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The Impact of M&A Transactions on Bank Profitability: Evidence from the European Banking Sector

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A chi mi ha accompagnato lungo questo percorso di crescita.

A mio padre, pilastro del cammino.

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ABSTRACT

The experimental thesis wants to assess the impact of bank M&A on bank profitability—proxied by ROA—for acquirers with total assets exceeding 25 billion euros. It was applied an OLS Before/after regression for a treatment group of banks who did at least one deal in the period between 2013 and 2023. Then it was apply a DID model to evaluate of banks who did an m&a in the target period had a positive benefit in comparison with those banks who didn't do an m&a.

Chapter 1 introduces the research questions and motivation. Chapter 2 reviews the literature and sets out the conceptual framework and testable hypotheses. Chapter 3 describes the European institutional and market context that shapes banking consolidation. Chapter 4 details data sources, sample construction, variable definitions, and summary statistics. Chapter 5 presents the empirical methodology, including before–after comparisons and the baseline identification strategy, with assumptions and limitations. Chapter 6 reports the main results on ROA. Chapter 7 investigates heterogeneity and robustness. Chapter 8 concludes with implications for managers and policymakers and directions for future research.

1. DRIVERS OF BANK PERFORMANCE

1.1 BANK BUSINESS MODEL

From an economic point of view banks are defined as financial institutions who are authorized to receive deposits and lend money in exchange of an interest. Nowadays, this continues to represent the core banking activity. However, since its first constitution, banks (especially Universal banks) have diversified their product services incorporating asset management, private banking, securities brokerage, financial advisory and investment banking services to its clients.

Banks are essential for any modern economy, being the primary financier of a country.

Analysing the banks profitability is fundamental to assess the financial health of a company.

The banking sector is known for be highly regulated, characterized by strong competitive pressure and a high financial leverage.

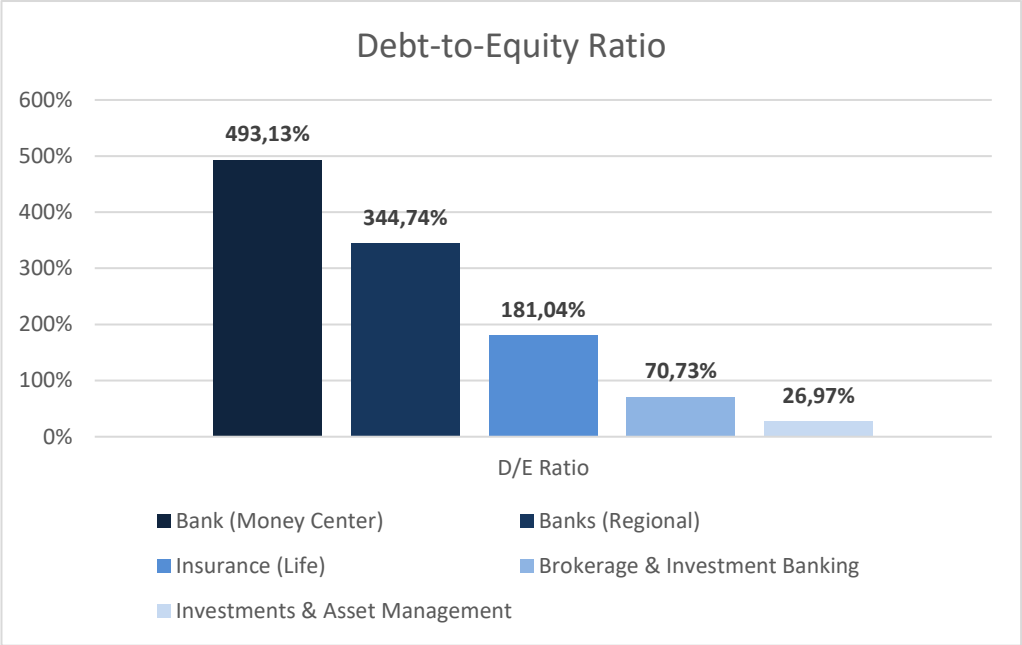
The business model of a bank and its revenue generation mechanisms significantly differ from those of a typical company. Consequently, the financial statements and the ratios we focus on to assess a bank's health differ from those used for non-financial institutions. Moreover, Banks are subject to a range of industry-specific risks, which tend to be more complex than those faced by other businesses. These can include credit risk, liquidity risk, interest rate risk, market risk, operational risk, compliance risk and reputational risk.

The banking regulation obliges analysts to be always update about the new capital requirements, liquidity ratios and other standards that banks must meet. Analysts must understand these requirements to evaluate the bank’s financial health and ensure it maintains the necessary buffers to prevent liquidity and solvency crisis. For this reason, bank analysts must be aware of the new regulatory environment to help the bank to adapt its strategy to the regulatory changes and maximize profitability while remaining compliant.

1.2 DEBT AS A SOURCE OF OPERATING PROFIT

Across European banking groups, universal and specialized like (e.g., BNP Paribas, UniCredit, Intesa Sanpaolo), the core activity is financial intermediation: transforming funding (customer deposits and wholesale liabilities) into interest-earning assets. Because liabilities are an input to production, "debt" for a bank is part of the operating model, and the margin on that funding is captured as Net Interest Income (NII). In practice, NII remains the largest single revenue line for euro-area significant institutions, accounting for roughly 59–61 pp[1] of operating income in 2024; this pattern is also visible at leading groups (e.g., Intesa Sanpaolo FY2023: NII €14.65bn vs. fees €8.56bn; UniCredit 4Q23: NII €3.6bn vs. fees €1.8bn). By contrast, in non-financial companies, interest-bearing liabilities are purely a financing choice recorded below operating profit and do not generate operating revenue. This structural difference helps explain why banks are, by design, more leveraged than other industries: funding deposits plus market borrowing is one of their primary sources of income. That said, the mix can vary with business models (CIB, wealth/asset management) and the cycle: as rates fall and deposit competition rises in 2025, fees and trading have partly offset a softer NII at some groups.

[1] European Central Bank (ECB) – Banking Supervision, Supervisory Banking Statistics – Fourth Quarter, March 2025.



Note: D/E ratio of the Western Europe Financial Services Sector.

Source: Damodaran.

The chart illustrates the Debt-to-Equity (D/E) ratio across different segments of the financial industry, highlighting the structural differences in leverage among them. Commercial banks stand out as the most leveraged entities, with Money Center Banks displaying an exceptionally high D/E ratio of approximately 493 pp, and Regional Banks following at around 345 pp. These figures reflect the very nature of the banking business model, in which debt—mainly represented by customer deposits and wholesale funding—constitutes a primary source of operating income rather than merely a financial liability.

In contrast, other financial sectors rely far less on debt financing. Life insurance companies exhibit a D/E ratio of 181 pp, indicating moderate leverage, while Brokerage and Investment Banking firms (71 pp) and Investment & Asset Management companies (27 pp) operate with substantially lower levels of debt relative to equity. This discrepancy arises because these sectors generate revenues primarily through fees and commissions, rather than through the transformation of borrowed funds into loans and other interest-bearing assets.

The key takeaway is that the banking sector is structurally far more leveraged than other financial industries. This has important implications for mergers

and acquisitions (M&A): given their already high levels of indebtedness, banks engaging in consolidation face a heightened need to carefully manage their capital structures and realize operational synergies to avoid exacerbating financial fragility. In non-bank financial institutions, where leverage plays a less central role, M&A transactions are less directly constrained by debt sustainability considerations. Indeed, It is common for non-banks to be acquired through a leveraged buyout (LBO) from a private equity fund; the sponsor contributes to a modest equity stake (often below 30 percentage points) and finances the reminder with debt serviced by the target's operating cash flows.

1.3 BANKING REGULATION:

European Banks must comply to a strict regulation whose object is to preserve liquidity and solvency issues, or in other words, the potential bank's failure.

The regulation derived from the Basel framework, an international agreed set of capital requirements and risk measurements developed by the Basel Committee on Banking Supervision (BCBS) to all the major international banks, of all sizes.

The BCBS was founded in 1974 at Basel (Headquarter of the Bank for International Settlements) to enhance financial stability in the banking system improving the quality of banking supervision worldwide and to be a forum for regular cooperation between its member countries (45 members comprise central banks and bank supervisors from 28 jurisdictions). Today, the BCBS ensure the capital adequacy of banks and the banking system.

The Basel Accords are a series of three sequential banking regulation agreements (Basel I, II, III) set by the Basel Committee on Bank Supervision (BCBS). They impose strict capital requirements to the covered banks to create a resilient financial system from liquidity stress scenarios or risk. The key idea is that long term benefits of additional regulation and prudential standards outweigh the short-term costs of their implementation. The revision of Basel accords was aimed to capture risks that was not adequately

covered with the previous regulation. After the GFC of 2007-2008 and the collapse of the systemic bank, Lehman Brothers, the BCBS decided to strengthen the Accords.

1.4. HOW BANKS REINVEST PROFITS:

Companies usually invest the "Net Income" in the purchase of tangible assets, Property, Plant and Equipment (PP&E) who are recorded on the balance sheet as an asset and depreciated or amortized during their useful life. In addition, during the valuation through the DCF model, they are classified as capex.

Banks don't invest their earnings in PP&E, because their investments are focused on human capital (classified as operating costs) and the increase of regulatory capital to meet regulatory capital requirements.

Non-financial companies typically reinvest a sizable share of net income in PP&E (capex) recorded on the balance sheet and depreciated over useful life; in heavy industries PP&E can represent a large share of total assets By contrast, banks invest earnings primarily to grow financial assets (loans, securities) and to accumulate regulatory capital, while PP&E is a very small slice of assets (e.g., JPMorgan: $32.2bn premises & equipment on $4.0tn assets ≈ 0.8% in 2024[2]; HSBC: $10.5bn owned PP&E vs. $3.04tn assets ≈ 0.3% in 2023[3]). Banks' "investment capacity" is therefore better read through prudential buffers: CET1 ≥ 4.5pp plus the 2.5pp capital conservation buffer (with bank-specific SREP[4] stacks often around 10pp CET1, e.g., Intesa 9.89%[5]; UniCredit 10.27pp[6] for 2025). In addition, Banks are required to keep the LCR at or above 100pp fully in force since 2019—and, within the EU, to maintain an NSFR of at least 100pp effective from 28 June 2021. Eu Banks reported an

[2] JPMorgan Chase & Co., Form 10-K, 2024
[3] HSBC, Financial Statement, 2023
[4] Supervisory Review and Evaluation Process: It is the ECB's annual supervisory process that sets bank-specific capital and liquidity requirements beyond minimum regulatory standards.
[5] Intesa SanPaolo, Investor Relations, 2025
[6] Unicredit, Price Sensitive, 2024

average NSFR of about 127pp[7] in December 2023. In essence, whereas corporates channel investment into physical capacity such as PP&E, banks build financial capacity through capital and liquidity and devote substantial resources to people and IT, most of which is expensed rather than capitalized.

2. **CAPITAL BUFFERS IN THE BASEL III FRAMEWORK**

2.1. CONCEPT AND RATIONALE OF CAPITAL BUFFERS

The difference between a bank's assets and liabilities represents its equity, which reflects the bank's net worth or the value attributable to shareholders. Bank capital is a buffer used to absorb losses in order to protect depositors and creditors from losses in the case of a bank's insolvency.

There are two main categories of capital used for this purpose:

The first is equity, also known as going concern capital (or Tier 1 capital), which allows the bank to continue operating during times of distress. Tier 1 capital is further divided into CET1, the highest quality of regulatory capital that absorbs losses immediately, and Additional Tier 1 (AT1), which includes subordinated instruments that can be written down or converted to equity under a financial distress scenario[8].

The second category is debt capital (or gone concern capital) known as Tier 2 capital.

This is used when the Tier 1 capital buffers are insufficient to cover bank losses, and it absorb losses before they can impact depositors and shareholders.

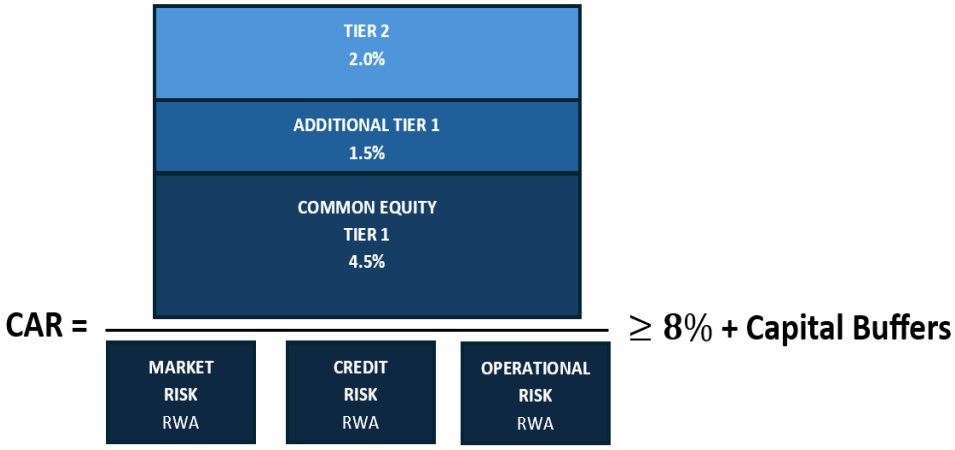
Tier 2 includes subordinated debt instruments and other qualifying items subject to regulatory adjustments.

A bank becomes insolvent when losses reduce the value of its assets below the level of its liabilities and so it needs to be recapitalized or acquired by

[7] EBA, ANALYSIS ON EU/EEA BANKS FUNDING STRUCTURE AND THEIR DEPENDENCE ON ASSET AND LIABILITY EXPOSURES IN FOREIGN CURRENCY, 2023

[8] BIS, Definition of capital in Basel III – Executive Summary, 2019

another company to remain solvent[9].



Note: **- cet1** include: common equity, retained earnings, a limited amount of unrealized gains and losses and minority interest. – **at1** includes: noncumulative perpetual preferred stock, converted debt, approved minority interest non included in cet1. – **tier2:** debt subordinated to depositors, with an original maturity higher than 5 years, preferred stock, general loan loss reserves not allocated to absorb losses on specific positions

Source: Author's elaboration.

A capital buffer is a mandatory capital allocated to specific financial institution who must hold in addition to the minimum capital requirement of 4.5pp[10]. The implementation of new capital buffers was a response to the systemic crises of 2008 were regulators understood that the minimum capital buffers were insufficient to prevent liquidity risk.

2.2. COUNTERCYCLICAL CAPITAL BUFFER

The CCyB was implemented in Europe in 2016 and became fully effective in 2019[11]. It is used to protect banks in periods of financial instability.

During an economic recession, bank's assets (e.g. loans) tend to lose value and this may cause a solvency threat for those financial institutions who need to be recapitalized to bear capital losses and preserve a safe leverage

[9] A. Hayes, Bank Capital: Meaning and Classifications, 2025
[10] BIS, Basel III: A global regulatory framework for more resilient banks and banking systems, 2010
[11] BIS, Countercyclical capital buffer (CCyB), 2025

ratio. To restore this ratio, banks may decide to lend less, intensifying the severity of the economic recession.

Basel III recommends banks to have a capital buffer against the cyclicality of banks earnings. The CCyB can range from 0 pp to 2.5 pp of RWAs[12]. Moreover, an international bank with credit exposure in multiple countries must calculate its overall CCyB as a weighted average, based on its exposure in each jurisdiction.

Countercyclical capital buffers aim to reduce the cyclical effects of standard capital requirements reducing the credit supply during economic booms and providing additional capital during stress periods in order to preserve the core banking activity.

This translate into two advantages:

- the severity of financial crises may be reduced.
- for banks is cheaper raising capital during periods of economic stability that during stress periods.

The effectiveness of this novel macroprudential tool was first assessed during the COVID-19. Empirical studies applied a Did-in-Did method to compare a Treatment Group of banks who experienced a reduction in the CCyB and the remaining banks as a control Group to verify the benefit of this new buffer during the Covid period. The study shows that banks increased their loans after a release of its CCyB buffer, while the control group remained stagnant. A one percent point reduction in the CCyBs (by the treatment group) led to a significant increase in banks lending of about 5.6 percentage points of total their assets, confirming the effectiveness of the buffer. This increase happened mainly in retail mortgage loans and was stronger for poorly capitalized banks[13]**.**

2.3. CAPITAL CONSERVATION BUFFER

The “CCoB” is a capital buffer equal to 2.5 pp of the bank’s total exposure. The rationale of this buffer is like the CCyB. The idea behind is that is easier

[12] BIS , The capital buffers in Basel III – Executive Summary

[13] A. Schandlbauer, C. Wittig, Countercyclical capital buffers and credit supply: Evidence from the COVID-19 crisis, Journal of Banking and Finance, 2023

to raise capital during good times that bad times. The "Great Financial Crises" was a great lesson to understand that satisfying the minimum capital requirements was not always sufficient to prevent bank's failures; as a result, the CCoB act as cushion against losses during stress periods. The trade-off is that it increases the bank's stability but may decrease the dividends payments, shares buybacks, bonus payments… reducing the value creation for the bank's shareholders due to a series of constraints imposed by the Basel Committee (rule also applies to the CCyB)[14].

All European banks are subject to a CCoB equal to 2.5 pp of bank's total exposures. If a bank's CCoB falls below this level, automatic safeguard applies and will limit the amount of dividend payments the bank can distribute to shareholders.

2.4. GLOBALLY SYSTEMICALLY IMPORTANT BANKS

The introduction of additional capital buffers for the so called, "Globally Systematically Important Banks" (G-SIB), a subset of the "Systemically Important Financial Institutions" (who include also non-banks deemed to fail) was considered a necessary decision to prevent the recurrence of history.

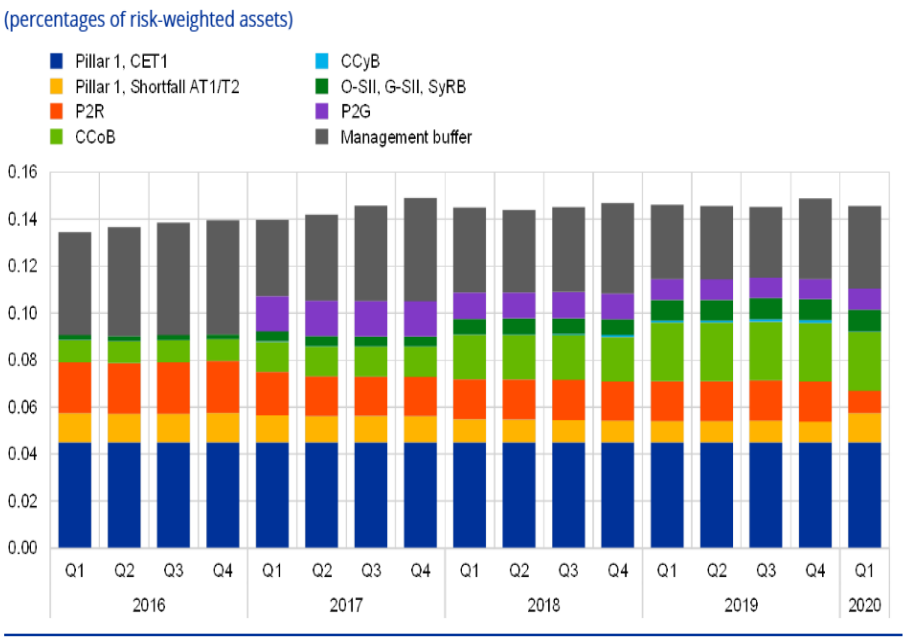
The rationale is that there are huge costs for the society if a G-SIB declares bankruptcy. For this banks, the additional capital buffer requirements range between 1 pp and 3.5 pp (1, 1.5, 2, 2.5, and 3.5[15]) based on the Rating issued by the major rating agencies.

The Financial Stability Board redacted the list on G-SIB, in consultation with the BCBS and the national authorities.

EVOLUTION OF BANK CAPITAL RATIOS AND THEIR COMPONENTS IN THE EURO AREA

[14] BIS, The capital buffers in Basel III – Executive Summary

[15] Moody's, S&P, Fitch



Sources: ECB supervisory statistics and ECB calculations.

Higher capital buffers raise the share of equity in banks' funding, because equity is typically more expensive than debt, this can compress ROE in the short run. Banks usually pass part of this cost through slightly higher lending spreads, which can temporarily reduce margins.

To better understand this concept Basel studies used to break down ROE into a DuPont-style Decomposition:

$$ROE = \frac{Net\ Income}{Assets} x \frac{Assets}{Equity}$$

That can be rewrite as:

$$ROE = ROA\ x\ Leverage$$

Holding ROA constant, an increase in equity (i.e., lower leverage) mechanically reduces ROE. Hence, during the adjustment to higher buffers, ROE tends to dip unless banks offset the effect via pricing strategies, cost efficiencies, or balance-sheet rebalance.

3 LIQUIDITY REGULATION AND BANK PROFITABILITY

3.1 LIQUIDITY COVERAGE RATIO

The financial crisis, started in the middle of 2007, has increased the attention of liquidity risk by both financial institutions and regulators.

Liquidity represents the ability of a company to make cash payments as they become due.

Banks are vulnerable to liquidity risk because many clients may withdraw their deposits at any time due to fears that the bank may fail (bank run).

For this reason, a robust funding liquidity strategy is fundamental to guarantee bank's stability and to prevent bank's failures.

Banks can have access to liquidity through a variety of channels:

- from depositors.
- from financial markets through trading book liquidation , securitization, loan syndication, secondary loan market, or bond issuance.
- from the interbank market (the most important source of short-term funding).
- from the Central Bank (or "Lender of Last Resort") at the Main Refinancing Operation Ratio or at the Marginal Lending Facility Rate[16].

The MRO represents the cost for banks to obtain overnight liquidity from the ECB, using eligible collateral.

The liquidity gap ratio is a financial measure used to assess the maturity mismatch deriving from the core banking activity[17]:

$$Liquidity\ GAP\ Ratio = \frac{short - term\ assets}{short - term\ liabilities}$$

The "Liquidity Coverage Ratio" is a short-term liquidity measure. It ensures that banks maintain a sufficient liquidity buffer on their balance sheets to stay liquid. The LCR is a preventive measure who require to have a sufficient

[16] ECB, Recent developments in the composition and cost of bank funding in the euro area, 2016

[17] W. Kenton, Liquidity Gap: Meaning, Examples, and FAQ, Investopedia, 2022

stock of "high-quality liquid assets (HQLA)" to sell during a period of significant liquidity distress lasting 30 calendar days[18]:

$$LCR = \frac{High\ Quality\ Liquid\ Assets}{Net\ Cash\ Outflows\ 1n\ a\ 30-day\ period} \geq 100\%$$

At the numerator we have the HQLA that are classified in Level 1, Level 2A and Level 2B.

At the denominator there is the total amount of net cash outflows defined as total expected cash outflows, minus the total expected cash inflows (in a predetermined stress scenario) for the subsequent 30 days[19].

A clear example of application of the "liquidity coverage ratio" is the case study of Banco Popular, a public commercial bank focused on lending activity to SMEs and household banking[20]. It entered in 2017 with long-standing asset-quality problems (large real-estate NPAs) that had already weakened capital. Investors' confidence dramatically decreased after a 3.5 billion euros loss and rating downgrades in 2016, causing an acceleration of deposit withdrawal. Although the bank was compliant with the liquidity regulation coming from Basel, it couldn't respond to the large amount of clients' withdrawals. Eventually it was bailout by Banco Santader.

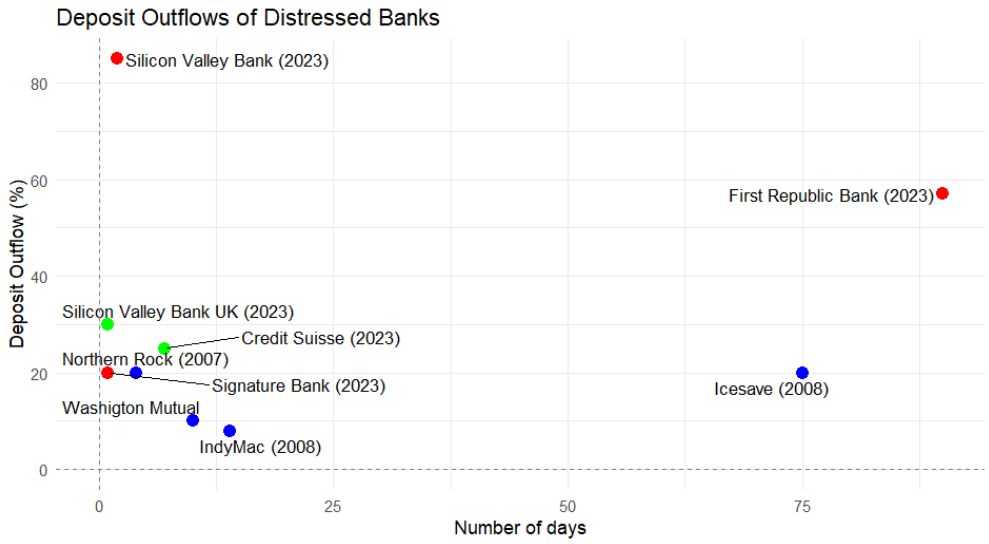
Empirical studies show a relation between the update of the LCR requirement from 60pp in 2015 to 100pp in 2018[21]. They state that it contributed to a reduction of the L*oan-to-Deposits Ratio* that leads to an improvement of the credit and liquidity risk profile of banks with different specializations.

Although the LCR ratio is not designed to cover all tail events involving deposit outflows, it tries to ensure that the bank is able to withstand a combined idiosyncratic and market-wide liquidity stress scenario.

[18] BIS ,Basel III- Il Liquidity Coverage Ratio e gli strumenti di monitoraggio del rischio di liquidità, 2013
[19] Basel Committee on Banking Supervision
[20] small and medium-sized enterprises
[21] P. Hanzlik, P.Teply, Navigating the Low Interest Rate Landscape: Assessing Liquidity Positions of EU Banks under the LCR Constraint, journal of economics, 2024

Banking Supervisors may request an higher-frequency reporting from banks and the latter may conduct internal stress tests to ascertain their required level of liquidity.

The banking turmoil of 2023 lead regulators to question about the design and calibration of the "Basel III liquidity standards" about the additional liquidity banks should have need to be adjusted in response to the collapse of SVB and the subsequent rescue by UBS of Credit Suisse. It must be highlight that many small and mid-sized financial institutions including SVB in U.S. were exempt from the most stringent standards (of Basel III), because these banks are subject to the U.S. regulations derived from Basel II (with local adaptations).



Sources: Bank for International Settlements (BIS).

Notes: **red**: small-mid banks based in U.S. who follow updated Basel II rules; **blue**: no longer stringent rules to prevent liquidity risk; **green**: Banks who fully applied the Basel III regulation.

3.2. NET STABLE FUNDING RATIO

The "Net Stable Funding Ratio" is a longer-term (1 year) structural ratio introduced in 2014[22] and designed to prevent funding problems during a

[22] BIS, Basel III: the net stable funding ratio, 2025

distress scenario limiting the reliance on unstable wholesale funding, which proved to be unreliable during the past financial crises.

$$NSFR = \frac{Available\ amount\ of\ stable\ funding}{Required\ amount\ of\ stable\ funding} \geq 100\%$$

It represents a Basel III liquidity requirement used to limit funding risk coming from the maturity mismatches between bank assets and liabilities. The NSFR was set to become mandatory for European Banks in EU in 2021 through the "Regulation (EU) 2019/876 (CRR II)"[23].

The numerator is calculated as the sum of total liability items weighted according to a coefficient (established by the Basel Committee) that reflects the degree of stability of the liability item in question.

The denominator is the same for the asset items but in this case the assets that can be more easily liquidated present a lower weighted factor.

Empirical studies highlight the effectiveness of monetary policy to the economy; specifically, they find a negative correlation between bank lending and the NSFR[24]. Banks who present higher NSFR are less sensitive to restrictive monetary policy[25] as they respond to such policy changes, by restructuring their loans' portfolios to achieve higher risk-adjusted returns. Hence, banks with high NSFR have greater access to cash over crisis periods and manage to reduce the negative effects the policy can have on the economic activity.

4 DETERMINANTS OF BANK PROFITABILITY

4.1 INTERNAL SHOCKS

Since the 2008 global financial crisis, banking profitability has remained a significant global challenge (Bank for International Settlements 2018). Over the past decade, while banks in the North Atlantic region have largely

[23] EUROPEAN BANKING AUTHORITY

[24] S. Papadamou, D. Sogiakas, The role of net stable funding ratio on the bank lending channel: evidence from European Union, Journal of Banking Regulation Volume 22, pages 287–307, 2021

[25] Increase in Interest Rates

recovered, European banks have lagged in profitability compared to their American counterparts[26]. For this reason, academic literature tries to discover the internal determinants of bank profitability.

A key one is the bank size pursue through M&A transactions (to benefit from possible economy of scale).

Larger Banks, measured by bank assets (AUM), have greater market power and bargaining leverage. This can result in higher fees and interest rates on depositors while reducing the cost of funding.

Academic studies highlighted the benefit of bank size on bank profitability for financial institutions in the West Balkan countries [27]. Other, showed that bank size has a positive impact on banks at the lowest profitability level, with the effect of becoming statistically insignificant at higher profitability quantiles[28]. Other studies focused on European Banks, reporting that bank size was negatively affected by ROAA[29] and ROAE[30] over the period 1990-2018[31], whereas found only a negative effect on the ROAA over the period of 2011-2015[32].

Another important determinant of bank profitability is the credit risk exposure (calculated using the "loan-loss provisions to total loans" or "non-performing loans to gross loans") associated with the lower profitability of European Banks[33].

Monitor asset quality and preserve high-quality loan portfolios can support long-term bank profitability.

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[26] S. Elekdag, S. Malik, S. Mitra, Breaking the Bank? A Probabilistic Assessment of Euro Area Bank Profitability, 2020

[27] E. Menicucci, G. Paolucci, The determinants of bank profitability: empirical evidence from European banking sector, Journal of Financial Reporting and Accounting, 2016.

[28] F. Blaga, B. Dumitrescu, I. Duca, I. Leonida, D. Poleac, Analyzing the Determinants of Banking Profitability in European Commercial Banks: Do COVID-19 Economic Support Measures Matter?, 2024.

[29] ROAA= Return on Average Assets.

[30] ROEA= Return on average Shareholders' Equity.

[31] E. Davis, D. Karim, D. Noel, The effects of macroprudential policy on banks' profitability, International Review of Financial Analysis, 2022.

[32] M. Korytowski, Banks' profitability determinants in post-crisis European Union, International Journal of Finance and Banking Studies, 2018

[33] E. Menicucci, G. Paolucci, The determinants of bank profitability: empirical evidence from European banking sector, Journal of Financial Reporting and Accounting, 2016

Another determinant of bank's profitability is represented by the liquidity risk exposure, often measured through the loan-to- deposit ratio:

$$\text{LDR} = \frac{Total\ Loans}{Total\ Deposits}$$

And the NPL ratio.

$$\text{NPL} = \frac{Non-Performing\ Loans}{Total\ Loans}$$

Research papers reported positive and significant correlation between banks liquidity and profitability, among ROAE and NIM[34].

The profitability discrepancy between the Euro area and US "Global Systemically Important Banks" (G-SIBs), highlights two main factors:

- the higher income from fees and commissions and trading of US G-SIBs
- the legacy of non-performing exposures of euro area G-SIBs built up during the GFC have driven up impairment and provision expenditures beyond that of US peers.

Other important bank-specific factors include capital adequacy (CET1) and management efficiency. Several studies show how well-capitalized banks tend to exhibit higher profitability[35].

Studies shows that higher share of loans in bank assets supports profitability by increasing net interest margins, especially when interest rates are favourable[36]. However, this advantage is represented by the highly dependency of banks business model on the macroeconomic conditions and its procyclicality effect. During downturns, high loan exposure can increase NPL, reducing profitability (due to higher loan loss provisions).

The typical measure of Management efficiency is represented by the cost-to-income ratio, in which most studies report a negative effect on the bank

[34] N. Petria, B. Capraru, I. Ihnatov, Determinants of Banks' Profitability: Evidence from EU 27 Banking Systems, Procedia of Economics and Finance, 2015

[35] R. . Ercegovac, I. Klinac, I. Zdrilić, Bank specific determinants of EU banks profitability after 2007 financial crisis, Journal of Contemporary management issues, 2020

[36] European Central Bank, 2024

profitability of the European Banks[37]. Cost efficiency measures how efficiently a bank manages its operating expenses, including personnel, administrative, and other overhead costs. Lower operating expenses relative to revenue indicate a higher cost efficiency that result in higher operating profits.

The ECB (2018) shows that improving cost efficiency through higher IT spending has a positive and significant impact on bank profitability. The analysis also shows that the strength of a bank's balance sheet is an important determinant of IT investment decisions.

4.2. EXTERNAL FACTORS

Apart from internal factors, bank's profitability is highly vulnerable to macroeconomic and industrial factors. The latter are mainly represented by the "Herfindahl-Hirschman Index (HHI)", a standard indicator of market concentration used to determine the market competitiveness[38]. Concentration is a key structural indicator of bank profitability. In highly concentrated banking markets where a few large banks dominate, these may have a greater market power and pricing control, leading. However, concentrated banking markets can also reduce competition and incentives for innovation, leading to less dynamic profitability.

In terms of concentration, there is an opposite hypothesis on the impact of an high HHI on bank profitability. High bank concentration may reduce borrowing costs, increasing the bank margin operations. In contrast, high market concentration could capture large branch network size and headcounts, presenting low competitive dynamics.

Several studies for European Banks shows a positive correlation between HHI and Bank profitability. Among the macroeconomic factors, GDP growth is a key variable influencing bank profitability. Indeed, stronger GDP growth

[37] M. Borroni, S. Rossi, Banking in Europe: The Quest for Profitability after the Great Financial Crisis, Palgrave Macmillan Studies in Banking and Financial Institutions 2019

[38] M. Bromber, Herfindahl-Hirschman Index (HHI): Definition, Formula, and Example, Investopedia, 2025

creates economic environment that can stimulate lending activity, increase NII, generate fee revenue, and improve asset quality, all of which can lead to higher bank profits. However, some studies show a negative correlation, particularly in highly competitive markets. Researchers found that GDP growth negatively affected Japanese banks' profitability operating via lower entry barriers and increase competition[39].

Two different papers have confirmed that strong economic growth tends to boost bank profitability through increased loan demand and higher net interest margins. The first one found that an increase of one percent point of GDP growth can raise European banks' "return on assets" (ROA) by between 15 and 35 basis points (corresponding to about the 10 to 20 percent of the standard deviation of ROA between 2007 and 2016)[40].

The second one found a strong positive growth on the net-interest income-to-asset-ratio with a coefficient of between 1.4 and 2.2 pp for a one percentage point increase in growth, and a smaller effect on non-interest income of about half the size[41].

In addition, the dynamic of inflation and real interest rates have shown heterogeneous effects on profitability.

This suggest that internal factors, such as operational efficiency and risk management, play a more critical role than external conditions in determining profitability in some markets.

Several studies a reported a positive association between long-term interest rate and the NIM[42][43].

The role of regulation in shaping bank profitability has also been explored extensively. Stricter capital requirements, introduced under frameworks like Basel II and Basel III have had mixed effects. A study regarding 433 european banks (between 2006 and 2015) found that, while large and medium sized

[39] Hong Liu & John O. S. Wilson, The profitability of banks in Japan, Applied Financial Economics, 2010

[40] S. Elekdag, S. Malik, S. Mitra, *Breaking the Bank? A Probabilistic Assessment of Euro Area Bank Profitability, IMF, 2019*

[41] M. Belloni, M. Jarmuzek, D. MylonasFrom modelling to forecasting bank profitability: Evidence from euro area banks, Journal of Risk Management in Financial Institutions, 2022

[42] "Net Interest Margin"

[43] E. Kohlscheen, A. Murcia and J. Contreras,Determinants of bank profitability in emerging markets, BIS, 2018

banks improved efficiency and profitability, smaller banks struggled due to increased regulatory burdens, which could lead to future mergers or failures[44].

In addition, the development of financial technology (fintech) is also an external factor that has a multifaceted impact on the European Banking sector, especially in recent years. It fosters innovation, competition, and transformation in business models, regulations and customer experiences.

It is the so-called disruptive business. Several research papers addressed the issue; one of this, using the World Bank Global Findex Database for 91 countries (in 2014, 2017, and 2021) found that banks in less developed countries benefit most from investing in fintech innovation[45].

4.3. THE IMPACT OF REGULATORY REFORMS ON THE EUROPEAN BANKS

The Basel reforms introduced in the aftermath of the 2007–2008 financial crisis had a profound impact on the European Banking sector; It caused a reduction in terms of profitability, increased the risk exposure and the redistribution of costs between shareholders, creditors, and taxpayers. By tightening the regulatory framework for market, credit, and liquidity risks, the reforms aimed to strengthen the resilience of the financial system and to reduce the likelihood of future public bailouts.

In the area of market risk, European banks experienced a large drop in the financial markets, with cumulative losses ranging from approximately 11 pp to 20 pp, reflecting investors' expectations of lower profitability (derived by stricter trading and investment requirements). Similarly, credit risk regulation led to sharp declines in bank equity values, with losses reaching up to 40 pp in some cases. As a result, creditors revised their forecasts; credit default swap (CDS) spreads for European banks rose substantially, often exceeding 35 pp. This indicates that markets reduced the probability of a

[44] I. Gržeta, S. Žiković, I. Žiković, Size matters: analyzing bank profitability and efficiency under the Basel III framework, Financial Innovation, 2023

[45] S. Yoon, H. Lee, Differential Impact of Fintech and GDP on Bank Performance: Global Evidence, *Journal of Risk and Financial Management, 2023*

government bailout, shifting more of the risk burden from the public sector to private investors.

By contrast, regulatory measures targeting liquidity risk—such as the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR)—had a limited observable impact. Neither shareholders nor creditors displayed statistically significant reactions, suggesting that European banks had already strengthened their liquidity positions in the wake of the crisis.

Importantly, the effects were not homogeneous across institutions. Bank-specific factors such as capitalization levels, as well as country-specific conditions (particularly for banks located in GIIPS[46] countries—played a critical role in shaping the intensity of market responses.

Overall, the Basel reforms successfully reallocated financial risks away from taxpayers and toward shareholders and creditors, thereby reducing moral hazard. However, the stricter and more comprehensive application of the framework in the EU compared to the United States raises concerns about international competitive imbalances and the absence of a fully level playing field[47].

Regulatory capital reform for banks increases capital costs (reducing bank's profitability) and credit spreads charged on clients. On the other hand, it clearly reduces the tail risk of future banking crises improving the bank z-score[48]. Using data on Commercial and Retail European Banks studies shows the impact of Basel III on the bank z-score:

$$Z = \frac{ROA + \frac{Equity}{Total\ Asset}}{\sigma(ROA)}$$

The introduction reduced the volatility of banks earnings, increased the Equity-to-Total Assets Ratio with the introduction of higher capital requirements (CET1). However, the s of capital ratios during deleveraging coincided with slower loan growth[49].

[46] GIIPS countries: Greece, Italy, Ireland, Portugal, and Spain

[47] Jonas Krettek, Market reactions to the Basel reforms: Implications for shareholders, creditors, and taxpayers, Journal of Economics & Finance, 2025

[48] **Bank z-score** is a measure of financial stability calculated as the sum of the average return on assets and the equity-to-assets ratio, divided by the standard deviation of return on assets, with higher values reflecting greater stability and lower insolvency risk.

[49] **Pépy, J., & Roulet, C. (2017).** *Basel III and bank lending: Evidence from the United States and Europe*. **IMF Working Paper No. 17/245**.

Empirical Research on the Macroeconomic impact of the phasing-in Basel III reform reduces annual GDP growth by about 0.2 percentage points in the short run, but has no significant drag on long-run average GDP growth lowering the probability of extreme negative outcomes[50]; this point is crucial when set against the evidence on the macroeconomic costs of systemic banking crises.

Recent evidence shows that banks play an important role in fostering economic growth through their ability to create liquidity. By transforming short-term liabilities into long-term illiquid assets such as loans, banks stimulate real investment, especially in tangible capital like machinery and equipment. Using data on around 18,000 banks in 100 countries over 1987–2014 find that a 10pp increase in on-balance-sheet liquidity creation per capita is associated with a 1.12pp increase in long-run GDP per capita, while the effect for off-balance-sheet liquidity is 0.34pp[51].

When a banking crisis hits, banks' capacity to create liquidity and extend credit collapses, raising external finance premia and choking off firms' tangible investment—a key engine of growth, reducing the investment component in the GDP formula[52].

Finally, Basel III higher liquidity levels (LCR, NSFR) had a limited impact on European Banks Profitability; especially a higher share of customer deposits in total funding—supports profitability (ROA/ROE), whereas the loan-to-deposit proxy is weakly negative or insignificant. By contrast, the impact of capital on performance is mixed: risk-weighted capital (equity/RWA) is positively related to returns, while the simple equity-to-assets ratio is generally not, suggesting that the quality and risk-weighting of assets matter more than raw leverage[53].

Moreover, studies on U.S. banks find that Basel III liquidity regulation—via the NSFR and LCR—has a small but positive impact on profitability (NIM or

[50] **Budnik et al. (2021, ECB)**

[51] Balakrishnan R., Brooks P., Leigh D.,Tytell I. and Abiad A., What's the Damage? Medium-term Output Dynamics After Financial Crises, IMF

[52] GDP=Consumption+Investment+Public expenses + (exports-imports)

[53] Adelopo, I., Vichou, N., & Cheung, K. Y. (2022). Capital, liquidity, and profitability in European banks. *Journal of Corporate Accounting & Finance*

ROA)[54]. Using quantile regressions, the effect is statistically significant for most parts of the profitability distribution, revealing important heterogeneity that an average (OLS) estimate would miss. Small banks appear more sensitive to short-term liquidity risk (LCR), while large banks are more exposed to medium/long-term funding risk (NSFR). Overall, the results suggest stronger liquidity with minimal cost to profits, supporting a tailored approach by bank profile.

Usually, the key aspect to monitor during a bank's due diligence are capital adequacy, profitability, asset quality and liquidity.

5. DETERMINANTS OF M&A TRANSACTIONS

5.1. INTRODUCTION TO BANK M&A

Banks have not traditionally used mergers and acquisitions as a consistent strategy for growth. However, nowadays something has changed, especially in Italy where in the last years we have assisted at two Public Tender Offers (a notable example is the cross-border bid launched by UniCredit on Commerzbank) and four Share Exchange Offers launched only in the domestic territory who may drastically increase the concentration of the Italian banking sector.

A few banks in Europe with strong balance sheet can start to invest in other businesses to improve efficiency, costs and productivity.

Studies have found that mergers and acquisitions in the banking sector are not driven by one dominant motivation. The tendency is that mergers are conducted by those banks who aim to improve efficiency and profitability pursuing the so-called operational synergies. Usually, more profitable banks with a large amount of AUM tend to acquire smaller banks with lower profitability. Moreover, empirical studies show that cross-border M&A occurs more frequently when countries had stronger links through bilateral interbank loans and securities holdings[55].

[54] NIM represent the interest income relative to earning assets; ROA represents the net income to total assets.

[55] I. Figueiras, S. Gardó, M. Grodzicki, B. Klaus, L. Lebastard, B. Meller and W. Wakker,
Bank mergers and acquisitions in the euro area: drivers and implications for bank performance, Finacial Stability Review (ECB), 2021

In an M&A transaction, the “negotiation” is a critical part of the process to acquire the target at the lowest price (from the buy-side perspective). This is particularly important in friendly acquisition, where the financial price derives from the extreme synthesis of the negotiation process.

Differently from the hostile takeover, where the price is determined by the market; in this case, companies involved in extraordinary financial operations are acquired at a price that represent a large gap with the stand-alone theoretical value.

The premium price paid by the acquirer can be explained by a series of factors:

- the revenue/cost synergy created by the m&a transaction
- the improvement of the company risk profile and/or market position
- the maximization of the shareholders’ value creation.

For non-financial institutions, financial analysts typically use the Discounted Cash Flow to calculate the Enterprise Value that will represent the current “intrinsic value” of the business.

Bank valuation differ significantly from the value estimation of non-financial firms. While it is a standard methodology for industrial companies to apply a Discounted Cash Flow (DCF), estimate the WACC and derive Enterprise Value, this framework is of limited use for banks because the free cash flows are not well defined for a financial institution. Deposits and wholesale funding are operating liabilities, effectively the raw material for producing loans, so “debt” is part of the operating model rather than an exogenous financing choice. Revenues derive primarily from net interest margins, fees/commissions, and trading. Moreover, regulatory capital constraints (e.g., CET1 ratios and risk-weighted assets) directly shape the payout capacity. For these reasons, bank valuation typically focuses on equity value and on the estimation of the future free cash flows to equity (FCFE). The principal intrinsic methodology used to evaluate a bank is the Dividend Discount Model (DDM), which discounts the stream of expected dividends to equity holders, linking payout assumptions to capital adequacy and

sustainable growth. When dividends are irregular or heavily managed, practitioners often complement or substitute the DDM with Residual Income (RI), valuing equity as book value plus the present value of residual earnings (net income more than the cost of equity on beginning book). In M&A applications, intrinsic approaches are systematically cross-checked with market approaches: a comparable companies analysis (using P/E, P/B, and P/TB on a peer set aligned by business model, risk, and size[56]) and a precedent transactions analysis (deal multiples paid in similar bank acquisitions, which embed control premia and anticipated synergies) provide an external range and a reasonableness check.

In addition, during the valuation process, we have to take into account a series of benefit for the acquirer after the post-merger integration that will justify the premium price.

5.2. OPERATING SYNERGIES

Top Management of financial institutions usually decide to pursue economy of scale and economy of scope.

Revenue synergies may derived from:

- product diversification or improvement of a business line through the acquisition of a company specialized in financial services (tender offer of MPS on Mediobanca to increase the market position in the Wealth Management sector).
- the acquisition of a large client base
- The access to new channels through the acquisition of a digital bank; a relevant example is the acquisition of Mooney by a financial Joint Venture between Intesa San Paolo and Enel[57].
- An acquisition improve the market share and may reduce the competition, resulting in an improvement of its pricing power.

Cost synergies focus on the potential cost reduction obtainable through:

[56] M. Massari, C. Difonzo, G. Gianfrate and L. Zanetti, Bank Valuation Using Multiples in US and Europe: An Historical Perspectivem

[57] Enel and Intesa Sanpaolo jointly finalized acquisition of Mooney, Internal Press Release, 2022

- the closing of overlapping branches post-acquisition in order to reduce operating costs.
- the reduction of IT costs integrating the new bank with a unique technological platform.
- the reduction of personal costs (especially for banks with a high cost-to-income ratio derived from a large branches network)
- economy of scale that allow the bank to offer competitive price to their clients

The 2020–2021 consolidation wave in the Italian banking landscape was driven by low interest rates, ,more stringent regulatory demands and increased competition from the disruptive fintech business. In the early 2020 Intesa Sanpaolo launched the acquisition of UBI Banca, a large domestic bank with a consolidated influence in North of Italy. The strategic acquisition aimed at improving the acquires leadership in the Italian landscape via operating cost and revenue synergies. The transaction was designed to maximize economies of scale and scope, with measurable value creation on efficiency, recurring fee income, and the risk profile**.** On the cost side, levers included the rationalization of the physical network (overlapping branches, ATMs, real estate), IT convergence onto a single platform with decommissioning of UBI's legacy systems, the centralization of operations and procurement, and organizational streamlining (back-office and control functions) with a prevalence of voluntary exits. On the revenue side, the plan relied on cross-selling (wealth/asset management, bancassurance, payments, CIB/SMEs), a more efficient pricing mix in higher-value segments, and the rollout of digital and proximity channels with low marginal cost. Antitrust clearance was granted subject to structural remedies. At Intesa Sanpaolo–UBI, the plan envisaged run-rate pre-tax synergies of approximately €730 million per year—about €510 million from costs (roughly 5pp of the pro-forma 2019 cost base) and 220 million euros from revenues net of attrition.

in Billion EUR	Intesa SanPaolo	UBI Banca	New Entity	Synergies
Market Cap.	47.9	3.7	38.4	**-24,74%**
Total Assets	816.102	126.5	975.7	**16,36%**
Net Profit	4.182	0.251	4.350	**-4,02%**
Revenue	18.083	3.638	21.47	**-18,73%**
Cost-to-Income	51.4%	65.1%	50,90%	**-0,50%**
ROA	0.51%	0.2%	0.45%	**-0.06%**
RoTE	9%	3.2%	10.4%	**-1.4%**
Employee	89.102	19,94	95,574	**6.77%**
Rating (S&P)	BBB/ Negative / A-2	BBB- /Positive/A-3	BBB/ Stable/ A-2	--------

Source: Banks financial reports.

At the end of 2022, the combination had resulted in 976bn euros of AUM for the new entity (an increase of 16.36pp) with a cost-to-income ratio of 52pp, a rising share of fee income (WM/insurance/payments), and robust prudential buffers (CET1 > 14pp; 12-month-average LCR equal to185pp and a NSFR 127pp[58]). The period 2020–2022, contributed to a reduction of the NPE by Intesa Sanpaolo and a normalization of the cost of risk, supporting margins despite a challenging macro environment. The voluntary exchange offer embedded an estimated 45pp premium to UBI's pre-announcement price. In the short term (2 years after the merger for incorporation) the positive effect of revenues synergies has not yet materialized, and the market has reflected this with a decline in market capitalisation of over 20pp.

5.3. GEOGRAPHIC DIVERSIFICATION

Another important aspect for which the Top Management of a bank decide to acquire another financial institution is the geographic diversification.

From portfolio theory, diversification represents the standard approach for managing the trade-off between risk and return of a portfolio; for banks we can adopt the same rationale. The benefit of mergers and acquisitions is that

[58] Intesa SanPaolo Financial Reports.

they reduce risk due to diversification, particularly the idiosyncratic risk (or concentration risk). Usually, acquired banks tend to present riskier portfolios strong localized operations. Acquisitions lead to a reduction in the overall unexpected loss, even though the systematic risk component (driven by macroeconomic correlations) remains mostly unchanged.

Large U.S. literature on how the geographic expansion of bank assets can reduce risk highlights that when banks expand into new regions, the total risk drop increase when the new market present asynchronous cycles, different industrial structures and different business cycle fluctuations[59].

Cross Border M&A allow to reduce the vulnerability from a possible economic recession in a country and a consequently increase on distress loan that will determine an increase in the capital allocated to reserve and a decrease in the operating profit of the bank. Consequently, the presence in another country may reduce the probability of default especially if the original state presents an higher risk.

However, empirical studies inherent to the geographical diversification (as a bank m&a driver) present also negative effects.

Researchers' analysis reveals that bank geographic diversification can increase systemic risk, as measured by changes in the "Conditional Value at Risk (ΔCoVaR)". This suggests that while diversification may reduce idiosyncratic risk, it could simultaneously amplify the overall vulnerability of the financial system[60].

U.S. Investor valuations sometimes penalize diversified banks because of complexity and information problems. Diversification can erode value for not sufficient risk oversight and an increase in organizational problems who translates in higher costs[61].

In the Euro area, cross border M&A may improve revenue diversification making more stable and resilient earnings reducing the average standard deviation of ROA for diversified banks. On the other hand, these deals tend

[59] M. Goetz, L. Laeven, R. Levine ,DOES THE GEOGRAPHIC EXPANSION OF BANK ASSETS REDUCE RISK?, National Bureau of Economic Research, 2014.

[60] Y. Chu, S. Deng, C. Xia, P. Strahan, Bank Geographic Diversification and Systemic Risk, The Review of Financial Studies, vol. 33(10), pages 4811-4838, 2020.

[61] M. Goetz, L. Laeven, and R. Levine, The Valuation Effects of the Geographic Diversification of U.S. Banks, 2012

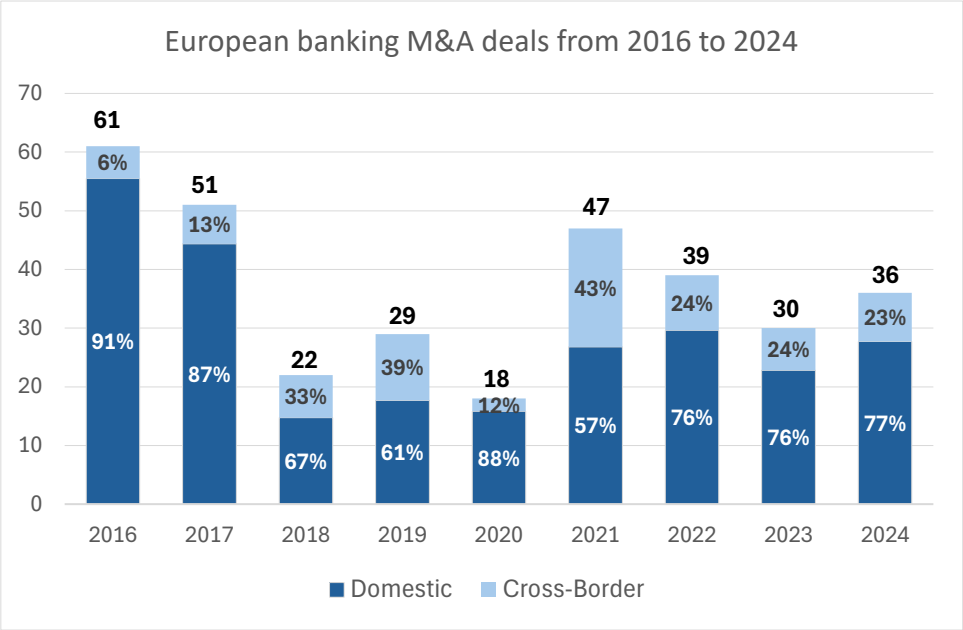
to yield limited cost synergies respect to domestic deals facing execution risks (Post- merger IT integration). These result in a lower valuation upside compared to a domestic deal.

In addition, policy frictions cap the private benefits of diversification. Rules that require each subsidiary to keep its own capital and liquidity buffers limit how freely banking groups can move money across borders. Subsidiaries often face restrictions on paying dividends or sending cash back to the parent company, which makes it harder for banks to quickly shift resources where they're most needed. This reduces the benefits of geographic diversification as a more stable source of earnings. To stay compliant, banks end up holding extra buffers in several countries, which lowers their return on capital and drives up funding costs.

These challenges are made worse by the incomplete framework of the Banking Union. Without a common European deposit insurance scheme (EDIS), and with ongoing differences in insolvency laws, tax rules and capital-market systems, risks and funding costs remain tied to each country (especially during distress periods). As a result, supervisors prefer to keep resources within their own jurisdictions.

On top of this, legal and fiscal fragmentation increases compliance costs, makes it harder to manage bad loans, and slows down efforts to capture operational synergies in areas like IT, data, and back-office functions. Altogether, these factors add to the organizational complexity and costs faced by cross-border banking groups[62].

[62] ECB, Financial Stability Review, 2019



Note: Deal Value in $ billion, 2016-2025 YTD.

Source: Mergermarket. Announced and completed FIG deals greater than $1 million in value.

In recent years there are strong signs of recovery in bank M&A in Europe. Banks are supported by substantial capital headroom increased through the NII (Net Interest Income) who benefit of the high interest rates (Euribor (12 Months) reached 4.216 pp in September 2023[63]). This excess capital is the used to pursue strategic acquisitions, the majority regarding domestic banking consolidation and Cross-Border Banking Consolidation of respectively 21pp and 17pp. Next come acquisitions of wealth-management capabilities and strategic payment providers, both up by 6 percentage points[64].

5.4. MANAGERIAL SYNERGIES

In Banking M&A, managerial synergies refers to the performance improvements of the target derived from a partial renowal of the management present in the target company. The idea is that the previous management didn't manage to maximize the shareholder's value.

[63] Source: Euriborrates.EU

[64] Oliver Wyman, Capital Currents Banking Edition: European Banking M&A is back, 2025

To pursue this object we must be certain that the interest of the bank's managers is align with its shareholders. This is really dangerous, because the bank's managers may incentivize risky acquisition to obtain an higher annual pay from the increment of the AUM (Asset under Management). This practice may induce also to acquisition with negative synergy for the acquirer.

Another important point is represented by the excess self-confindence of executives (especially CEOs) in their ability to successfully execute and manage M&A. These often result in an overpay of the target company and underestimation of the integration costs[65].

5.5. CULTURAL PROBLEMS

In every M&A transaction the cultural aspect is often undervalued but it may be an obstacle to the successful completion of the acquisition.

Empirical research shows an higher frequency of cultural clashes phenomenon (who may cause a planned m&a collapse) in cross-border acquisitions[66]. A prime example is the acquisition of Bank of America on Merril Lynch.

Nowadays, in front of an increasingly global environment, cultural compatibility between financial institutions involved in M&As is essential. Before an M&A transaction, the acquirer company must assess during the pre-merger phase the possible post-merger scenarios (in terms of culture) for the new entity.

Common challenges usually include: poor internal communication, resistance to change and clashes between different corporate cultures.

As a result, Banks require a high-level Management Team who manage to use the cultural differences deriving from a cross border M&A as a source of

[65] R. Roll, The Hubris Hyphotesis of Corporate Takeovers, The Journal of Business, 1986

[66] E. Lawrence, M. Raithatha, I. Rodriguez, The effect of cultural and institutional factors on initiation, completion, and duration of cross-border acquisitions, Journal of Corporate Finance, 2021

value for the bank, promoting creativity, knowledge exchange and improved managerial quality.

Another recent example is the challenging integration process of Credit Suisse in UBS. The merger and acquisition operation between those giants allowed the creation of the third bank in Europe for market capitalization and the seventh by total assets. UBS is extracting a meaningful value from the Credit Suisse deal faster than sceptics expected. The UBS Group shows a CET1 equal to 14.3pp[67], solid capital ratios and a buybacks back on the agenda.

6. **M&A TRANSACTION RISKS**

6.1. THE USE OF DERIVATIVES IN BANK M&A

Banks use M&A as a growth catalyst to expand into new markets or consolidate their leadership position in a specific market. However, an extraordinary finance transaction can bring some risks that must not be underestimated.

Above all, financial risks are the most common in this operations.

If a bank doesn't set a clear and effective M&A strategy using derivatives to protect from different risks such as the risk of an increase in the interest rates and a subsequent higher cost of capital to finance the acquisition the transaction will likely be more expensive and yield lower future returns.

Moreover derivatives can be useful to make strategic acquisition ("hidden acquisition") through the so called "equity swaps (or total return swaps)".

Nowadays, many CFO or Treasurers may assume that risks related to M&A transactions from unpredictable events (e.g. the 2024 U.S. decision to raise tariffs on Chinese EVs to 100 pp[68]) are difficult to mitigate. The solution to prevent financial risks is to secure the acquition cost in the purchase currency. For example, if anm European Bank want to purchase a bank based in England during three to twelve months required for an M&A process, there may be the foreign exchange risk (assuming the transaction is priced

[67] UBS, Financial Statement

[68] WH.GOV, FACT SHEET: President Biden Takes Action to Protect American Workers and Businesses from China's Unfair Trade Practices, 2024

in Sterlin). If the Sterlin will appreciate against the Euro, the deal will be more expensive, resulting in a lower Internal Rate of Return (IRR) for the acquirer.

M&A deal can be divided into two classes: pre-closing and post-closing.

In the first category we find the "collar" options. The post-closing instruments include "earns-out" and "contingent value rights (or CVRs)" and can be used to manage the risk of a substandard performance and potential overpayment that would result in a lower return[69].

6.1.2. PRE-CLOSING RISK MANAGEMENT: THE USE OF COLLARS

Stock price volatility is a critical problem in M&A transactions, especially those involving two listed companies that are structured as stock-for-stock swaps. In many such cases, the pre-closing price risk has been hedged through the so called "plain vanilla equity derivatives"[70].

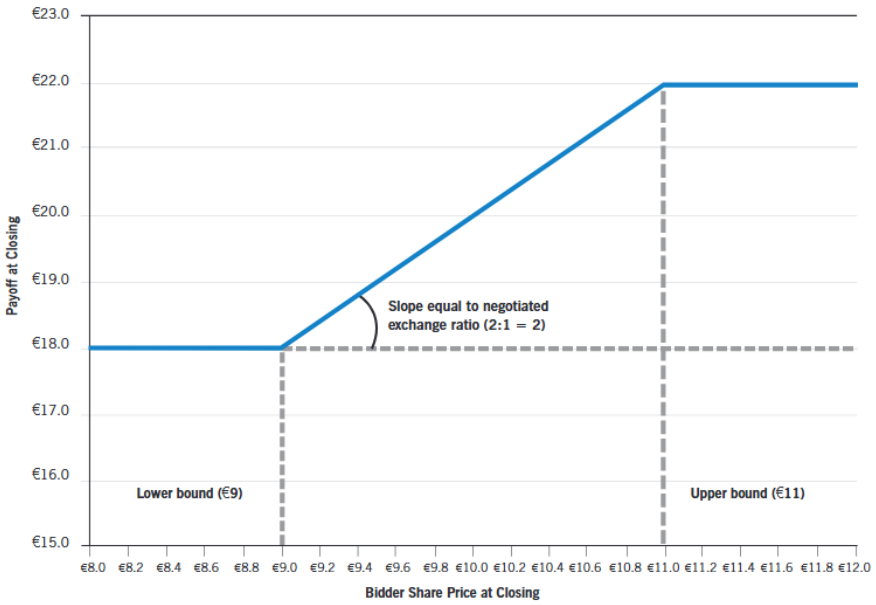
There are a lot of risk management techniques that allow the potential acquirers to hedge price risk effectively, but they don't account for the possibility that the target or the buyer will lose interest during the deal process if stock prices change dramatically from the agreed-upon transaction price.

To solve this problem the finance industry has introduced a particular kind of contingent offer, called "COLLAR OFFER".

In stock-financed transactions between listed companies, the fixed collar address share price volatility for the companies involved in the deal. So, the two parties will negotiate the exchange ratio (for example two shares of the bidding company for one share of the target (2:1)) and an agreement on the trading collar for the bidder share price. For example, if the bidder's share price is around 10 euros, they could establish a range between 9 and 11 euros. As a result, if the bidder share price will go off the boundaries, either the bidder or the target company will have the right to cancel the deal.

[70] Plain vanilla equity derivatives are standard contracts like futures or plain call/put options, with no exotic features

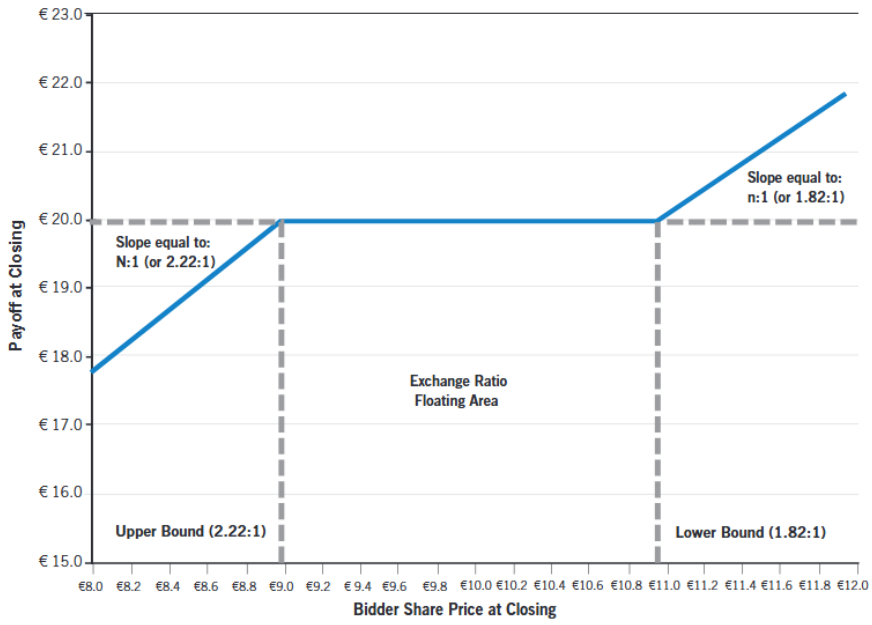
Intuitively the lower bound protects the target shareholder's and the upper bound the acquirer shareholders.



Source: S. Caselli, S. Gatti, M. Visconti, Managing M&A Risk with Collars, Earn-outs, and CVRs, Journal of Applied Corporate Finance, 2006

In the floating Collar Offer, the exchange ratio is free to float within a negotiated range of values.

In a floating collar offer, the exchange ratio between bidder and target shares can fluctuate within a set range. If the ratio stays within this band (e.g., between 1.82 and 2.22), target shareholders receive a fixed share value (e.g., 20 euros). If it moves outside the range, the price becomes a linear function of the bidder's share price, based on the breached bound. This structure protects the bidder from excessive dilution if its share price drops before the deal closes.



Source: S. Caselli, S. Gatti, M. Visconti, Managing M&A Risk with Collars, Earn-outs, and CVRs, Journal of Applied Corporate Finance, 2006

From a Management standpoint of view the collar offer present a clear reduction in the negotiation costs; if the collar is violated, one party can immediately decide to cancel the transaction with no need to resort to "material adverse change clauses (MACs)" or other measures, which usually failure.

Finance literature shows that collars offer are mostly used in the financial services sector, especially in the banking sector.

Empirical research highlight how the use of collar offer reduce the present of abnormal returns (ARs), usually emphasized by the activity of institutional investors, such as M&A arbitrage hedge funds that go long on targets stocks and sell (or short sell) the bidder's stocks, experienced by bidders in share exchange offers.

Studies shows more negative AR for purely stock-for-stock offers, less negative for fixed collars, still less for floating collars and positive AR for all-cash offers.

In conclusion collar offer represent an effective tool to manage the dilution and overpayment risks for a potential takeover.

6.1.3. OTHER DERIVATIVES

Banks make “Interest Rate Swap (IRS)” Contracts in order to prevent foreign exchange risks or interests rate risks,

An IRS is a derivative through which two parties exchange interest payments calculated on a notional principal. The most common structure converts a floating rate exposure into a fixed rate for a defined period. In practice, a borrower with a floating-rate loan enters an IRS to pay fixed and receive floating from the swap counterparty; the received floating cash flows offset the loan’s floating payments, leaving the borrower with an effective fixed borrowing cost. In this way, an IRS mitigates interest rate risk by transforming variable-rate debt into synthetic fixed-rate debt.

A frequently used variant in cross-border M&A is the “Cross-Currency Swap (CCS)”. In a CCS, two counterparties exchange principal amounts in different currencies at the spot exchange rate on the trade date and typically re-exchange them at maturity, while swapping the associated interest payments over the life of the contract.

Both IRSs and CCSs are “over the counter (OTC) contracts” and can be tailored to the parties needs, including tenor, payment frequency, day-count convention, reference indices, and other terms.

6.1.4. THE USE OF DERIVATIVES IN TAKEOVER TRANSACTIONS

In bank M&A transactions, regulatory clearance is required to exceed certain ownership thresholds in another credit institution—a topic already discussed in the previous chapter. Specifically, within the Banking Union, if a bank or investment fund intends to increase its stake in another bank beyond 10%, 20%, 30%, or 50% (or otherwise acquire control), the proposed acquirer must obtain prior approval from the European Central Bank (ECB) under the qualifying holdings assessment.

Usually those entities who require the increase of the ownership stake on a specific bank has the possibility to convert a derivative position in ordinary shares of the target.

The TRES is a powerful tool used by hedge funds and other potential

acquirers to obtain an exposure in the performance of a specific stock or an index without necessarily owning it.

In practice, it is a swap agreement between two parties: the hedge fund who want receive the economic returns deriving from an underlying stock (dividends + stock appreciation) and a financial intermediary who already own a position in the stock and in exchange receive a floating rate (EURIBOR/LIBOR +/- spread) calculated on a notional value and any negative price moves. A market practice of the Total return swap for the dealer (short party) is to buy the underlying one-for-one (hedge shares) in order to offset its short economic exposure created by the swap.

Those hedge shares sit on the dealer's balance sheet, as a result the TRS holder enjoys the returns deriving from the long position on the stock without appearing in the share register. A perfect tool when you want to build a position in stealth mode before a takeover bid.

A clear example is the request by UniCredit to increase its ownership stake over 10% on Commerzbank to the ECB.

A prime example, necessary to mention is represented by the strategy used by the Chief Executive Officer of UniCredit, Andrea Orcel, to build its ownership stake on Commerzbank[71].

Eurozone laws governing bank ownership and control affirm that to exceed the threshold of 10pp, 20pp, 30pp and 50pp of ordinary shares (with voting rights)[72] the potential acquirer must receive the green light by the European Central Bank. The approval process can take several months, giving competitors time to strengthen their positions, hedge funds to accumulate shares, and the target company to reinforce its defences.

In cross-border bank takeovers, acquirers often use call options and related derivatives to gain economic exposure or secure future control without triggering immediate disclosure. This stealth acquisition strategy allows bidders to quietly accumulate positions, as seen in Deutsche Bank's gradual acquisition of Postbank in 2009.

[71] O. Storbeck, A. Massoudi, Anatomy of a trade: how UniCredit built its Commerzbank stake, FT, 2024

[72] ECB, Guide on qualifying holding procedures, 2023

Call options offer strategic advantages: they lock in a price, defer payment until regulatory approval is obtained, and may influence market prices. Key benefits include stealth accumulation below disclosure thresholds, regulatory timing flexibility, and purchase price certainty. Initially designed to evade supervisory authorities, today many jurisdictions treat such instruments as “shares in suspense,” requiring disclosure once control thresholds are met (even for cash-settled options).

6.2. INCREASE OF SYSTEMIC RISK DERIVED FROM M&A TRANSACTIONS

Following the concentration-stability hypothesis, larger consolidated banks contribute to the financial stability thanks to a better diversification and operating efficiency.

However the banking literature introduced also the concentration-fragility hypothesis which argues that banking consolidation tend to create a highly interconnected financial landscape at a global level which result in higher systemic risks.

The trade-off between risk and return synergies in the banking consolidation is liable.

The Bank consolidation increase the banking concentration measured by the HHI (Herfindahl-Hirschman Index) and increase the market share (if perceived as a successful operation by the market) of the new entity and reduce the market competition. On the other hand, merger and acquisitions reduce the overall diversification of the financial system and makes it more vulnerable to economic recessions and other financial risks. The interconnection at a global level of the financial system determines the systemic risk problem.

The standard risk measure of risks in portfolio theory is represented by the Value-at-Risk who quantify the expected loss of a portfolio at a specify confidence level and at a specific time horizon assuming (usually assuming a Gaussian distribution of returns). Then to measure the potential excess losses of a portfolio there is the “Expected shortfall” who represent a conditional Value-at-Risk (CVaR) measure that determine the expected loss

of a portfolio in a worst case scenario where we threat the Var expected loss.
In response to the GFC, "Robert Engle" (Professor at NYU) and "Christian Brownless" proposed a revised formula of the expected shortfall to quantify the capital shortfall a financial institution would experience in the case of a systemic crisis known as SRISK[73]. The latter stands for systemic risk, and it is a forecast of the amount of capital a financial institution need to raise to remain solvent complying with regulatory capital requirements.

$$SRISK_{it} = E_t(CS_{it+h}|R_{mt+1:t+h} < C$$

It measures the expected capital shortfall of a firm conditional on a stock market decline of 10pp over a one-month horizon.
During a financial market fall the firm's assets fair value decrease and the bank risk to be insolvent.
The Conditional shortfall is the difference between the desired level of equity and the firm's actual equity in the event of a crisis, necessary to remain solvent.
As a result, to assess the capital needed to remain solvent must be estimated the equity value of the bank during a distress scenario. This is done by estimating the dynamic conditional beta (time varying beta) through arch/garch parametric processes to capture the volatility clustering of daily returns and measure the relationship between the firm return and market return.
The subprime mortgage crisis is a clear example of a modern financial crisis. The GFC causes the failure of almost 500 banks between 2008 and 2013, at a cost of approximately 73 billion dollars to the Deposit Insurance Fund (DIF)[74]. In this period, we assisted at how the failure of undercapitalized financial institutions due to the highly interconnection of the financial system can amplify economic downturns triggering the financial sector but

[73] C. Brownlees, R. Engle, SRISK: A Conditional Capital Shortfall Measure of Systemic Risk, The Review of Financial Studies, 2016
[74] Center for Financial Research (CFR), Crisis and Response: An FDIC History, 2008–2013, FDIC, 2017

especially the real economy and population savings. Moreover, the failure of a single bank can erode trust for the financial system triggering bank panic and affecting also financial solid banks. A recent example is the Silicon Valley Bank (SVB) failure who was determined by a balance sheet highly exposed to interest rate risk, a poor risk management and by a rapid withdraw of depositors who was represented by VC fund, startupper and tech companies who withdraw deposit due to the deterioration of market condition and they didn't fully secured by the FDIC because above 250.000 dollar[75].

7 EUROPEAN BANKS

7.1. LITERATURE REVIEW ON EUROPEAN BANKS

Several studies present a positive correlation between bank profitability and economic growth, confirming a strong procyclicality[76].

Nowadays the European Banking sector is one of the largest sectors in Europe who presented an exponential growth in terms of operating profits and market capitalization in the last few years (thanks to the high-interest rate scenario).

From the ECB statistics we assist to a decrease in the inflation rate, a continued improvement of the NPL ratio (although the current economy), a continue increase of the CET1 ratio which confirm the financial solidity of European banks and thanks to the decrease in interest rates there will be also an increase in the loan to non-financial corporations and households. Moreover, the profitability and cost efficiency ratios (ROE, ROA and Cost-to-income) shows a strong outlook for the banking sector, the growth in terms of profitability and market cap. was emphasized in the European "periphery" represented by Italy, Greece and Spain.

Although the positive outlook, U.S. and Chinese financial Institutions play in different league and European banks struggle to remain competitive with them.

[75]Chairman Martin J. Gruenberg, Lessons Learned from the U.S. Regional Bank Failures of 2023, FDIC, 2024

[76] Demirguc-Kunt A., & Huizinga H., Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence, World Bank Economic Review, 1999;

Competitiveness is related to the ability of a company to overperform in specific market compared to its peers. A competitive bank presents a high client attraction, growing market share and strong efficiency and profitability ratios.

Bank M&A transactions have this object, increase competitiveness growing its market share. This type of extraordinary finance transactions has recently shown sign of recovery in the euro area after a decade of subdued activity.

A recent example is the takeover plan of UniCredit on Commerzbank. The consolidation would allow the Italian bank to become a leading banking group in the European Landscape and increase its power in Germany thanks to the HVB (UniCredit bank). The Cross-Border nature of the deal reflect an initial integration of the European banks and lead to the creation of a competitive EU Banking sector that could contribute to the formation of giant financial institutions manageable to compete with the global leading financial companies.

7.2. STRUCTURAL PROBLEM OF THE EUROPEAN BANKING SYSTEM

The main problem of Europe derive from its fragmented environment characterized by 27 member states with different regulations together with a non-fully integrated financial market. This translates in a difficulty to research capital, a lack economic growth and high operating inefficiency of the European system.

In addition, the overregulation of the European Banking Sector after the great financial crises limit the competitiveness of banks at a global level and result in an undercapitalized market with lower profitability and higher costs derived by a lower adoption of technology compared to American and Asian peers.

7.3. KEY INDICATORS TO UNDERSTAND BANK RESILIANCE

7.3.1. PRICE-TO-BOOK RATIO

A financial metric used to assess the competitiveness of the European banks is the price-to-book ratio.

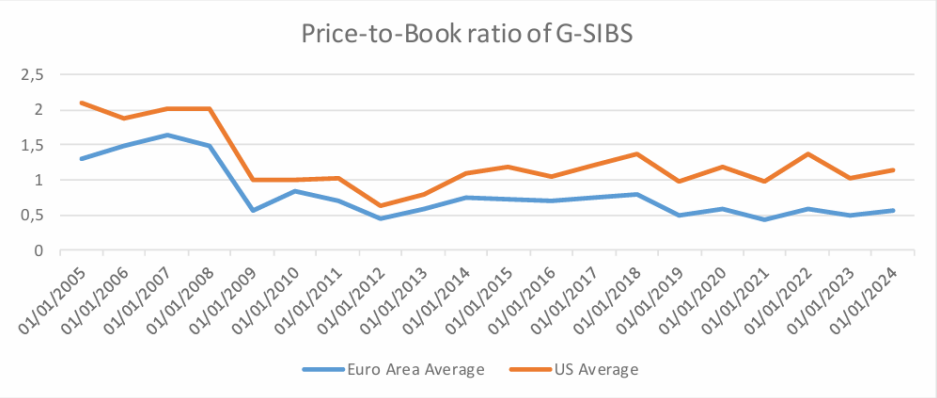
It is an accounting measure, frequently used in multiple valuation method equal to the market capitalization of a listed company divided by its book value of Equity (bank's assets minus bank's liabilities).

In other words, It may be translated as the price per share divided by the earnings per share.

The P/B ratio reflects the perception of investors in the target stock; if the ratio is higher than one it means that investors are willing to "overpay" the stock based on their belief.

Since the GFC, p/b ratio have been lower than one (especially in Europe) reflecting the market participants concerns for banks profitability and financial resilience to other financial shocks. In fact, after the GFC the profitability performance gap between US and EU abruptly increased. In US the GDP growth rebound and together also the ROA and ROE of the banking sector.

As a result if we compare the P/B ratio of G-SIB in a time horizon between 2008 and 2024 we will see the GAP between EU and US banks.



Note: Collected G-SIBs defined by the Financial Stability Board of 2024 in the Euro area and in US.

Source: Refinitiv

7.3.2. TOBIN'S Q

Another measure frequently analysed by academic researchers in economics and social sciences is the Tobin's q; introduced by the Nobel price James Tobin it is used to describe the efficiency of investment decisions.

$$Tobin's\ Q = Total\ Asset\ Value\ of\ Firm / Total\ Market\ Value\ of\ Firm$$

It is equal to the Equity Market value (equity plus debt market value) divided by the equity book value (equity book value plus debt book value).

The idea is that the market value of a company stock should be equal to its replacement costs.

A low Tobin's q ratio, lower than 1, means that the cost to replace a firm's assets is higher that the value of its stock and as a result the company is perceived by investor to destroy value.

Vice versa the stock is overvalued for a ratio Tobin's q ratio higher than 1; in this case investors believe in the company who is creating value for shareholders should continue to invest in this business.

A bank presents a Tobin's q ratio larger than one only if the price-to-book ratio is above one, and vice versa. So, by transitive property, a p/b ratio higher that one means that the bank create value, while a ratio lower than one means the bank destroy value.

7.3.3. COST-TO-INCOME

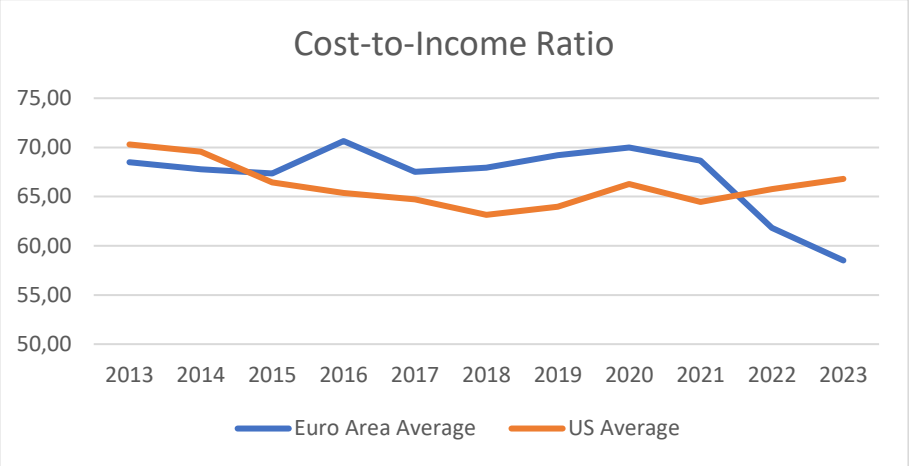
Another important accounting measure used to assess the operating cost efficiency is the Cost-To-Income Ratio[77].

$$CIR = \frac{OPERATING\ EXPENSES}{OPERATING\ INCOME}$$

[77] Wikiaccounting, Cost to Income Ratio: Meaning, Example, Formula, Calculation, and More.

The measure is a percentage and a lower cost-to-income shows an higher efficiency who translate in more income relative to operating costs. The latter include all those costs necessary to generate the income deriving from the core banking business: staff costs, administrative expenses, and other overheads. Operating income represents all those sources of income for a bank: NII and Fees revenue (from banking services)

In the last years the leading European banks are tighten the gap in terms of operating efficiency



Source: ORBIS; author's calculated.

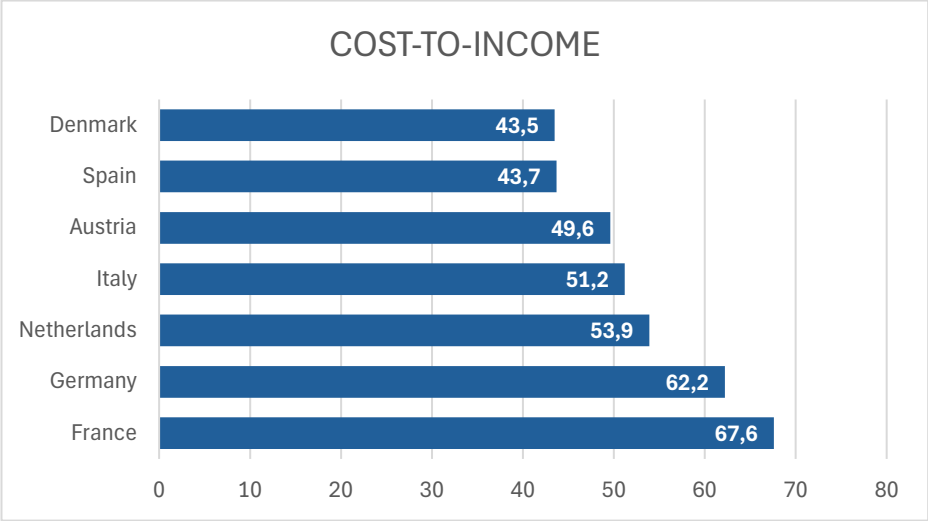
Academic researchers highlight in different studies the relation between the p/b ratio and the cost efficiency ratio. It is demonstrated the negative correlation between the CIR ratio, and the price-to-book ratio were also lower costs usually translated in higher banks valuations.

Indeed, in the last few years, there was a boost of the Return on capital invested in the European Banking Sector, thanks to the favourable market conditions but also a positive sentiment of the market about the EU banks performance and solidity.

Investor usually criticize Europe for its strict banking regulation who limit the potential growth of banks and economy. The US benefit of a more efficient regulation, an integrated financial market and a complete banking union.

Moreover although the last year presented a positive outlook for the European stock market, the competitiveness problem remain and present a large gap. The Largest U.S. bank for AUM is JPMorgan Chase Bank (market

share: 14.4 pp[78]), doubling the market share of its European peer BNP Paribas (market share: 8.16pp[79]).



Source: STATISTA, author's creation.

8 EMPIRICAL ANALYSIS

8.1. RESEARCH OBJECTIVE:

The decade following the subprime mortgage crisis (2007–2009) and the European sovereign debt crisis (2010–2012) marked a turning point for the banking sector. In the subsequent years, European banks presented a profound restructuring, particularly in Europe. The launch of the Banking Union with the ECB's Single Supervisory Mechanism, the tightening of capital and liquidity requirements and a prolonged period of very low interest rates compressed European banks' net interest margins and pushed institutions to seek new paths toward efficiency and sustainable growth.

The combination of new regulations (BRRD/CRR, SSM), years of ultra-low rates and a rapid cycle of rate hikes reignited incentives for banking consolidation. The goal was to restore efficiency, rebalance funding models, and strengthen the ability to generate capital internally. This wave of consolidation also helped clean up bank balance sheets through the

[78] Source: Bloomberg
[79] Source: Bloomberg

improvement of the NPL ratios[80]; these fell from a peak of 6.5 pp in 2014 to around 1.8pp in 2023, supported by extensive securitization transactions and stricter banking supervision policies[81].

Between the 2013 and 2023 the number of banking institutions fell by 38 pp, while domestic branches declined by 42pp compared with the pre-2008 crisis level. Over the same period, the market share held by the five largest banking groups in each national market (CR5) rose to an average of 68.6% in the EU by the end of 2023[82].

The ROE of EU/EEA groups is around 10 pp in 2023, while the CET1 is about 16 pp[83]. In this context, M&A activity has largely remained domestic, typically involving small to mid-sized targets. The main drivers are always the same: reducing excess capacity, achieving economies of scale and scope, and strengthening margin generation.

8.2. REGRESSION MODEL

This chapter explores whether mergers and acquisitions (M&A) in the banking sector led to improve profitability. To investigate this, I compile a sample of large parent banking groups, those with total assets exceeding 25 billion euros, since these are the financial institutions most likely to pursue major deals. The final dataset includes 40 banks from Italy, Germany, France, Spain, Netherlands, Austria, and Denmark: offering a representative snapshot of the Western European banking landscape.

The analysis focuses on M&A transactions between banks where the acquirer is a retail, commercial or universal bank in order to isolate the scale and scope synergies typically expected from such deals. The target must have a banking license, and we exclude all the fintech and neobanks to understand if the acquisition of “traditional banks” has a positive contribute in the Return of Assets of Large banks.

[80] NPL Ratio= Total Non-Performing Loans/Total Outstanding Loans.
[81] European Banking Authority, EBA REPORT ON NPLs, 2023
[82] ECB,EU structural financial indicators, 2023
[83] European Banking Authority, Capital and risk-weighted assets, 2024

The dependent variable (ROA) is defined as:

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

The formula expresses the ability of a bank to generate profits from its assets and represents a synthetic measure of operational and managerial efficiency widely used in academic research to study the impact of external shocks (such as an M&A).

Other studies applied the ROE[84] or ROTE[85] to assess the impact of an acquisition on banks profitability. This specific focus is intentional, as European banks are under growing competitive pressure in global markets and must achieve concrete efficiency gains to keep up with larger U.S. peers. Although many banks have started to acquire fintech companies and neobanks to diversify or strengthen their business models, this study excludes those transactions.

The purpose of this analysis is to offer a preliminary evaluation of whether M&A activity in the banking sector is linked to changes in profitability, as measured by Return on Assets (ROA). I adopt a straightforward before-and-after approach, comparing each bank's ROA in the year before its first transaction (t−1) with the ROA in the year following the deal (t+1). The treated sample is represented by 23 banks with 40 M&A transactions over the 2013–2023 period.

We apply the following linear equation:

$$ROA_{i,t} = \alpha + \beta POST_{i,t} + \varepsilon_{i,t}$$

Where:

$$\beta = E[ROA(t+1) - ROA(t-1)]$$

[84] RETURN ON EQUITY: Net Income/ Shareholders' Equity

[85] RETURN ON TANGIBLE EQUITY: Net Income/ Tangible Equity

```
Residuals:
     Min       1Q   Median       3Q      Max
-1.71991 -0.10698 -0.03652  0.20202  0.65146

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   0.2913     0.0809    3.60 0.000802 ***
Post          0.1109     0.1144    0.97 0.337548
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.388 on 44 degrees of freedom
Multiple R-squared:  0.02092,   Adjusted R-squared:  -0.001333
F-statistic: 0.9401 on 1 and 44 DF,  p-value: 0.3375
```

And the t statistic:

```
t test of coefficients:

            Estimate Std. Error t value  Pr(>|t|)
(Intercept) 0.291259   0.048189  6.0441 2.907e-07 ***
Post        0.110926   0.093599  1.1851    0.2423
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

The OLS regression yields an intercept of 0.291, representing the average ROA before the deal, and a coefficient on *Post* of 0.111, indicating a modest increase of about 11 basis points in ROA following the transaction. However, this difference is not statistically significant ($t \approx 0.97$, $p = 0.338$). The model's explanatory power is limited ($R^2 = 0.021$).

From this result, we can say that the estimated effect of M&A on ROA is small and statistically inconclusive. There is no reliable evidence of a significant change in profitability from the year before to the year after the deal in this sample.

label	n	mean_roa	sd_roa
<chr>	<int>	<dbl>	<dbl>
t-1 (pre)	23	0.291	0.229
t+1 (post)	23	0.402	0.499
Δ = post_deal - pre_deal	23	0.111	0.444

A tibble: 4 × 2

metric	value
<chr>	<dbl>
median Δ	0.154
IQR Δ	0.179
%Δ<0	0.174
%Δ>0	0.826

In the matched sample of 23 European banks, each observed in the year before (t−1) and the year after (t+1) the average Return on Assets (ROA) increases from 0.291 (standard deviation: 0.229) before the deal to 0.402 (standard deviation: 0.499) after the deal. This suggests a modest improvement in profitability with greater variability in post-deal outcomes. Looking at within-bank changes, the average difference is 0.111, and the median is slightly higher at 0.154. The interquartile range (IQR) of 0.179 indicates that the middle 50 pp of banks experienced relatively contained, positive changes. Notably, 82.6 pp of banks show an increase in ROA (Δ > 0), compared to 17.4pp that show a decline (Δ < 0).

8.3. DIFFERENCE-IN-DIFFERENCE MODEL

This chapter investigates the effect of mergers and acquisitions (M&A) on the profitability of banks, measured through the Return on Assets (ROA).

The main objective is to assess whether M&A transactions lead to a statistically significant improvement in banks' performance in the short and medium term.

The empirical analysis relies on a Difference-in-Differences (DID) econometric model with two-way fixed effects (bank and year). This methodology allows us to isolate the causal impact of an event — in this case, the completion of an M&A transaction — by comparing the evolution of ROA between treated banks (those that engage in M&A) and untreated banks (those that do not).

The econometric model applied to estimate the impact of M&A on bank profitability is a Difference-in-Difference with fixed model effects (TWFE) specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 Dummy(t)_{it} + \beta_2 Dummy\,(t+1)_{it} + B_3 Dummy\,(t+2)_{it} + \alpha_i + \gamma_t + \mathcal{E}_{it}$$

The dummy variables capture the dynamic effects of the M&A activities over time to assess the impact of the external shock in the short-term and medium-term.

Moreover, this model captures two different fixed effects. The first one is represented by α_i that incorporate the bank-specific fixed effects. It incorporates controls for unobserved, time-invariant heterogeneity across banks (such as size, business model, or risk appetite). γ_t represents the year fixed effects and it incorporates all those common shocks and macroeconomic trends that can affect all banks simultaneously (such as regulatory changes, monetary policy, or economic cycles).

Finally, $\mathcal{E}_{it}$ captures the error term and represent the unpredictable part of the model.

This specification, commonly known as a "two-way fixed effects (TWFE) difference-in-differences model"[86], facilitate the estimation of the average causal impact of M&A operations on profitability by exploiting within-bank variation over time and isolating it from distort factors that are constant across banks or across years.

[86] Jeffrey M. Wooldridge, Two-Way Fixed Effects, the Two-Way Mundlak Regression, and Difference-in-Differences Estimators, Empirical Economics, 2021

DEAL	0.078+
	(0.043)
1 YEAR AFTER M&A	−0.103
	(0.062)
2 YEARS AFTER M&A	−0.055
	(0.051)
Num.Obs.	440
R2	0.419
R2 Adj.	0.340

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

The coefficient associated with the year of the deal (beta= 0.078) is positive and marginally significant at the 10pp. This suggests that in the year when the M&A transaction occurs, ROA increases by approximately 0.078 percentage points on average compared to non-M&A years, considering the other factors constant.

The dynamic effects in the years following the transaction are not statistically significant. One year after the deal (1 year after M&A), the coefficient becomes negative (-0.103), and two years after (2 years after M&A) it remains negative (-0.055), indicating a dissipation of the initial positive effect over time.

The empirical results indicate that M&A transactions can produce a short-term positive impact on bank profitability, highlighting potential synergies and cost efficiencies realized in the year of the transaction. However, the absence of significant effects in subsequent years underlines the importance of post-merger integration strategies and the need for banks to effectively manage the consolidation process to sustain profitability gains.

In conclusion, while M&A can serve as a strategic tool to enhance bank performance, it does not guarantee long-term profitability improvements. The success of such operations ultimately depends on the ability of the combined entity to integrate operations, exploit synergies, and adapt to the evolving financial environment.

8.4. RESULTS

This study focuses on the acquisition of "traditional banks"[87] by major European players to assess the impact on those Giant who has a great amount of market share in their origin country. The empirical research excludes acquisitions of fintech or neobanks, which the recent literature often associates with potentially larger strategic payoffs (digital capabilities, faster product innovation, data/tech synergies). Empirical and industry evidence suggests that acquiring specialized fintech firms can help incumbents overcome in-house capability gaps in new digital areas and improve efficiency and service quality, with the aim (and in some settings the outcome) of enhancing profitability[88].

The empirical analysis conducted in this chapter provides meaningful evidence on the relationship between mergers and acquisitions and the profitability of major European banks. By focusing exclusively on the largest and most representative institutions — those that dominate market share in their respective national banking systems — the study aimed to capture how consolidation strategies affect the financial performance of the sector's key players. Results indicate that M&A transactions are associated with a positive but short-lived impact on ROA. Banks show an improvement in performance during the year of the transaction, but this effect diminishes and becomes statistically insignificant in the following years.

These findings suggest that while M&A operations can generate immediate benefits, such as cost synergies, increased market power, and balance sheet

[87] All banks excluding fintechs and neobanks (disruptive business)

[88] K. Kwon, P. Molyneux, L. Pancotto, A. Reghezza, Banks and FinTech Acquisitions, Journal of Financial Services Research, 2023

optimisation, they do not automatically lead to sustained improvements in profitability. The results must also be interpreted considering the broader macroeconomic environment of the 2013–2023 period, characterised by prolonged low interest rates, significant regulatory changes, major shocks (such as the COVID-19 pandemic) and the subsequent surge in inflation. These external factors may have influenced both the strategic motivations behind consolidation and its outcomes, shaping the observed post-merger dynamics.

Overall, the analysis highlights the complexity of M&A outcomes in the banking sector: they remain a relevant strategic tool for growth and competitiveness, but their success ultimately depends on effective post-merger integration, management decisions, and the current macroeconomic environment.

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