	0.0
10.	CREDEM SpA	0.0	0.0	0.0	0.0	0.0	0.0
11.	Banca Piccolo Credito Valtellinese	0.0	0.0	0.0	0.0	0.0	0.0
12.	Banca Carige SpA	0.0	0.0	0.0	−0.1	0.0	0.0
13.	Banca di Desio e della Brianza SpA	0.1	0.0	0.0	0.0	0.0	0.0
14.	Banca Generali SpA	0.0	0.1	0.1	0.1	0.0	0.0
	Average	0.0	0.0	0.0	0.0	0.0	0.0

Source: Bureau van Dijk Orbis.

**Table A10.** Profitability indicators.

Operating Profit/Total Deposits							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	0.0	0.0	0.0	0.0	0.0	0.0
2.	Intesa Sanpaolo	0.0	0.0	0.0	0.0	0.0	0.0
3.	Banco BPM SpA	0.0	0.0	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	0.0	0.0	−0.1	0.0	0.0	0.0
5.	UBI Banca SCpA	0.0	0.0	0.0	0.0	0.0	0.0
6.	BPER Banca SpA	0.0	0.0	0.0	0.0	0.0	0.0
7.	Mediobanca SpA	0.0	0.0	0.0	0.0	0.0	n.a.
8.	Banca Mediolanum SpA	0.0	0.0	0.0	0.0	0.0	0.0
9.	Banca Popolare di Sondrio SCpA	0.0	0.0	0.0	0.0	0.0	0.0
10.	CREDEM SpA	0.0	0.0	0.0	0.0	0.0	0.0
11.	Banca Piccolo Credito Valtellinese	0.0	0.0	0.0	0.0	0.0	0.0
12.	Banca Carige SpA	0.0	0.0	0.0	−0.1	0.0	0.0
13.	Banca di Desio e della Brianza SpA	0.1	0.0	0.0	0.0	0.0	0.0
14.	Banca Generali SpA	0.0	0.1	0.1	0.1	0.0	0.0
	Average	0.0	0.0	0.0	0.0	0.0	0.0

Source: Bureau van Dijk Orbis.

**Table A11.** Quality indicators.

Impaired/Non-Performing Loans/Equity							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	1.8	1.5	1.5	1.5	1.1	1.1
2.	Intesa Sanpaolo	1.2	1.3	1.3	1.2	0.9	0.8
3.	Banco BPM SpA	3.4	2.0	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	6.9	4.6	7.1	5.0	3.9	1.8
5.	UBI Banca SCpA	1.4	1.3	1.1	1.0	0.9	0.8
6.	BPER Banca SpA	2.0	2.0	1.8	2.0	1.5	1.3
7.	Mediobanca SpA	0.2	0.2	0.2	0.2	0.1	n.a.
8.	Banca Mediolanum SpA	0.1	0.1	0.1	0.1	0.1	0.3
9.	Banca Popolare di Sondrio SCpA	1.5	1.4	1.3	1.2	0.7	0.5
10.	CREDEM SpA	0.6	0.6	0.5	0.5	0.5	0.5
11.	Banca Piccolo Credito Valtellinese	2.9	2.4	2.1	1.7	1.3	1.0
12.	Banca Carige SpA	3.4	2.6	3.4	3.1	0.7	0.7
13.	Banca di Desio e della Brianza SpA	1.4	1.2	1.0	1.1	1.5	1.7
14.	Banca Generali SpA	0.1	0.1	0.1	0.1	0.1	0.2
	Average	1.9	1.5	1.7	1.4	1.0	0.9

**Table A12.** Quality indicators.

Impaired/Non-Performing Loans							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	75,483,530	80,005,187	77,412,983	74,310,248	69,602,096	62,011,648
2.	Intesa Sanpaolo	57,853,000	62,142,000	58,559,000	52,619,000	42,851,000	36,452,000
3.	Banco BPM SpA	25,888,394	26,429,293	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	44,672,678	44,027,989	41,327,529	31,003,497	24,966,976	20,237,777
5.	UBI Banca SCpA	12,407,687	13,196,123	11,641,365	10,967,663	9,584,547	7,514,979
6.	BPER Banca SpA	11,015,891	11,110,712	10,064,663	9,393,477	7,314,886	5,919,843
7.	Mediobanca SpA	1,998,478	1,930,737	1,927,976	1,133,655	909,043	n.a.
8.	Banca Mediolanum SpA	112,837	107,114	87,210	61,983	55,370	170,222
9.	Banca Popolare di Sondrio SCpA	4,087,552	3,768,117	3,105,902	2,485,175	1,435,197	1,009,034
10.	CREDEM SpA	1,360,080	1,360,631	1,233,072	1,149,257	961,320	826,946
11.	Banca Piccolo Credito Valtellinese	5,171,495	5,274,281	4,207,025	3,280,051	2,502,824	2,020,046
12.	Banca Carige SpA	7,212,565	6,545,468	6,134,241	5,071,102	2,711,748	2,115,125
13.	Banca di Desio e della Brianza SpA	1,761,638	667,992	430,480	435,427	467,885	330,005
14.	Banca Generali SpA	41,859	43,486	54,271	51,293	39,155	49,844
	Average	17,790,549	18,329,224	16,629,671	14,766,294	12,569,388	11,554,789

**Table A13.** Structural/capital ratio indicators.

Solvency: Equity/Total Assets							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	5.0	6.2	6.3	5.9	7.2	5.9
2.	Intesa Sanpaolo	6.8	7.2	7.0	7.2	7.5	7.5
3.	Banco BPM SpA	7.1	7.7	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	4.2	5.7	3.2	3.1	3.0	4.6
5.	UBI Banca SCpA	8.1	9.0	8.5	9.0	8.0	7.6
6.	BPER Banca SpA	8.6	9.2	9.1	7.6	7.7	7.7
7.	Mediobanca SpA	12.8	12.5	11.3	9.5	8.4	n.a.
8.	Banca Mediolanum SpA	5.1	4.6	4.3	5.7	6.3	3.8
9.	Banca Popolare di Sondrio SCpA	7.2	7.5	7.0	6.1	6.0	6.5
10.	CREDEM SpA	6.3	6.6	6.8	6.8	6.5	5.3
11.	Banca Piccolo Credito Valtellinese	6.9	8.1	7.0	7.0	6.7	7.5
12.	Banca Carige SpA	8.2	8.2	4.7	3.9	7.5	6.4
13.	Banca di Desio e della Brianza SpA	14.1	8.2	5.3	3.4	3.8	5.0
14.	Banca Generali SpA	7.7	10.4	8.7	7.1	5.4	5.8
	Average	7.8	7.9	6.7	6.3	6.5	6.1

Source: Bureau van Dijk Orbis.

**Table A14.** Structural/capital ratio indicators.

Net Profit/(Loss) for the Year from Discontinued Operations							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	630,111	−295,426	−124,126	−760,471	−174,808	0
2.	Intesa Sanpaolo	987,000	59,000	−48,000	0	0	0
3.	Banco BPM SpA	2524	−7280	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	0	0	0	−51,224	10,807	17,675
5.	UBI Banca SCpA	0	0	0	0	0	248
6.	BPER Banca SpA	0	0	0	1,258	0	−6572
7.	Mediobanca SpA	0	0	0	0	0	n.a.
8.	Banca Mediolanum SpA	0	0	212	0	0	−59
9.	Banca Popolare di Sondrio SCpA	0	0	0	0	0	0
10.	CREDEM SpA	0	0	0	0	0	6692
11.	Banca Piccolo Credito Valtellinese	0	20,070	−1125	0	26,430	0
12.	Banca Carige SpA	0	71,216	−138,706	0	0	0
13.	Banca di Desio e della Brianza SpA	0	0	0	0	0	0
14.	Banca Generali SpA	0	0	3051	−124	451	1835
	Average	115,688.2	−10,887.1	−23,745.7	−62,350.9	−10,547.7	1,651.6

Source: Bureau van Dijk Orbis.

**Table A15.** Structural/capital ratio indicators.

Tier 1 Ratio							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	9.0	11.5	11.1	10.1	11.4	9.3
2.	Intesa Sanpaolo	13.9	13.8	14.2	12.3	12.1	11.5
3.	Banco BPM SpA	12.5	12.7	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	8.2	12.9	8.5	10.6	9.6	11.1
5.	UBI Banca SCpA	11.5	12.1	12.3	13.2	10.8	9.1
6.	BPER Banca SpA	13.9	11.3	11.3	8.6	8.3	7.9
7.	Mediobanca SpA	12.1	12.0	11.1	11.8	11.5	n.a.
8.	Banca Mediolanum SpA	20.0	19.7	18.4	14.4	12.1	9.4
9.	Banca Popolare di Sondrio SCpA	11.1	10.5	9.8	7.9	7.6	7.8
10.	CREDEM SpA	13.2	13.5	11.1	9.9	9.4	8.7
11.	Banca Piccolo Credito Valtellinese	11.8	13.1	11.0	8.6	8.1	7.3
12.	Banca Carige SpA	12.0	12.8	8.7	5.8	7.4	5.7
13.	Banca di Desio e della Brianza SpA	15.1	15.0	14.0	13.7	12.9	11.2
14.	Banca Generali SpA	16.7	14.3	12.2	14.2	11.8	11.1
	Average	13.1	13.4	12.0	10.9	10.2	9.2

Source: Bureau van Dijk Orbis.

**Table A16.** Structural/capital ratio indicators.

Equity/Net Loans							
N.	Bank	2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	9.7	11.3	11.2	10.0	12.2	9.8
2.	Intesa Sanpaolo	13.5	14.0	13.3	13.1	13.3	12.7
3.	Banco BPM SpA	10.1	11.7	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	6.1	8.6	4.8	4.7	4.6	7.5
5.	UBI Banca SCpA	11.1	12.4	12.1	12.7	11.4	9.9
6.	BPER Banca SpA	12.2	12.9	12.6	10.1	9.9	9.6
7.	Mediobanca SpA	23.6	23.9	21.7	19.1	15.8	n.a.
8.	Banca Mediolanum SpA	24.9	27.7	26.8	20.9	21.9	13.1
9.	Banca Popolare di Sondrio SCpA	10.6	11.0	10.4	8.4	7.7	8.0
10.	CREDEM SpA	10.5	10.7	11.0	10.8	9.6	8.3
11.	Banca Piccolo Credito Valtellinese	10.1	11.5	10.7	9.5	9.0	9.6
12.	Banca Carige SpA	11.7	11.6	7.7	6.5	12.2	10.7
13.	Banca di Desio e della Brianza SpA	20.7	16.7	15.6	16.6	13.5	11.4
14.	Banca Generali SpA	34.4	33.1	29.9	31.3	30.2	27.0
	Average	16.4	18.3	16.6	14.5	13.2	11.5

Source: Bureau van Dijk Orbis.



**Table A17.** Structural/capital ratio indicators.

N.	Bank	Total Capital Ratio					
		2011	2012	2013	2014	2015	2016
1.	UniCredit SpA	11.7	14.2	13.4	13.6	14.5	12.4
2.	Intesa Sanpaolo	17.0	16.6	17.2	14.8	13.6	14.3
3.	Banco BPM SpA	14.9	15.2	n.a.	n.a.	n.a.	n.a.
4.	Banca Monte dei Paschi di Siena SpA	10.4	16.0	12.8	15.2	13.8	15.7
5.	UBI Banca SCpA	14.1	13.9	15.3	18.9	16.0	13.5
6.	BPER Banca SpA	15.2	12.5	12.2	11.9	12.1	11.5
7.	Mediobanca SpA	15.3	14.9	13.8	15.6	14.2	n.a.
8.	Banca Mediolanum SpA	20.0	19.7	18.4	18.0	13.8	12.1
9.	Banca Popolare di Sondrio SCpA	13.6	13.4	11.3	10.5	10.5	10.3
10.	CREDEM SpA	14.4	14.8	11.8	13.4	13.6	11.6
11.	Banca Piccolo Credito Valtellinese	13.0	15.2	14.0	12.2	11.5	10.6
12.	Banca Carige SpA	13.9	14.9	11.2	9.2	10.5	8.0
13.	Banca di Desio e della Brianza SpA	15.4	15.4	14.2	13.5	12.7	10.8
14.	Banca Generali SpA	18.4	15.9	14.2	14.8	13.0	12.8
	Average	14.9	15.2	13.8	14.0	13.1	12.0

Source: Bureau van Dijk Orbis.

**Table A18.** European listed banks that have undertaken M&As processes.

Country Name		Bank Name
1	AUSTRIA (AT)	Raiffeisen Bank International AG
2		Volksbank Vorarlberg e. Gen.
3		Wiener Privatbank SE
4		Autobank AG
5	BELGIUM (BE)	KBC Groep NV/KBC Groupe SA/KBC Group
6		Banca Carige SpA
7	CYPRUS (CY)	TCS Group Holding PLC
8	CZECH REPUBLIC (CZ)	Komerční Banka
9	GERMANY (DE)	Deutsche Bank AG
10		Commerzbank AG
11		Deutsche Boerse AG
12		Wüstenrot & Württembergische AG
13		Deutsche Pfandbriefbank AG
14		Aareal Bank AG
15		Comdirect Bank AG
16		Oldenburgische Landesbank—OLB
17		ProCredit Holding AG & Co. KGaA
18		Baader Bank AG
19		Niiio Finance Group
20	DENMARK (DK)	Danske Bank A/S
21		Jyske Bank A/S (Group)
22		Alm. Brand A/S
23		Ringkjøbing Landbobank
24		Vestjysk Bank A/S
25		Nordjyske Bank A/S
26	ESTONIA (EE)	AS LHV Group

Table A18. Cont.

	Country Name	Bank Name
27	SPAIN (ES)	Banco Santander SA
28		Banco Bilbao Vizcaya Argentaria SA (BBVA)
29		Caixabank, S.A.
30		Banco de Sabadell SA
31		Bankia, SA
32		Bankinter SA
33		Unicaja Banco SA
34		Liberbank SA
35	FRANCE (FR)	BNP Paribas
36		Crédit Agricole SA
37		Société Générale SA
38		Natixis SA
39		Caisse régionale de credit agricole mutuel Sud Rhône/ Alpes SC Credit Agricole Sud Rhône Alpes
40		Amundi SA
41		Caisse régionale de crédit agricole mutuel de Normandie-Seine
42	THE UNITED KINGDOM (GB)	HSBC Holdings PLC
43		Barclays PLC
44		Lloyds Banking Group PLC
45		The Royal Bank of Scotland Group PLC
46		Standard Chartered PLC
47		Cybg PLC
48		Virgin Money Holdings (Uk) PLC
49		TP ICAP PLC
50		Investec PLC
51		Bank BGZ BNP Paribas SA
52		Paragon Banking Group PLC
53		Close Brothers Group PLC
54		3i Group PLC
55		Intermediate Capital Group PLC
56		RIT Capital Partners PLC
57		Rathbone Brothers PLC
58		Electra Private Equity PLC
59		Brewin Dolphin Holdings PLC
60	GREECE (GR)	Shore Capital Group Limited
61		Cenkos Securities PLC
62		Arden Partners PLC
63		Fiske PLC
64		Piraeus Bank SA
65		National Bank of Greece SA
66		Alpha Bank AE
67		Eurobank Ergasias SA
68		Attica Bank SA/the Bank of Attica SA
69	CROATIA (HR)	Zagrebacka Banka d.d.
70		Privredna Banka Zagreb d.d./Privredna Banka Zagreb Group
71	HUNGARY (HU)	FHB Mortgage Bank PLC/FHB Jelzalogbank Nyrt
72	LIECHTENSTEIN (LI)	Liechtensteinische Landesbank AG/National Bank of Liechtenstein
73	THE NETHERLANDS (NL)	ING Groep NV
74		Van Lanschot Kempen NV
75		Flow Traders NV
76		BinckBank NV

Table A18. Cont.

	Country Name	Bank Name
77	POLAND (PL)	Powszechna Kasa Oszczednosci Bank Polski SA—PKO BP SA
78		Bank Polska Kasa Opieki SA/Bank Pekao SA
79		Bank Zachodni WBK SA
80		mBank SA
81		Alior Bank Spółka Akcyjna
82		Getin Noble Bank SA
83		Getin Holding SA
84		Idea Bank SA
85	PORTUGAL (PT)	Banco Comercial Português, SA/Millennium bcp
86		Banco BPI SA
87	ROMANIA (RO)	Transilvania Bank-Banca Transilvania SA
88		BRD—Groupe Societe Generale SA
89	SWEDEN (SE)	Nordea Bank AB (publ)
90		Svenska Handelsbanken AB
91		Skandinaviska Enskilda Banken AB
92		Swedbank AB
93		Avanza Bank Holding AB
94		Hoist Finance AB
95		TF Bank AB
96	SLOVAKIA (SK)	Prima banka Slovensko, a.s.

**Table A19.** Average values (2011–2106) of main indicators for European countries with listed banks.

		Liquidity		Performance		Profitability		Quality		Structural		Capital ratio				
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(L)	(M)	(N)	(O)	(P)	(Q)
1	AUSTRIA (AT)	30.37	27.78	0.80	3.63	2.89	4.50	0.02	0.02	0.45	2,716,643.51	10.82		44.28	33.83	47.51
2	BELGIUM (BE)	19.25	13.68	−0.24	−5.99	0.22	−1.70	0.00	−0.01	1.54	8,519,354.08	6.37	−103,624.17	11.75	11.43	14.51
3	CYPRUS (CY)	21.27	19.74	4.39	17.60		31.84	0.11	0.09	0.47	169,720.59	18.32		15.90	28.14	20.36
4	CZECH REPUBLIC (CZ)	16.08	15.05	1.52	13.14	3.97	15.86	0.02	0.02	0.26	954,386.09	11.60		15.48	20.36	15.67
5	GERMANY (DE)	44.48	36.44	−1.91	2.77	1.88	5.22	−3.68	−3.67	0.26	3,151,317.80	11.96	276,985.00	17.87	115.67	19.60
6	DENMARK (DK)	76.55	66.74	0.58	3.12	2.04	7.08	0.02	0.02	1.04	2,053,167.73	10.33	3767.49	18.78	26.66	19.48
7	ESTONIA (EE)	49.96	49.93	1.91	19.21	3.07	18.34	0.02	0.02	0.25	11,063.75	9.83	2051.50	16.36	18.05	22.82
8	SPAIN (ES)	16.09	12.68	0.07	−13.07	0.84	−10.95	0.00	0.00	1.00	14,442,362.65	6.06	383,215.78	11.82	10.31	13.01
9	FRANCE (FR)	127.05	43.28	0.92	5.78	2.95	8.90	0.03	0.03	0.30	15,494,717.19	12.60	−315,666.67	11.91	16.75	17.10
10	THE UNITED KINGDOM (GB)	112.47	105.08	0.99	8.87	3.72	4.67	0.03	0.03	0.81	13,460,632.54	25.20	−237,215.28	13.91	29.10	41.65
11	GREECE (GR)	5.55	5.26	−2.65	9.19	−5.96	−5.76	−0.07	−0.07	1.80	16,532,888.64	6.19	−583,119.04	12.39	11.01	12.82
12	CROATIA (HR)	25.91	23.44	1.09	6.01	2.37	8.13	0.02	0.02	0.60	1,292,087.40	15.99		22.30	24.21	21.96
13	HUNGARY (HU)	34.84	22.82	−1.29	−10.78	−2.35	−11.43	−0.03	−0.03	0.81	197,192.94	10.48	−423.16	12.97	18.04	16.16
14	LIECHTENSTEIN (LI)	52.86	48.50	0.35	3.79	0.96	4.41	0.00	0.00	0.20	294,043.61	8.43		17.98	16.17	20.60
15	THE NETHERLANDS (NL)	21.40	38.38	0.83	15.17	2.64	16.80	0.01	0.01	0.23	5,185,282.11	7.83	109,363.44	21.62	40.65	22.20
16	POLAND (PL)	10.16	9.54	1.45	13.17	2.19	12.71	0.02	0.02	0.58	1,218,123.48	11.37	17,830.35	13.59	17.31	14.74
17	PORTUGAL (PT)	13.29	11.85	0.04	−3.81	−0.36	−7.47	0.00	0.00	0.67	2,386,481.42	5.53	165,624.75	11.46	8.64	12.32
18	ROMANIA (RO)	17.29	16.91	1.30	10.58	3.00	11.61	0.02	0.02	0.98	1,075,909.62	11.43		18.06	20.45	18.18
19	SWEDEN (SE)	51.32	32.16	1.17	16.46	4.50	21.56	0.03	0.03	0.14	1,798,725.65	7.12	−31,759.49	16.88	13.79	18.08
20	SLOVAKIA (SK)	10.46	10.10	−0.09	−5.01	0.88	−3.53	0.00	0.00	1.25	126,389.83	5.66			8.41	14.22

(A): Liquid assets/deposits and short-term funding; (B) liquid assets/total deposits and borrowing; (C) ROAA; (D) ROAE; (E) RORWA/RWA; (F) operating profit/average equity; (G) operating profit/total deposits; (H) profit before tax/total deposits; (I) impaired loans/non-performing loans/equity; (L) impaired loans/NPL; (M) equity/total assets; (N) net profit/(loss) for the year from discontinued operations; (O) Tier 1 ratio; (P) equity/net loans; (Q) total capital ratio. Source: Bureau van Dijk Orbis.

## Notes

- <sup>1</sup> In total, 19 listed banks undertook M&As from 2000 to 2018.
- <sup>2</sup> Note: more than one M&A can be undertaken in the same year. The whole dataset is available upon request from the authors.
- <sup>3</sup> For this econometric analysis, we used daily observations only for weekdays.
- <sup>4</sup> For the choice of indicator, see Section 6.

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