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The banking crisis of 2023: new challenges in the banking supervision and regulation

ABSTRACT: The crisis of some banking entities in March 2023 reminds us of the importance of demanding regulation and supervision and, above all, of truly effective corporate governance and risk management. The events observed have served as a reminder of how quickly banking crises can happen. This article analyzes the roots of the problems that, in a context of uncertainty and rapid contagion effects, affected entities that had significant weaknesses in their business model, governance and risk management, contributing to the literature on banking supervision and regulation. The article also reviews the main implications for the banking sector and for authorities internationally. Thus, these facts remind us, once again, that banking activity must be based on business models that are

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sustainable over time and on appropriate risk management. Furthermore, the importance of the supervisory activity done with the appropriate tools to guarantee its early and effective reaction is once again highlighted. Finally, although current regulation has helped curb the systemic reach of crises by increasing the resilience of the banking sector, thus once again reinforcing the need to implement the Basel III framework, there are some areas where it is appropriate to continue analyzing the functioning of the prudential regulatory framework.

KEYWORDS: supervision; regulation; banking crises; Basel III; Silicon Valley Bank; Signature Bank; First Republic Bank; Credit Suisse

SUMMARY: 1. Introduction. - 2. Literature review. - 2.1. Recent banking crises: similarities, differences and challenges. - 2.1.1. Silicon Valley Bank (SVB). - 2.1.2. Signature Bank. - 2.1.3. Credit Suisse. - 2.1.4. First Republic Bank. - 3. The Role of Supervision. Key differences between the European and American Banking Supervision. - 4. Prudential Regulation. Key differences between the European and American Banking Regulation. 5. Conclusions

1. Introduction

In 2023, the United States banking sector suffered the chain crises of several banking entities - First Republic Bank(FRB) (the 14th-largest bank

in USA, with assets of $232 billion[1] - the second bank failure in the country), Silicon Valley Bank (SVB[2]a "crypto-friendly"[3] bank which focused mainly on start-up and tech financing) (the 29th-largest bank in USA, with assets of $209 billion[4]) and Signature Bank (assets of $110 billion[5]), - which faced liquidity problems caused by the loss of confidence of its depositors and the markets. Scholars argue that "supervisors had substantial warning about the frailties of these banks. Yet, despite the post-Global Financial Crisis focus on large bank resolution, neither supervisors nor banks seemed prepared in March to resolve the […] failed banks without creating large spillover costs."[6]Likewise, the Swiss banking entity Credit Suisse was affected by the distrust generated in the markets by the

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[1] Federal Deposit Insurance Corporation (2023a). *FDIC's Supervision of First Republic Bank* (Washington: FDIC, September, 8), p. 2. Available online: https://www.fdic.gov/news/press-releases/2023/pr23073a.pdf, retrieved on 4.01.2024.

[2] Dewatripont, M., Praet, P., & Sapir, A. (2023). The Silicon Valley Bank collapse: Prudential regulation lessons for Europe and the world. *VoxEU. org*, *20*.

[3] Zetzsche, D. A., Buckley, R. P., Arner, D. W., & van Ek, M. (2023). Remaining regulatory challenges in digital finance and crypto-assets after MiCA. *Zetzsche/Buckley/Arner/van Ek, Remaining regulatory challenges in digital finance and crypto-assets after MiCA, publication for the Committee on Economic and Monetary Affairs (ECON), Policy Department for Economic, Scientific and Quality of Life Policies,* European Parliament, Luxembourg, p. 31.

[4]Board of Governors of the Federal Reserve System ("Federal Reserve"). (2023). Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank (2023), p. 17. Available online: https://www.federalreserve.gov/publications/review-of-the-federal-reserves-supervision-and-regulation-of-silicon-valley-bank.htm, retrieved on 4.01.2024.

[5] Federal Deposit Insurance Corporation (2023b). *FDIC's Supervision of Signature Bank* (Washington: FDIC, April), p. 2. Available online: https://www.fdic.gov/news/press-releases/2023/pr23033a.pdf, retrieved on 4.01.2024.

[6] Berner, R., Schoenholtz, K. L., & White, L. J. (2023). Evaluation of the Policy Response: On the Resolution of Silicon Valley Bank, Signature Bank, and First Republic Bank. *SVB and Beyond: The Banking Stress of.*

crises of American banks. These problems led to the non-viability of these entities and their resolution and/or sale (SVB, Signature Bank, Credit Suisse and First Republic Bank). In times of loss of confidence in the system, tools and objectives are mixed, as was once again evident in the US and Switzerland last March.

These cases occurred in a context of banking and financial markets already sensitized by the worsening of the macroeconomic context due to the war in Ukraine[7], the persistent inflation[8], banking sector stress[9]and increases in interest rates[10] caused by the necessary tightening[11] of monetary policy.

Therefore, before the first symptoms of crisis in some individual entities, the markets focused on other entities that showed some type of weakness, which generated outflows of funds and liquidity problems. The authorities

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[7] Nekhili, R., Foglia, M., & Bouri, E. (2023). European bank credit risk transmission during the credit Suisse collapse. *Finance Research Letters*, *58*, 104452.; Ozili, P. K. (2023). Causes and Consequences of the 2023 Banking Crisis. *Available at SSRN 4407221*; Corsetti, G., Eichengreen, B., Vives, X., & Zettelmeyer, J. (2023). The international economic and financial order after the pandemic and war. *Centre for Economic Policy Research*, London, pp. 1-178.

[8] Danielsson, J., & Goodhart, C. (2023). What Silicon Valley Bank and Credit Suisse tell us about financial regulations. *VOXEU/CEPR. Online: https://cepr. org/voxeu/columns/what-siliconvalley-bank-and-credit-suisse-tell-us-about-financial-regulations.*Moretto, M., & Parigi, B. M. (2024). Competitive runs on Government debt. *International Review of Economics & Finance*, *89*, 131-158.

[9] Yousaf, I., & Goodell, J. W. (2023). Responses of US equity market sectors to the Silicon Valley Bank implosion. *Finance Research Letters*, *55*, 103934.

[10] Mérő, K., (2023). Shall we reconsider banking regulations? Some lessons drawn from the failure of Silicon Valley Bank and Credit Suisse. *ECONOMY AND FINANCE: ENGLISH-LANGUAGE EDITION OF GAZDASÁG ÉS PÉNZÜGY*, *10*(2), pp.101-119.

[11] Vo, L. V., & Le, H. T. (2023). From hero to zero-the case of Silicon Valley Bank. *Available at SSRN 4394553*; Angeloni, I. (2023). Reversing the Great Monetary Expansion. *Intereconomics*, *58*(3), 142-147.

provided additional liquidity lines to those already existing, and some other measures were also taken to curb the contagion effects[12]. However, these actions could not stop the strong and rapid outflows of funds[13] from the affected entities, and the supervisory and resolution authorities had to intervene to address the problems identified in some banking entities, and thus safeguard the stability of the financial system.

Among the triggers for the loss of confidence and liquidity problems in the entities affected by the crisis are the tightening of monetary conditions and the worsening of the economic-financial conditions of a significant part of the clients of some of these entities. These factors caused withdrawals of funds at a dizzying pace and seriously affected the liquidity of these entities. These found themselves having to go to markets that were already very sensitive to maintain their liquidity levels[14], which further stimulated doubts about their situation; It also showed significant deficiencies in its management[15] of interest and liquidity risk, which, far

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[12] Akhtaruzzaman, M., Boubaker, S., & Goodell, J. W. (2023). Did the collapse of Silicon Valley Bank catalyze financial contagion?. *Finance Research Letters*, 104082; Aharon, D. Y., Ali, S., & Naved, M. (2023). Too big to fail: The aftermath of Silicon Valley Bank (SVB) collapse and its impact on financial markets. *Research in International Business and Finance*, *66*, 102036.

[13] Shikha, N., & Kapsis, I. (2023). Bank crisis management and resolution after SVB and Credit Suisse: Perspectives from India and the European Union. *International Insolvency Review*; Valiante, D. (2023). The Last Days of Credit Suisse: Banking Crisis Management under Siege. *Rivista delle Società*, *68*.

[14] Aharon, D. Y., Ali, S., & Naved, M. (2023). Too big to fail: The aftermath of Silicon Valley Bank (SVB) collapse and its impact on financial markets. *Research in International Business and Finance*, *66*, 102036.

[15] Gupta, P., & FCPA, T. L. (2023). SVB and Credit Suisse: The Case for Strong First-Line Risk Governance. *Strategic Finance*, *105*(1), 38-45; Valiante, D. (2023), Op. Cit.

from being the result of a temporary situation, had been developing over time and were fully manifested in a context of rising interest rates.

Although the cases of the afore mentioned entities show some different characteristics, they share, to a greater or lesser extent, the underlying causes of the crises that affected them, presented in figure 1:

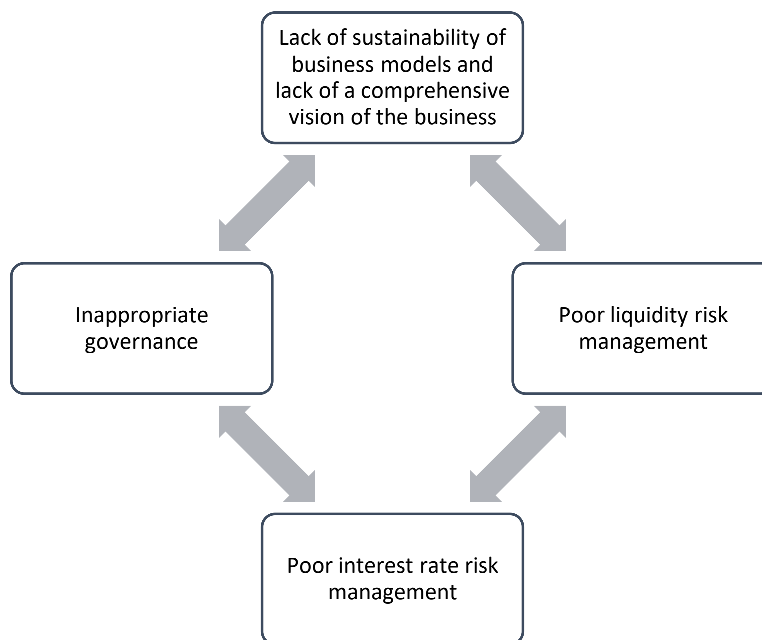

Figure 1. Causes of the banking crises from March 2023

Source: made by the author

1. Lack of sustainability of their business models[16] and lack of a comprehensive vision of the business.

[16] Shikha, N., & Kapsis, I. (2023). Bank crisis management and resolution after SVB and Credit Suisse: Perspectives from India and the European Union. *International Insolvency Review*.

In most cases there had been rapid and significant growth in assets in a short period of time, linked to businesses with rapid expansion and strong concentration of its clientele in certain sectors (technology: SVB; crypto assets[17]: Signature Bank; private banking and large fortunes: Credit Suisse, and banking services for wealthy clients: First Republic). Several of these entities showed a high concentration of liabilities in high balance deposits not covered by guarantee funds that were potentially subject to high turnover[18].

2. Poor liquidity risk management[19]. This can be translated into insufficient asset diversification and defective or null contingency plans in relation to alternative liquidity lines for crisis situations, with inadequate management of collateral available for use.

3. Poor interest rate risk management[20]. Inadequate management of the duration gap between assets and liabilities. Most of the affected entities maintained large maturing debt portfolios, recorded at amortized cost,

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[17] Zetzsche, D. A., Buckley, R. P., Arner, D. W., & van Ek, M. (2023). Op. Cit.

[18] Gupta, P., & FCPA, T. L. (2023). SVB and Credit Suisse: The Case for Strong First-Line Risk Governance. *Strategic Finance*, *105*(1), 38-45; Ziyao, Z., Yican, H., &Youzi, Z. (2023). The Use of ERM in Systemic Risk Analysis in Banking: Take Silicon Valley Bank's Bankruptcy as an Example. *Financial Engineering and Risk Management*, *6*(11), 17-27.

[19] Shikha, N., & Kapsis, I. (2023). Op. Cit.;Manda, V. K. (2023). The Collapse of Silicon Valley Bank. *MAR-Ekonomi: JurnalManajemen, Akuntansi Dan RumpunIlmu Ekonomi*, *2*(1), 59-70; Gortsos, C. (2023). Preventing a New Global Financial Crisis Amidst the Current'Inflation Crisis' and the Spring 2023 Bank Failure Episodes. *Available at SSRN 4454997*; CEPAL, N. (2023). United States economic outlook: 2022 year-in-review and early 2023 developments. (LC/WAS/TS.2023/2), Santiago., Available online: https://repositorio.cepal.org/server/api/core/bitstreams/4fc6db6a-0f7a-452f-ae3f-0f5b3ee16cae/content, retrieved on 17.01.2024.

[20] Duan, X. (2023). Research on Liquidity Risk Management of Commercial banks under the impact of Fed rate hike. In *SHS Web of Conferences* (Vol. 170, p. 03015). EDP Sciences.

whose market price was reduced by the change in the nature of monetary policy[21]. This led to losses when these entities tried to liquidate these assets due to liquidity tensions. On this note it should be mentioned that in Europe, "the system is less exposed to interest rate risk on aggregate than the US system, although there are outliers where risk is high. While oversight in Europe does not leave any entities out on account of size, greater transparency around individual entity exposure to interest rate risk would be a welcome step in stemming contagion in the future."[22]

4. *Inappropriate governance*[23]. Lack of monitoring and control by management bodies of risks and problems or deficiencies detected by supervision.

The bankruptcy of SVB caused investors to focus on other banks whose situations were also complicated, causing other entities to go bankrupt and all US banking stocks to suffer large falls, which quickly spread to Europe. If compared to the great financial crisis of 2008-2012, the crises observed in 2023 are of a different nature, affect a small number of entities and have occurred in a very different regulatory and supervisory context. In recent cases, the financial authorities carried out agile management of the situation, thereby limiting the contagion effects and, therefore, avoiding

[21] Geman, H. (2023). *From Lehman to Silicon Valley Bank and Beyond: Why Are Mistakes repeated in the US banking system?* (No. 2006). Policy Center for the New South.
[22] Alberni, M., Berges, Á., & Rodríguez, M. Interest rate risk in the banking book and financial instability: Europe versus the US. Funcas SEFO Vol. 12, No. 4_July 2023, pp. 30-31.
[23] Pezzulli, B. (2023). Surviving the Stampede: Market-Based Resolutions vis-à-vis Overregulation. *Virginia Journal of International Law*, 64(1).

repercussions on the overall stability of the financial system.[24] Likewise, they have pointed out the importance of ensuring supervisory activity with the appropriate tools to guarantee their early and effective reaction/intervention.[25] On the other hand, these crises allow us to evaluate whether or not the current regulatory framework needs any additional improvement.

This article focuses on the analysis of the banking crises from US and Europe from March 2023 (section 2), the analysis of the role of supervision in these crises (section 3) and the regulatory framework, some key concerns that require regulatory attention and the way forward (section 4).

2. Literature review

This section focuses on the recent banking crises occurring in March 2023, while also focusing on their contextualization in terms of supervision and regulation.

2.1. Recent banking crises: similarities, differences and challenges

[24] Nekhili, R., Foglia, M., & Bouri, E. (2023). European bank credit risk transmission during the credit Suisse collapse. *Finance Research Letters*, *58*, 104452; Kraus, F., & Some, J. Credit Suisse's Crisis Impact on Global Banks: A Network Connectedness Approach. *Available at SSRN 4453152*.

[25] Dosumu, O. E., Sakariyahu, R., Oyekola, O., & Lawal, R. (2023). Panic bank runs, global market contagion and the financial consequences of social media. *Economics Letters*, *228*, 111170.

The crises of the American banks SVB, Silvergate Bank, Signature Bank and First Republic Bank and the Swiss bank Credit Suisse have had in common, although with different relative importance, that their roots are found in the weaknesses of their business models, governance and risk management being seen as "cases of late intervention and distorted incentives."[26] According to Chairman Martin J. Gruenberg, the triggers for the crises in the United States were the "banks' heavy reliance on uninsured deposits", "the accumulation of losses in the banks' securities portfolios" and "heightened exposure to interest-rate risk", in a context of uncertainty and market sensitivity, when the first problems began to appear.[27]

The a forementioned crises show the relevance of mistrust and contagion effects in the development of crises, especially in environments like the current one, where the speed of communication and the dissemination of information has reached levels that mark historical milestones. Furthermore, as is common in all crises, the entities that show the most weaknesses and deficiencies in internal control and risk management are the most sensitive to these contagion effects and the consequent

[26] Martino, E. D., & Perini, A. (2023). Rescued Banks Back to the Market?. *Amsterdam Center for Law & Economics Working Paper No. 2023-13*, pp. 1-28, p. 2.

[27] Gruenberg, M. J. (2023a). *Recent Bank Failures and the Federal Regulatory Response. Before the Committee on Banking, Housing and Urban Affairs United States Senate.* 29 March. Available on: https://www.fdic.gov/news/speeches/2023/spmar2923.html, retrieved on 9.01.2024 and Gruenberg, M. J. (2023b). *Remarks on Oversight of Financial Regulators: Financial Stability, Supervision, and Consumer Protection in the Wake of Recent Bank Failures before the Committee on Banking, Housing and Urban Affairs,* United States Senate. 18 May. Available on: https://www.fdic.gov/news/speeches/2023/spmay1723.html, retrieved on 9.01.2024.

withdrawal of funds. These entities are the most likely to suffer liquidity tensions that feed on each other and that can ultimately make an entity collapse.[28] In figure 1 is summarized a chronology of the events that occurred and in Table 2 are shown in summary some of the main characteristics of the four bank collapses.

[28] Enria, A. (2023). "Well-run banks don't fail – why governance is an enduring theme in banking crises". Keynote speech by Andrea Enria, Chair of the Supervisory Board of the ECB, at the 22nd Annual International Conference on Policy Challenges for the Financial Sector organised by the World Bank, International Monetary Fund and Federal Reserve System. Available on: https://www.bankingsupervision.europa.eu/press/speeches/date/2023/html/ssm.sp230601~0d92d89e8c.en.html, retrieved on 8.01.2024; Federal Reserve Board. (2023a). Review of the Federal Reserve Supervision and regulation of Silicon Valley Bank. Available on: https://www.federalreserve.gov/publications/files/svb-review-20230428.pdf, retrieved on 8.01.2024; Federal Deposit Insurance Corporation. (2023). FDIC's Supervision of Signature Bank, Available on: https://www.fdic.gov/news/press-releases/2023/pr23033a.pdf, retrieved on 8.01.2024.

Figure 1. Timeline of banking crises from March to May 2023

Source: made by the author

Further on, a brief presentation and analysis of the situation of each bank will be drawn.

2.1.1. Silicon Valley Bank (SVB)

Silicon Valley Bank was a banking entity from California with a business focused on private banking clients, linked to the technology sector and the venture capital sector, many clients being involved in crypto. Its assets showed rapid growth, as they tripled "from $71 ($62) billion to $220 ($198) billion"[29] between 2019 and 2022.This was linked to the growth of the sectors from which most of its clients came. In spite of the fact that "several large crypto platforms deposited their fiat currency reserves with SVB"[30], the bank did not confirm its' exposure to crypto. Still, its' reports[31] confirm "that at the time of the insolvency, SVB held at a minimum USD 3.5 billion in deposits from crypto intermediaries."[32]In this context, it can be assumed "that the deposit outflows prompted by the Crypto Winter were a significant contribution to SVB's difficulties (indicating systemic

[29] Aharon, D. Y., & Ali, S. (2024). A high-frequency data dive into SVB collapse. *Finance Research Letters*, *59*, 104823.

[30] Zetzsche, D. A., Buckley, R. P., Arner, D. W., & van Ek, M. (2023). Op. cit., p. 43.

[31]SVB Financial Group, (2022). Form 10-K for Fiscal Year ended December 31, 2022, EDGAR, Securities and Exchange Commission, 24 February 2023, p. 34, available at: https://www.sec.gov/Archives/edgar/data/719739/000071973923000021/sivb-20221231.htm, retrieved on 17.01.2024.

[32] Zetzsche, D. A., Buckley, R. P., Arner, D. W., & van Ek, M. (2023). Op. cit., p. 43.

risk in the interlinkages of traditional finance and crypto)."[33] By consequence, there are scholars who consider that, as a prevention measure, regulators "will need information on counterparties, exposures and interconnectivity both across crypto and traditional finance."[34]

The entity had its assets concentrated in "treasury bills and other secure debt instruments"[35] in the medium and long term, in addition to having cross-border operations with a subsidiary in the United Kingdom and with branches in Germany, Canada and the Cayman Islands[36]. SVB had been suffering from deposit outflows[37] from the technology sector since 2022. On the same day that Silvergate Bank announced its liquidation decision[38], the bank announced a plan to restructure its balance sheet and sold a substantial portion of its "held-to-maturity" bonds at a significant loss. Likewise, it announced its intention to capital raising and "selling a portion of its portfolio of low-yield assets in order to reinvest the proceeds in

[33] Idem.

[34] Arner, D. W., Zetzsche, D. A., Buckley, R. P., & Kirkwood, J. M. (2023). The Financialization of Crypto: Lessons from FTX and the Crypto Winter of 2022-2023. *Available at SSRN 4372516*.

[35] Farok, G. (2023). Analysis of financial services and recent turbulence in the USA banking system. *Financial Markets, Institutions and Risks*, *7*(3), p. 116.

[36] Manda, V. K. (2023). The Collapse of Silicon Valley Bank. *MAR-Ekonomi: Jurnal Manajemen, Akuntansi Dan Rumpun Ilmu Ekonomi*, *2*(1), 59-70.

[37] Acharya, V. V., Cecchetti, S. G., & Schoenholtz, K. L. (2023). Overview of recent banking stress. *SVB and Beyond: The Banking Stress of 2023*, 14-32.

[38] On the 8th of March 2023, Silvergate Bank announces its self-liquidation due to heavy losses. Later on, through a letter to shareholders SVB announced losses and plan to increase its capital in the event of withdrawals of funds from clients related to the technology sector. In addition, Moody's downgraded SVB rating. For more information see: Walker, M. J. (2023). Accounting for Debt Securities in the Age of Silicon Valley Bank. *Supervisory Research and Analysis Notes*, (2023-01), 1-11.

shorter-term debt"[39]. As a consequence, there were heavy deposit outflows.[40] The consequence was "a loss of trust that came with a USD 42 bn withdrawal of deposits in a single day"[41], and according to some estimates, in two days SVB lost around 80% of its deposits.[42] SVB had a high percentage of deposits that exceeded the coverage of the deposit insurance fund. To try to stop contagion effects in the system and alleviate distrust in the banking markets, the FDIC ensured access for all deposits to the insurance fund and therefore "uninsured depositors took no losses"[43], a measure that was also adopted in the case of Signature Bank. The SVB did not have adequate plans to deal with significant liquidity risks and was therefore unable to make greater use of existing liquidity facilities. Thus, "the US authorities allowed SVB to be closed while protecting all depositors (also uninsured depositors, invoking the systemic risk exemption) using resolution tools (a bridge bank) while offering emergency assistance to all depository institutions suffering from liquidity problems triggered by the contagion effects of the loss of confidence."[44]

[39] Gili, R. M. (2023). The Silicon Valley Bank intervention and its implications. FINANCIAL MARKETS|FOCUS, CaixaBank Research, p. 8; Available on: https://www.caixabankresearch.com/en/economics-markets/financial-markets/silicon-valley-bank-intervention-and-its-implications, retrieved on 10.01.2024.
[40] Berner, R., Schoenholtz, K. L., & White, L. J. (2023). Op. Cit.
[41] Hauf, P., &Posth, J. A. (2023). Silicon Valley Bank-(Why) did regulation and risk management fail to uncover substantial risks?. *Available at SSRN*, p. 14.
[42] Basel Committee on Banking Supervision (2023a). Op. Cit.
[43] Ohlrogge, M. (2023). Why Have Uninsured Depositors Become De Facto Insured?. *Available at SSRN*, p. 3.
[44] Goodhart, C. A. E., & Lastra, R. (2023). Lender of Last Resort and moral hazard, p. 3. Available on: https://eprints.lse.ac.uk/118679/1/Goodhart_lender_of_last_resort_discussion_paper.pdf, retrieved on 10.01.2024.

Consequently, "a new facility was established under section 13(3) of the Federal Reserve Act– the Bank Term Funding Program - in addition to the traditional discount window lending under Section 10 of the Act."[45]

The United States Federal Reserve (FED), SVB's federal supervisor, notified the FDIC - which decided, together with the local regulatory authority (authority that granted the banking license or chartering authority), The Department of Financial Protection and Innovation (DFPI)from California - that it was unlikely that the entity would be able to continue addressing the liquidity outflows, and on March 10, the SVB was closed by the CADFPI and the FDIC was designated as receiver[46]. This also meant the resolution of the subsidiary in the United Kingdom (SVB UK), which maintained a business model similar to that of the parent company SVB. In the UK case, "the use of resolution tools by the Bank of England led to the sale of SVB UK subsidiary to HSBC for a nominal price of £1,"[47] on the 13th of March 2023.

The FDIC opened a search process for a buyer for the entity and, after the entity was declared as having systemic risk[48], created a bridge bank, which continued SVB's operations while a buyer was found. Finally, on March 26, the FDIC signed an agreement with First Citizens Bank & Trust Company, Raleigh, North Carolina, whereby this entity acquired all of SVB's deposits and loans.

[45] Idem.
[46] Gruenberg, M. J. (2023b). Op. Cit.
[47] Goodhart, C. A. E., & Lastra, R. (2023). Op. Cit, p. 3.
[48] Yadav, Y., & Stark, R. (2023). The Bankruptcy Court as Crypto Market Regulator. *Vanderbilt Law Research Paper*, (23-43).

For its part, the Bank of England, "in consultation with the Prudential Regulation Authority (PRA), HM Treasury (HMT) and the Financial Conduct Authority (FCA), has taken the decision to sell Silicon Valley Bank UK Limited ('SVBUK'), the UK subsidiary of the US bank, to HSBC UK Bank Plc (HSBC)."[49]However, in terms of banking regulation, in the UK, just as in the EU, due to the Covid-19 pandemic, there will be a delay in the implementation of the remaining Basel III standards to January 2025, according several statements from the PRA[50]. The remining standards to be implemented are seen as very important for managing banking crises.

Therefore, it can be assumed that the origin of the tensions, as could be expected, has been the rise in global interest rates by more than 4 percentage points (pp) in the last year and a half, a movement that, due to its speed and intensity, has no parallel in recent years. Such marked increases in interest rates constitute a demanding stress test for financial institutions that present weaknesses in their business models, not corrected by inadequate regulation/supervision. This was the case of

[49] Bank of England. (2023). *Statement on Silicon Valley Bank*. Available online: https://www.bankofengland.co.uk/news/2023/march/statement-on-silicon-valley-bank, retrieved on 10.01.2024.

[50] Bank of England. (2022). Timings of Basel 3.1 implementation in the UK. Published on 27 September 2023, Available online: https://www.bankofengland.co.uk/news/2023/september/timings-of-basel-3-1-implementation-in-the-uk, retrieved on 17.01.2024; Bank of England. (2023). The PRA publishes the first of two policy statements for the implementation of the Basel 3.1 standards. Published on 12 December 2023, Available online: https://www.bankofengland.co.uk/news/2023/december/pra-publishes-first-of-two-policy-statements-for-basel-3-1-standards-implementation, retrieved on 17.01.2024.

Silicon Valley Bank (SVB), which multiplied its balance sheet by three in three years, thanks to the growth of deposits from technology companies, investing that liquidity in long-term public debt without any type of coverage. Consequently, the bank began to accumulate heavy latent losses. Doubts about the entity's liquidity and solvency situation led to an accelerated flight of deposits, which were highly concentrated and unstable (95% of the deposits were greater than $250,000 and, therefore, were not guaranteed). The role of social networks ended up exacerbating the problem and in a single day 40,000 million were removed from the deposit base (25% of the total). A flight of deposits of an intensity eight times greater than the one which occurred at the moment of maximum tension of the 2008 financial crisis.

Finally, on March 28, 2023, a few weeks after the event, the US Senate Committee on Banking, Housing and Urban Affairs held a hearing on the SVB and Signature Bank failures and on the federal regulatory responses. This hearing was attended by Martin Gruenberg[51]; Michael Barr[52], and Nellie Liang.[53] During the hearing, in addition to commenting on what happened, it was announced that the Federal Reserve Board of Governors would carry out an investigation in depth to determine whether any errors had been made in the supervision of the bank. Further on, the most relevant aspects of this report will be discussed, which were published

[51] President of the FDIC
[52] Vice Chair for Supervision of the Board of Governors of the Federal Reserve System
[53] the Under Secretary for Domestic Finance at the U.S. Treasury Department

more than a month later, on April 28, 2023.[54]Firstly, this report shows that the SVB lacked good risk management, this leading to its bankruptcy. The report highlights that the bank did not adequately manage the risks of variations in interest rates and liquidity risk. Thus, after several deficiencies found by supervisors on two occasions,

(1) at the end of 2021 "in the bank's liquidity risk management, resulting in six supervisory findings related to the bank's liquidity stress testing, contingency funding, and liquidity risk management"[55], and
(2) in May 2022, concerning "ineffective board oversight, risk management weaknesses, and the bank's internal audit function."[56]

As a consequence, towards the middle of 2022, supervisors "lowered the bank's management rating to 'fair' and rated the bank's enterprise-wide governance and controls as 'deficient-1.' These ratings mean that the bank was not "well managed" and was subject to growth restrictions under section 4(m) of the Bank Holding Company Act."[57]

Several months later, in October, supervisors expressed concern regarding "the bank's interest rate risk profile and in November 2022, supervisors delivered a supervisory finding on interest rate risk

[54] Barr, M. (2023). Testimony. March 28, 2023. Bank Oversight Vice Chair for Supervision Michael S. Barr Before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, Washington, D.C. Vice Chair for Supervision Barr submitted identical remarks to the Committee on Financial Services, U.S. House of Representatives, on March 29, 2023.Available online: https://www.federalreserve.gov/newsevents/testimony/barr20230328a.htm, retrieved on 22.01.2024.
[55] Idem.
[56] Idem.
[57]Idem.

> management to the bank. In mid-February 2023, staff presented to the Federal Reserve's Board of Governors on the impact of rising interest rates on some banks' financial condition and staff's approach to address issues at banks. Staff discussed the issues broadly, and highlighted SVB's interest rate and liquidity risk in particular. Staff relayed that they were actively engaged with SVB but, as it turned out, the full extent of the bank's vulnerability was not apparent until the unexpected bank run on March 9."[58]

Summing up, it is alleged that those charged with the supervision of the SVB did not correctly identify the risks, and when they did, they did not take all necessary measures to ensure that the SVB resolved those problems. Specifically, the supervisors found deficiencies in the management of the risk associated with variations in interest rates, but they did not do so in the management of liquidity risks.

Finally, the report highlights the influence of the regulatory changes carried out in 2018 with the approval of the "Economic Growth, Regulatory Relief, and Consumer Protection Act"[59], which lowered regulatory and supervisory requirements for banks in the US, except for the eight largest. However, according to the report, maintaining these requirements would not have prevented the bank from failing, as SVB would have passed liquidity tests.

[58] Idem.

[59] FDIC. (2019). EGRRCPA (S. 2155), Available online: https://www.fdic.gov/transparency/egrrcpa.html, retrieved on 22.01.2024.

2.1.2. Signature Bank

Signature Bank was another entity affected by the events of March, initially dedicated to the commercial real estate sector and financing the industrial and commercial sector. In 2018, the bank expanded its business model into the private equity and crypto segment, and between 2019 and 2020 its assets experienced a growth of 64%. As was the case at SVB, about 90% of Signature Bank's total deposits were not FDIC insured, "an abnormally large share of uninsured deposits reaching US$79.5 billion as of December 2022."[60] 20% of its deposits were related to companies in the crypto sector, although this entity did not have loans insured to this sector. Scholars argue that "Signature was a large player in the crypto space. It offered Signet-a commercial payments product that Signature ran on a private, permissioned form of Ethereum's blockchain,"[61] while also offering "loans against various crypto-asset collateral, including Bitcoin."[62] During the second half of 2022, as a consequence of the disruptions in the crypto markets and the collapse of some major cryptoasset companies, such as FTX and Alameda Trading, and following the announcement of a delay in the publication of their accounts, the concern about its liquidity position, which led to significant deposit outflows. The situation became more critical with the bankruptcy of SVB on March 10. The bank did not

[60] Ozili, P. K. (2023). Causes and Consequences of the 2023 Banking Crisis. *Available at SSRN 4407221*, p. 13.
[61] Gorton, G. B., & Zhang, J. (2023). Bank Runs During Crypto Winter. *Available at SSRN 4447703*, p. 23.
[62] Idem.

have adequate contingency plans to deal with liquidity outflows, which prevented it from making use of existing liquidity support and raised doubts about the bank's viability. Finally, on March 12, the New York State Department of Financial Services (NYSDFS) closed the bank.[63] 48 hours after SVB went bankrupt, the FDIC took over the resolution of the entity, so a bridge bank was created. Flagstar (a subsidiary of New York Community Bancorp) signed an agreement on March 20 with the FDIC to acquire most of the deposits and part of the loans of the bankrupt Signature Bank.[64] This shutdown occurred in order "to contain the panic in the banking system and prevent it from spreading to other banks"[65] since "the FDIC was deeply concerned about the contagion effect of SVB's collapse on Signature Bank which could trigger a system-wide bank run and contagion of systemic proportions."[66]

2.1.3. Credit Suisse

Credit Suisse bank is "among the world's largest wealth managers, and it is one of 30 global systemically important banks, whose bankruptcy could threaten the stability of the whole financial system."[67] In the month of March, in the context already mentioned, the doubts and problems that

[63] Galati, L., & Capalbo, F. (2024). Silicon Valley Bank bankruptcy and stablecoins stability. *International Review of Financial Analysis*, *91*, 103001.
[64] Federal Deposit Insurance Corporation (2023b). *Op. Cit.*
[65] Ozili, P. K. (2023), p. 14.
[66] Idem.
[67] Martins, A. M. (2024). The collapse of Silicon Valley Bank and Credit Suisse and their impact on other US Banks. *Applied Economics Letters*, 1-5, p. 1.

Credit Suisse was already experiencing, the result of several scandals that affected its managers and its operations, increased. Throughout 2021 and 2022, Credit Suisse suffered losses for its role in the Archegos and Greensill cases, which caused distrust in the bank.[68] Several key observations are made by Rossi in his article. According to him, "the billion-dollar losses Credit Suisse recorded in 2021 with regard to the hedge funds Archegos and Greensill Capital were not enough to induce this bank's managers to reduce the volume of risky assets on its balance sheet. These managers did not change their strategy even after the failure of FTX - the world's largest cryptocurrency trading platform- which revealed in November 2022 that it did not have enough liquidity to satisfy all of its clients' claims. These and other warning signals were ignored by Credit Suisse's managers, who, on the contrary, had the effrontery to declare that the liquidity outflows had stopped, while in reality they continued to weaken the bank's capital strength with a rapid run on the bank's counters by several of its deposit holders: In the last three months of 2022, their cash withdrawals amounted to 138 billion Swiss francs, compared to a balance sheet total of 531 billion Swiss francs for Credit Suisse in the same year."[69] The actions taken by the Swiss financial supervisor (FINMA) revealed weaknesses in the areas of governance,

[68] Swiss Financial Market Supervisory Authority. (2023). Archegos: FINMA concludes proceedings against Credit Suisse. 24 July. Available on: https://www.finma.ch/en/news/2023/07/20230724-mm-archegos/, retrieved on11.01.2024.

[69] Rossi, S. (2023). The banking crisis of Credit Suisse: origins, consequences, and reform proposals. *Investigacióneconómica*, *82*(325), 21-36.

management and risk control[70], although capital and liquidity ratios remained solid, in part thanks to the entity's issuance of Mandatory Convertible Notes following losses incurred from their transactions with Archegos. Since the market disruptions caused by COVID-19 in March 2020, FINMA had been requiring greater liquidity buffers from the entity[71]. After suffering net losses in three consecutive quarters, the bank issued a statement (profit warning) after the second quarter of 2022 that produced a lowering of its rating by the rating agencies. The above, together with a worsening of the macro-financial context, led to the entity announcing a review of its strategy, which included an increase in its capital, which did not stop significant liquidity outflows, given the intense rumors about the health of the company/entity. The bank's ratings, credit default swap (CDS) spreads and market capitalization diverged significantly from the median levels of its peer group of global systemically important banks (G-SIBs)). Likewise, Credit Suisse announced "a delay in the publication of its 2022 annual report, following a request from the US Securities and Exchange Commission concerning issues identified in previous accounting statements (2021 annual report) as well as related controls."[72]

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[70] Valiante, D. (2023). The last days of Credit Suisse: banking crisis management under siege. *Rivista delleSocietà*, 68.
[71] Idem.
[72] SNB. (2023). Financial Stability Report 2023, p. 25, Available on: https://www.snb.ch/en/publications/financial-stability-report/2023/stabrep_2023, retrieved on 9.01.2024.

All of the above intensified doubts about the situation of Credit Suisse, despite the fact that the Swiss authorities announced their availability to support the entity's liquidity. Therefore, between March 16 and 17, the Swiss authorities, under the direction of the Swiss Federal Council (SFC), adopted emergency measures to safeguard the viability (liquidity) of Credit Suisse and support the takeover of Credit Suisse by the Swiss bank UBS[73], with the aim of protecting financial stability and the Swiss economy[74]. The central players in this matter were Swiss Federal Council, SNB and FINMA. Negotiations were complex and in order to make them smooth, on March 19ththe Federal Council issued an Ordinance[75] amending the ELA ordinance from March 16th on the following aspects:

(i) the opportunity to establish a limit to the ELA loans per financial group[76];

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[73] For more information see: Böni, P., Kroencke, T. A., & Vasvari, F. P. (2023). The UBS-Credit Suisse Merger: Helvetia's Gift. Available at SSRN 4486417.

[74] Finance Swiss. (2023). Safeguarding financial market stability: Swiss government welcomes and supports UBS takeover of Credit Suisse. 20.03.2023. Available on : https://finance.swiss/en/news-and-events/safeguarding-financial-market-stability-swiss-government-welcomes-and-supports-ubs-takeover-of-credit-suisse/, retrieved on 12.01.2024; The Swiss Federal Council. (2023). Ordinance on Additional Liquidity Assistance Loans and the Granting of Federal Default Guarantees for Liquidity Assistance Loans from the Swiss National Bank to Systemically Important Banks, 16 March 2023, available at: https://www.newsd.admin.ch/newsd/message/attachments/76289.pdf, retrieved on 12.01.2024.

[75] The Swiss Federal Council. (2023). Ordinance on Additional Liquidity Assistance Loans and the Granting of Federal Default Guarantees for Liquidity Assistance Loans from the Swiss National Bank to Systemically Important Banks, Amendment of 19 March 2023, available at: https://www.newsd.admin.ch/newsd/message/attachments/76290.pdf, retrieved on 12.01.2024.

[76] art. 3 para 2

(ii) FINMA's empowerment to request the borrower to write down additional tier 1 instruments[77];

(iii) a derogation[78], among others, to the Mergers Act[79] "to the approval of a merger between systemically important banks for mergers agreed with FINMA by the general meetings of the merging entities"[80];

(iv) a Loss Protection Guarantee[81] (LPG) stipulated in Section 3a, according to which, "the Confederation may grant a guarantee to the acquiring bank in order to protect against losses on the assets of the acquired bank which are to be wound up,"[82] "the maximum loss protection guarantee shall be CHF 9 billion,"[83] after CHF 5 billion[84] is provided by UBS.

In addition to taking emergency liquidity measures, the Swiss Confederation granted a public guarantee to UBS for any losses that might materialize. In addition, FINMA informed Credit Suisse that its additional Tier 1 capital (convertible contingent bonds, or CoCos) was being written down, meaning its holders assumed losses before shareholders.[85] This

[77] art. 5a
[78] art. 10a
[79] The Federal Law on Merger, Demerger, Conversion and Transfer of Assets and Liabilities (Bundesgesetzüber die Fusion, Spaltung, Umwandlung und Vermögensübertragung), in force since 1 July 2004.
[80] Section 3a
[81] Section 3a.
[82] Art. 14a (1).
[83] Art. 14a (2)
[84] Art. 14a (3)
[85] Swiss Financial Market Supervisory Authority. (2023a). FINMA approves merger of UBS and Credit Suisse. 19 March. Available on: https://www.finma.ch/en/news/2023/03/20230319-mm-cs-ubs/, retrieved on 9.01.2024.

occurred in spite of the fact that, according to article 34(1)(a) of the European Bank Recovery and Resolution Directive[86] ('BRRD') "Member States shall ensure that … resolution action is taken in accordance with the following principles: (a) the shareholders of the institution under resolution bear first losses …"[87]. Therefore, in spite of this regulation, "the bonds were written down, and CS's shareholders received UBS shares worth USD 3.25 billion under the bailout deal."[88] These generated negative reactions in the AT1 markets, which led to statements from European supervisors regarding the legal certainty of the use and amortization of AT1 instruments. According to Bolton, Kartasheva and Jiang, "of all the too-big-to-fail tools, the Credit Suisse CoCos did play their intended role. Going forward, financial regulation should focus on enhancing the role of contingent capital like CoCos that can be activated prior to a bank's failure. Furthermore, regulators also need to review the great variety of CoCo designs in terms of their conversion mechanism and

[86] Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council Text with EEA relevance, OJ L 173, 12.6.2014, p. 190–348.

[87] Idem, art. 34(1)(a).

[88] Paz Valbuena, J., & Eidenmüller, H. (2023). Bailout Blues: the Write-Down of the AT1 Bonds in the Credit Suisse Bailout. *European Corporate Governance Institute-Law Working Paper*, (705), p. 2.

their trigger level. Discretionary (PONV) triggers that are widespread in CoCos offer regulators a possibility to act in the middle of the crisis."[89]
Summing up, in the case of Credit Suisse, a globally systemically important entity, the deterioration of investor confidence has been greatly influenced by losses linked to its investment banking business, past execution of failed high-risk investment strategies, such as the Archegos cases and Greensill, and to the materialization of operational risks that significantly damaged the perception of their reliability, something fundamental in the banking business. This entity was, in fact, in a complex process of transforming its' business model and had been subject to significant liquidity withdrawals in the last quarter of 2022.

2.1.4. First Republic Bank

First Republic Bank, a California bank that was primarily dedicated to offering private banking and brokerage services, was the next and final case in this series. At the end of 2022, the entity had 68% of deposits that were not insured.[90] Although this bank initially benefited from some of the deposits leaving the SVB, outflows soon began to occur due to contagion effects in regional banks with high percentages of uninsured

[89]Bolton, P., Kartasheva, A. V., & Jiang, W. (2023). The Credit Suisse CoCo wipeout: Facts, misperceptions, and lessons for financial regulation. *Journal of Applied Corporate Finance,35*,p. 73.
[90] Note that in the case of SVB, 90% of the deposits were uninsured. Dinh, H. T. (2023). *The Current Banking Crisis and US Monetary Policy* (No. 1968). Policy Center for the New South.

deposits[91]. Deposit outflows increased after the SVB crisis on March 10. Despite liquidity support of over $100 billion[92] from the Fed, the Federal Home Loan Bank of New York (FHLB) and a consortium of the 11 largest US banks, and the entity's design of plans to increase its capital and restructure its business model, it continued to produce a strong outflow of deposits. Finally, on May 1, CADFPI closed the entity and designated the FDIC as administrator/receiver entity.[93]The FDIC agreed to JPMorgan Chase Bank's purchase of all of First Republic's deposits and a substantial portion of its assets, JPMorgan Chase being "already by a number of metrics the biggest bank in the United States."[94] This operation was carried out with an agreement between the FDIC and the acquiring entity to share the losses that could occur in the loan portfolio.

With the purchase of First Republic by JP Morgan at the beginning of May, the feeling is that the situation is quite under control, thanks to the rapid intervention and sale of the affected entities and the capital cushion from additional liquidity from FDIC.

All in all, currently, the movements of deposits within the American financial system would reflect that the crisis seems quite stabilized. Only during the epicenter of the tensions (mid-March 2023), there was a notable

[91] Nobanee, H., Hamill, P. A., Azmi, W., Chakraborty, D., & Nghiem, X. H. (2023). In search of a safe haven in times of turbulence: Effects of First Republic Bank failure on global asset markets. *Heliyon*, *9*(10).

[92] Cecchetti, S. G., & Schoenholtz, K. L. (2023). Making banking safe. *Available at SSRN*.

[93] Federal Deposit Insurance Corporation (2023a). *Op. cit.*

[94] Drumea, C. (2023). Financial Crisis Cyclicality in Europe under the US Financial Disturbances' Impact. A Logical Framework. *Ovidius University Annals, Economic Sciences Series*, *23*(1), p. 92.

outflow of funds from regional banks to large American banks. Therefore, the American authorities have managed to: protect depositors, minimize the risk for taxpayers and limit the loss of confidence in regional banks. Still, SVB and First Republic have been the two largest US banks to fail since the great financial crisis of 2008.

3. The Role of Supervision. Key differences between the European and American Banking Supervision

The observed events represent the first major test for the global banking system since the great financial crisis of 2008. This article does not address the perspective of resolution of entities, an issue addressed on a global scale by the FSB, which, mainly identified challenges in the implementation of the international resolution framework.[95] Therefore, we consider that it must be reflected from a double perspective: of the supervisors and of the post-crisis regulatory reforms that have been adopted. This part will analyze therefore, the facts and the possible regulatory and supervisory implications they could have.

When reviewing these cases, it is worth analyzing whether the supervision and regulation in force was capable of dealing with the problems emerging

[95] Financial Stability Board. (2023). 2023 Bank Failures: Preliminary lessons learnt for resolution. Available on: https://www.fsb.org/2023/10/2023-bank-failures-preliminary-lessons-learnt-for-resolution/, retrieved on 15.01.2024.

while also focusing on the key lessons drawn from this double perspective.[96]

The supervisors of the affected entities had detected the weaknesses[97] of said entities. As already seen earlier in this article, reports on the bank failures have been published by the U.S. authorities[98]. The conclusion of these reports is that "the management and board of directors of the failed banks pursued risky business strategies compounded, problematically, by weak liquidity and inadequate risk management, […] the supervisors had in fact identified several of the relevant vulnerabilities but had not been quick enough to escalate their supervisory actions, nor to insist or require the banks to respond more prudently while there was still time to do so."[99] However, as the reports[100] of the affected supervisory authorities explicitly recognize, they did not act quickly enough due to the slowness, and in

[96] Basel Committee on Banking Supervision. (2023b). Basel Committee to review recent market developments, advances work on climate-related financial risks, and reviews Basel Core Principles.Available on: https://www.bis.org/press/p230323a.htm, retrieved on 15.01.2024; Basel Committee on Banking Supervision. (2023c). Governors and Heads of Supervision endorse initiatives in response to the banking economy and reaffirm priority to implement Basel III. Available on: https://www.bis.org/press/p231109.htm, retrieved on 15.01.2024.
[97] Adrian, T., Moretti, M., Carvalho, A., Chon, H., Seal, K., Melo, F., & Surti, J. (2023). Good Supervision: Lessons from the Field, *IMF Working Papers, (181),* A001.
[98] See in this vein: Board of Governors of the Federal Reserve System (2023), Op. Cit.; Federal Deposit Insurance Corporation (2023), Op. cit.; Federal Deposit Insurance Corporation (2023b), Op. cit.; US Government Accountability Office (2023).Bank Regulation: Preliminary Review of Agency Actions Related to March 2023 Bank Failures. Available on: https://www.gao.gov/assets/gao-23–106736.pdf, retrieved on 15.01.2024.
[99] Adrian, T., Moretti, M., Carvalho, A., Chon, H., Seal, K., Melo, F., & Surti, J. (2023). Op. Cit., p. 8.
[100] Board of Governors of the Federal Reserve System (2023), Op. Cit.; Federal Deposit Insurance Corporation (2023), Op. cit.; Federal Deposit Insurance Corporation (2023b), Op. cit.; US Government Accountability Office (2023). Op. Cit.

some cases inefficiency of the internal supervisory escalation processes in decision-making and the absence of sufficiently effective supervisory measures (enforcement measures).According to the GAO report, "in the years prior to 2023, FRBSF and FDIC identified liquidity and management risks at SVB and Signature Bank—key drivers of the banks' failures. However, neither regulator's actions resulted in management sufficiently mitigating those risks."[101]

Regarding US entities, supervisory authorities have noted that, in some cases, they did not have sufficient human resources to carry out their tasks.[102] It should be noted, on the other hand, that the organization and structure of supervision in the United States is somewhat complex and includes different state and federal supervisory authorities, which perhaps in some cases could have slowed down decision-making, although this has not been explicitly noted in the reports of the US supervisory authorities. In the United States, banks can choose to obtain a state or federal license, without limiting their scope of operation. Under this scheme-in which the type of license does not limit the territorial scope of action-banking entities will be under the supervision of the authority that has granted them the license: the Office of the Comptroller of the Currency (OCC), if the supervisor is federal, or, if the supervisor is the state, the licensing authority of the State plus a federal supervisor, which may be a regional bank of the FRB or the FDIC.

[101] US Government Accountability Office (2023). Op. Cit., p. 3.
[102] Federal Deposit Insurance Corporation (2023b), Op. Cit.

Therefore, as a first major observation can be said that in the US, not only regulation but also supervision is quite fragmented as compared to those in Europe.

On the other hand, in the United States the intensity and application of supervision is based on size, which led to more lax supervision[103] of the entities targeted by the crisis. All of this meant a lack of a global supervisory vision and a more prospective approach to the business model and risk management of the supervised entities.

In all cases, the supervisors had detected, to some extent, the vulnerabilities of these entities that, subsequently, made them sensitive "by reducing consumer confidence"[104] and bringing forward the contagion. However, in view of what happened and the speed of contagion and market reaction, some areas of improvement are evident regarding the structure of supervision and the supervisory approach in relation to its global vision of the risks of the entities and their business model, as well as the speed of decision-making and measures to address the identified problems. These areas of improvement are not applicable to the same extent to all supervisors, as there are relevant differences between the United States and the European Union[105].

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[103] Alberni, M., Berges, Á., & Rodríguez, M. (2023). Interest rate risk in the banking book and financial instability: Europe versus the US.*, Funcas SEFO 12*, No. 4, p. 28.

[104] Alahmari, N., Mehmood, R., Alzahrani, A., Yigitcanlar, T., & Corchado, J. M. (2023). Autonomous and Sustainable Service Economies: Data-Driven Optimization of Design and Operations through Discovery of Multi-Perspective Parameters. *Sustainability*, *15*(22), 16003, p. 2.

[105] Enria, A. (2023). Well-run Banks Don't Fail–Why Governance Is an Enduring Theme in Banking Crises. Keynote speech by Andrea Enria, Chair of the Supervisory Board of the ECB, at the 22nd Annual International Conference on Policy Challenges for the Financial Sector organised by the World Bank, International Monetary Fund and Federal

One key aspect of the bankruptcy cases of the US entities is that these entities were not subject to the standards agreed on a global scale in the Basel Committee because they were not internationally active. In 2019, the deregulation process carried out during the presidency of Donald Trump gave rise to an approach ("tailoring rule"[106]) by which only the largest entities (with more than 700 billion dollars in assets) or with relevant cross-border activity (more than 75 billion dollars) were subject to all the defined requirements within the Basel framework (for example, liquidity standards or stress tests). This implied that, of the thousands of banking entities operating in the United States, only a group of around ten (including the eight globally systemically important banks with headquarters in that country) had to comply with all of these standards. Additionally, only around two dozen other entities (those that had total assets greater than 100 billion dollars) have to comply with standards similar (although relaxed in several aspects) to those agreed upon by the Basel Committee on Banking Supervision (BCBS). All the remaining entities, which comprised the ones implied in the current article (from the US), would benefit from a lax regulatory and supervisory framework. This relaxation in regulation after the 2007-2008 financial crisis, in the case of small and

Reserve System. *Washington DC*, *1*. Available on: https://www.bankingsupervision.europa.eu/press/speeches/date/2023/html/ssm.sp230601~0d92d89e8c.en.html, retrieved on 15.01.2024.

[106] Federal Reserve Board (FED) (2019). Federal Reserve Board rules that tailor its regulations for domestic and foreign banks to more closely match their risk profiles. Available online :https://www.federalreserve.gov/newsevents/pressreleases/bcreg20191010a.htm, retrived on 15.01.2024.

regional banks, mainly during the Trump administration meant that the banks analyzed in this article did not participate "in the federal stress tests, […] did not have to calculate the liquidity and interest rate risk ratios as redefined in the Basel guidelines, and in their case the requirements for the organizational system of risk management were also relaxed."[107] It can therefore be affirmed that relaxations of the regulations adopted during precedent crisis may and will eventually lead to new banking crisis, as the one of 2023. In this case an efficient counter measure would be the elimination of the relaxation "at least for banks with a balance sheet total of more than USD 100 billion."[108]

These criteria were connected with the less important systemic nature of the other entities and the intention to simplify the requirements for the smaller ones. However, as the FDR made clear in its revision of events[109], the reduction of standards and the increasing complexity of this approach prevented effective supervision of said entities[110]. The framework applied and the associated relaxation of supervision prevented the magnitude of the identified vulnerabilities from being adequately assessed and measures taken to address them. Furthermore, the cases described call into question the evaluation of the systemic nature of these entities, which, despite not

[107] Király, J., & Mikolasek, A. (2023). US bank failures Spring 2023: Part Two: Real risks, (mis) diagnoses, (mis) recommendations. *ECONOMY AND FINANCE: ENGLISH-LANGUAGE EDITION OF GAZDASÁG ÉS PÉNZÜGY*, *10*(4), p. 297.
[108] Idem.
[109] Federal Reserve Board. (2023a). Op. cit.
[110] This conclusion has led the Fed to review, in its proposal for the implementation of the Basel III framework, the so-called tailoring rule so that more entities are subject to the requirements agreed on an international level.

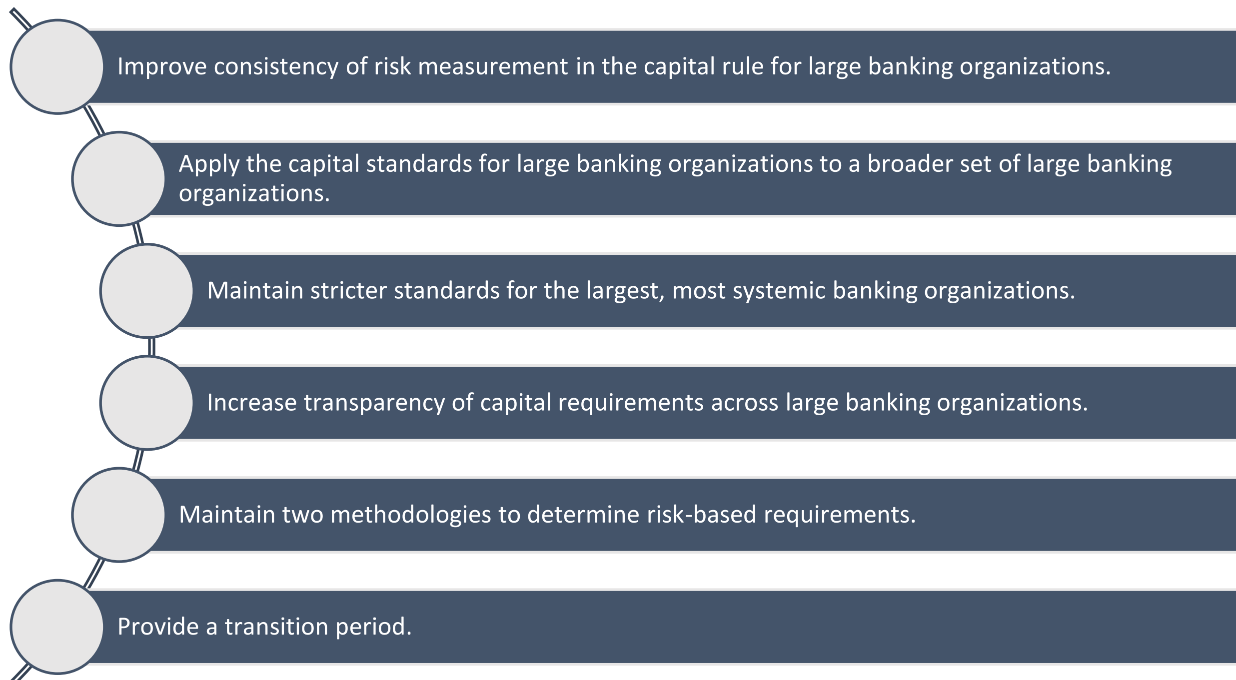
being among the largest, were larger than most entities in other jurisdictions and had sufficient capacity to cause national and cross-border contagion. This has been evident in the proposal for the implementation of the final Basel III agreement published for consultation[111] by the Federal Reserve Board, expanding the scope of the Basel III standards.

The Agencies implementing it, consider that the "proposal would improve the resilience of the U.S. banking system by modifying capital requirements for large banking organizations to better reflect their risks and apply more transparent and consistent requirements across large banking organizations"[112], mainly focusing on:

Figure 2. Overview of the Proposal

[111] Federal Reserve Board. (2023b). Agencies request comment on proposed rules to strengthen capital requirements for large banks. Available on: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20230727a.htm, retrieved on 15.01.2024.

[112] Federal Reserve Board. (2023b). Op. cit., Interagency Overview of the Notice of Proposed Rulemaking for Amendments to the Regulatory Capital Rule Applicable to Large Banking Organizations and to Banking Organizations with Significant Trading Activity, p. 2.



Source: made by the author

The first proposal focuses on the replacement of "internal-models-based capital requirements for credit and operational risk currently included in Category I or II capital standards with new, risk-sensitive standardized requirements (the "expanded risk-based approach") that would apply to all banking organizations with $100 billion or more in total assets (that is, banking organizations subject to Category I, II, III, or IV capital standards),"[113] while the second implies that "all banking organizations with $100 billion or more in total assets to calculate regulatory capital in a consistent manner, including by reflecting unrealized gains and losses on

[113] Idem, p. 2.

available-for-sale securities in regulatory capital to better reflect actual loss-absorbing capacity. Additionally, the proposal would require all banking organizations with $100 billion or more in total assets to meet the supplementary leverage ratio requirement and apply the countercyclical capital buffer, if activated."[114]

This approach is opposite to that from the euro area. Thus, in the Euro area, regulation does not differentiate between entities according to their size, which implies that all entities fall under the internationally agreed regulations, including capital and liquidity standards. This implies a certain homogeneity of the euro area entities, the smaller one being therefore better prepared for likely periods of stress than those from the U.S. As scholars acknowledge, "in Europe, even the smallest banks are regulated and supervised on the basis of the Basel principles, and within the European Union there are not only more and more regulations that cannot be changed by individual countries, but there are also fewer and fewer differences in the implementation of directives between countries."[115] This does not mean that banking regulation and supervision in Europe are perfect, but we should consider that in spite of the US banking crisis from 2023, this contagion did not impact the European banking system, particularly since "Switzerland is not part of the European Union and so does not fall under the region's banking regulation."[116]

[114] Idem, p. 2.
[115] Király, J., &Mikolasek, A. (2023). Op. cit., p. 296.
[116] Single Resolution Board. (2023). EU regulators distance themselves from Credit Suisse bond write downs. Interviews. Thursday, 30 March 2023, available online: https://www.srb.europa.eu/en/content/eu-regulators-distance-themselves-credit-suisse-bond-writedowns, retrieved on 23.01.2024.

The main areas of improvement in supervision highlighted due to recent crises refer to issues contemplated in the Basel Core Principles for Effective Supervision[117] and are among those highlighted by the International Monetary Fund in the lessons for supervision drawn, fundamentally, from its Financial System Assessment Programs[118]. Among the most relevant areas of improvement further on will be presented the most important ones.

First, we focus on the supervision of unbalanced business models which requires "diversification and balance of banking operations"[119]. In this respect can be mentioned the attention to the concentration of activities and operations in certain sectors and activities, especially those of recent and rapid expansion taking into account the challenges derived from the digital economy, crypto-assets, digital currencies, including those issued by central banks (CBDCs) and new technologies, but also the analysis of the sustainability of the business model with a prospective vision and identification of atypical cases. Therefore, scholars acknowledge that "banks should diversify and balance their business, that is, seek suitable investment and loan opportunities in different industries and markets, so as to improve the stability and sustainability of revenue and profit."[120]

[117] Basel Committee on Banking Supervision. (2012). Core Principles for Effective Banking Supervision. Available on: https://www.bis.org/publ/bcbs230.pdf, retrieved on 15.01.2024.
[118] International Monetary Fund. (2023). Op. Cit.
[119] Huang, Z. (2023). Analysis of Silicon Valley Bank Bankruptcy from the Perspective of Risk Management. *Financial Engineering and Risk Management*, *6*(3), p. 78.
[120] Idem, p. 78.

The interest rate risk is also a very important part of supervision. In this vein greater supervision of interest rate risk must be taken into account, as a consequence of significant duration gaps between the assets and liabilities of entities. Further on, the supervision approach is also very important. Thus, we mention the need for supervision to be based on risk assessment that takes into account a comprehensive vision of the entities, which also contemplates and assesses their governance and their planning of liquidity and of capital. Also, capital and liquidity requirements should be based more on a holistic view of entities. In addition, we consider that structure and sufficiency of supervision resources are very important. Supervision must be homogeneous regardless of the size of an entity, although it must be adapted to the type of business of each entity, taking into account proportionality criteria and consistency criteria between entities. Benchmarking analyzes help with this. Additionally, it must have sufficient supervisory resources adapted to the current complex framework, in which new assets and businesses have appeared (for example, fintech, crypto assets and relationships with non-bank intermediaries). On the other hand, resources must allow both in-depth analysis of certain risks (deep dives) and an appropriate balance between in-person (on site) and remote (off site) supervision, given that supervision requires on-site verification of the security systems, data management, procedures and infrastructure and the corporate culture of the entities. “Banks can also, according to their development strategies, constantly update their employees' ideas and optimize their knowledge

through phased training, online education and other channels, so as to create an excellent staff team of pure thinking, efficient work and learning, and promote the construction of bank risk management culture."[121] At the same time, the supervision of *liquidity management* has also raised many concerns. This imposes greater supervision of the liquidity available in entities in situations of liquidity stress, also assessing the management of guarantees and collateral available for use by entities and the potential degree rotation of its liabilities. Rapidity in taking supervisory measures is also a must since "there is a call for more proactive supervisory measures"[122]. The need to combine good and solid evidence with rapid supervisory action in the event of the appearance and detection of vulnerabilities, even if this implies the assumption of a certain level of legal risk by the supervisor. Legal risk should be assessed taking into account the supervisor's risk tolerance framework, but also the severity of the supervisory findings and the potential repercussions of failure to take early action. In addition to rapidity, the availability of an agile and flexible range of supervisory measures appropriate for the severity of each case (enforcement) and precise and clear definition of escalation processes, which allow improving the speed and agility of supervision and having sufficient and appropriate supervisory measures to complement minimum regulatory standards, depending on the seriousness of non-compliance or deviations from supervisory expectations, as well as the duration of non-

[121] Idem, p. 78.
[122] Corbet, S., & Larkin, C. J. (2023). The Implications of the Silicon Valley Bank Collapse. *Available at SSRN 4640800*.

compliance, are also needed. In order to implement all the mentioned measures there is also another necessity: that of the improvement of coordination between the different supervisory bodies.

Obviously, in all the analyzed cases, the first culprits were the administrators, who managed the banks with the aim of maximizing the short-term profits to which their managers' compensation is linked. However, the main responsibility lies with supervision, which is not sufficiently severe or effective. Although the anomalies of these banks (particularly in the U.S.) have been evident since at least 2017, the intensity of the commitment of supervisory resources, in terms of hours dedicated to monitoring these banks, has seen a progressive deterioration. The assessments of merit attributed to the various risk profiles, in particular those of liquidity and interest, had been largely overestimated and the corrective interventions requested by the supervisory authorities were not only largely ignored by the administrators but also not very timely. Supervision did not prevent these banks from continuing to grow at an accelerated pace nor was it able to impose the necessary changes, which implies the necessity for preventive supervisory measures[123].

In the case of Credit Suisse, it should be noted that this bank, due to its size and complexity, was classified as G-SIB[124], and that its supervision has faced greater complexities than those existing in medium-sized entities,

[123] Tuckman59, B. (2023). 4 Silicon Valley Bank: Failures In "Detective" And "Punitive" Supervision Far Outweighed the 2019 Tailoring of Preventive Supervision. SVB and Beyond: The Banking Stress of 2023, 60.

[124] Global systemically important bank.

such as US entities affected by the crisis. In this case, the nature and complexity of the business of these entities means that supervision faces greater challenges. For this reason, it would possibly be advisable to delve deeper into the analysis of the supervisory needs and the available supervisory resources and tools on a global scale. In this sense, the Swiss Federal Council[125] announced in March 2023 a general review of the framework on too-big-to-fail entities. On 17 May 2023 was established the creation of an independent expert group to analyze this issue known under the name of Expert Group on Baking Stability, having as "a mandate to present the FDF with independent strategic considerations on the role of banks and the framework in which they operate. The aim is to enhance the stability of the Swiss financial center."[126]

The conclusions of the Group focused mainly on (1) crisis management preparations, (2) liquidity gaps, (3) "additional and more effective powers and tools for banking supervision"[127] and (4) "enhanced transparency in the quality of capital."[128] As far as liquidity is concerned, the report stated that "ensuring access to liquidity even under difficult conditions is indispensable for banks. Digitalization has further increased the likelihood

[125]Federal Department of Finance. (2023). Credit Suisse/UBS: all federal guarantees terminated. Available online: https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-97300.html, retrieved on 15.01.2024.

[126]Federal Department of Finance (2023a). Report of the Expert Group on Banking Stability. The need for reform after the demise of Credit Suisse, Available online: https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-97593.html, Retrieved on 15.01.2024, p. 4.

[127] Idem p. 6.

[128] Idem, p. 6.

and speed of bank runs. Measures needed to address gaps in the liquidity mechanisms concern both the provision of emergency liquidity assistance by the SNB (ELA) and the subsidiary provision of liquidity guaranteed by the state to a bank in the event of resolution (PLB)."[129]

Summing up, the group presented as a recommendation the need to provide FINMA with the necessary tools to ensure appropriate liquidity management (ensuring that sufficient collateral is deposited in the SNB to guarantee access to liquidity) and the ability to intervene preventively before reaching the point of non-viability.

4. Prudential Regulation. Key differences between the European and American Banking Regulation

From a regulatory perspective, the work of the Basel Committee on Banking Supervision (BCBS) is highly relevant, particularly since, in March 2023, it announced its intention to collect and share information on these banking crises with the idea of learning the necessary lessons.[130] This work involved publishing a report with the conclusions of this initial report, and continuing to analyze the functioning of some areas of the Basel framework (such as those that address liquidity and interest rate risks) during these analyses.[131] The Committee highlighted that the

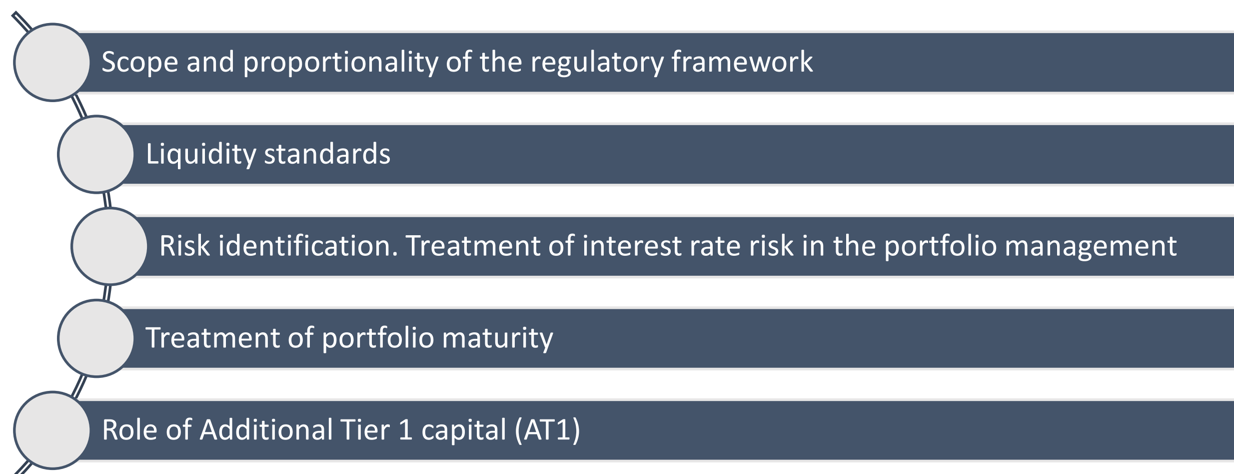
[129] Federal Department of Finance. (2023a). Op. cit., p. 5.
[130] Basel Committee on Banking Supervision. (2023b). Op. cit.
[131] Basel Committee on Banking Supervision. (2023c). Op. Cit.

implementation of the internationally agreed framework had protected the banking system from a more severe crisis. This is consistent with the fact that the current regulation "seeks to reduce the likelihood and impact of banking stress, while facilitating financial intermediation and economic growth"[132], and preventing bank failures from occurring. Furthermore, the Chair of BCBS has reinforced the importance of continuing to prioritize the coherent, complete and earliest possible implementation of the Basel III standards to ensure financial stability on a global scale. Despite a generally positive assessment, the appropriateness of reflecting on certain global prudential regulation has been raised. Indeed, the Basel Committee and the Financial Stability Board did promote a major package of rules in this regard. Still, as some scholars agree, "pushback from industry, however, has weakened this package (the EU is still Basel III non-compliant, and the US has many banks that 'escape' a number of Basel III rules, which technically apply only to 'internationally active institutions')."[133] as we shall see further on.

[132] BIS (2023). Reflections on the 2023 banking turmoil. Speech by Pablo Hernández de Cos, Chair of the Basel Committee on Banking Supervision and Governor of the Bank of Spain, at the Eurofi Financial Forum 2023, Santiago de Compostela, 14 September 2023, Available online: https://www.bis.org/speeches/sp230914.htm, retrieved on 15.01.2024.

[133] Dewatripont, M., Praet, P., & Sapir, A. (2023). The Silicon Valley Bank collapse: Prudential regulation lessons for Europe and the world. *VoxEU. org*, *20*, p. 4.

Some areas that deserve more analyzes on an international scale, listed by authorities, including the main ones involved[134] are:



1. *Scope and proportionality of the regulatory framework*. The US entities involved in the episodes described above were not subject to some of the internationally regulations. In this vein can be considered SVB, a bank which clearly "looks like an example of US failure in both regulation and supervision. Together with other banks, SVB had successfully lobbied Congress for weaker regulation, which allowed it (and others) to rely on held-to-maturity accounting, and to be exempted from the Basel liquidity coverage ratio (LCR) requirement."[135] Therefore, the observed facts could

[134] Federal Reserve Board. (2023a), Op. Cit.; Federal Deposit Insurance Corporation (2023), Op. cit.; Federal Deposit Insurance Corporation (2023a), Op. cit.; Federal Deposit Insurance Corporation (2023b). Op. cit.; Federal Department of Finance (2023a), Op. Cit.

[135] Dewatripont, M., Praet, P., & Sapir, A. (2023). Op. cit., p. 2.

respond to a greater extent to how the implementation has been carried out than to the functioning of the global prudential standards.[136]

The debate is based on the fact that the Basel Framework is applied to internationally active banks, without defining this concept, which grants discretion to national authorities when establishing the scope of said standards[137]. Furthermore, each jurisdiction can decide what requirements to define for its entities, and if we consider the cases presented from the United States, most of these entities fall under this aspect.

Taking into consideration the cases from the United States, authorities should focus on scope and proportionality of the regulatory framework, in this case the Basel III standards. SVB has shown that there are cases of banks that were not considered internationally active whose failure can have a systemic impact[138], both at the jurisdictional level and internationally. Therefore, it is worth considering the possibility of assessing the potential systemic impact, rather than international activity, when deciding its susceptibility to being subject to international standards (the function of which is both to compete on a level playing field and to preserve financial stability on a global scale).

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136 As an example, in the case of SVB, the capital framework that was applicable to it allowed a prudential filter to be applied to the losses of the portfolio of assets at fair value (which prevents unrealized losses from having an impact on the prudential capital). It is noteworthy that prudential filters had already been removed from the Basel framework after the 2008 financial crisis. US authorities are considering removing such filters from their prudential framework.

137 Basel Committee on Banking Supervision (BCBS). (2024). The Basel Framework. Bank for International Settlements 2024, available online: https://www.bis.org/baselframework/BaselFramework.pdf, retrieved on 17.01.2024.

138 Ziyao, Z., Yican, H., &Youzi, Z. (2023). Op. cit.

The Basel framework itself is based on the general principle that banks must be subject to supervision in accordance with their risk profile and systemic importance. Thus, if jurisdictions decide to use the principle of proportionality in a framework for entities other than internationally active ones, it is to reflect specific circumstances and supervisory capacity, as well as the nature of their business models. This proportionality could translate into simpler approaches, but the standards should not be diluted, which must remain at least as strict as those agreed in the Basel framework.[139] The banking crises of 2023 show that a reduction in standards[140] and their adjustments by implementing various other requirements can lead to a less effective system[141].

2.Liquidity standards. Liquidity problems were a common characteristic in all the cases described in the first and second part of the article. According to Borio et al., "the episodes of banking distress in March 2023 – including Silicon Valley Bank, Signature Bank and Silvergate Bank – highlighted the risks of holding liquid assets in the banking book and valued on a held-to-Maturity basis."[142] This opinion is supported by other scholars as well, who state that "recent bank failures such as Silicon Valley Bank point to factors

[139] Basel Committee on Banking Supervision. (2022a). *High-level considerations on proportionality*. Available online: https://www.bis.org/bcbs/publ/d534.htm, retrieved on 16.01.2024.
[140] Adrian, T., Moretti, M., Carvalho, A., Chon, H., Seal, K., Melo, F., & Surti, J. (2023). Op. Cit.
[141] Hauf, P., & Posth, J. A. (2023). Op. cit.
[142] Borio, C. E., Farag, M., & Zampolli, F. (2023). *Tackling the fiscal policy-financial stability nexus*. Bank for International Settlements, Monetary and Economic Department, BIS Working Paper 1090, p. 18.

such as asset-liability mismatch and liquidity risk."[143] Therefore, the liquidity framework should be evaluated to assess[144], based on recent events and the analytical evidence that can be extracted, if it requires any type of adjustment from a regulatory point of view. In this sense, it is worth continuing to analyze both the design of these standards and their calibration. In this respect, there are scholars in favor of draconian regulations. According to them there are several measures the authorities should take:

- "Strengthen the risk control of banks, including the establishment of a sound information disclosure system, risk assessment and control mechanism;
- Strengthen the supervision and punishment of bank related transactions and transfer of benefits; Strengthen supervision over banks' capital adequacy ratio and leverage ratio to prevent banks from lending excessively and taking unnecessary risks;
- Urge banks to strengthen the disposal of non-performing assets, timely replenish capital and other measures to improve their risk resistance ability, and formulate targeted "one action, one policy" risk resolution plan."[145]

[143] Gupta, J., Srivastava, A., &Alzugaiby, B. (2024). Schumpeterian creative destruction and temporal changes in business models of US banks. *International Review of Financial Analysis*, *91*, 102951, p. 4.
[144] Borio, C. E., Farag, M., & Zampolli, F. (2023). Op. Cit.
[145] Hauf, P., & Posth, J. A. (2023). Op. cit., p. 79.

In relation to CoCodesign, the Credit Suisse case forces regulators to reflect on the usability of High Quality Liquid Assets (HQLA), particularly since the entity made use of these assets to meet its financial obligations in terms of liquidity but also for day-to-day operational needs. On this account, a debate emerged considering whether the Liquidity Coverage Ratio (LCR)[146] should cover more risks than just the net asset balance in 30-day LCR scenario.[147] Furthermore, Credit Suisse's use of the buffer was also limited by the scrutiny to which the entity was subject (both by the supervisor and by the market). The obligation to report any non-compliance with liquidity requirements made them less willing to use said buffer.[148] In the case of risk control of banks, of key importance are "the evaluation of the liquidity buffer, potential financing needs and the elasticity of the overall balance sheet."[149]

The calibration of these standards, especially the LCR, is another aspect of the topics analyzed. The speed and magnitude of the withdrawals

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[146] Segal, M. (2024). Designing capital-ratio triggers for Contingent Convertibles. Available online: https://opinvisindi.is/bitstream/handle/20.500.11815/4526/PhD%20Thesis%20-%20Maxime%20Segal%20-%20electronic%20version.pdf?sequence=1, retrieved on 16.01.2024.

[147] Bindseil, U., & Senner, R. (2023). Destabilisation of bank deposits across destinations–assessment and policy options. *Available at SSRN 4534754*; Cottrell, S., Delpachitra, S., Ma, Y., & Jiang, P. Liquidity Regulation and G-Sibs' Default Risk. *Available at SSRN 4621044*.

[148] Swiss National Bank. (2023). *Financial Stability Report - June 2023.* Available online : https://www.snb.ch/public/publication/en/www-snb-ch/publications/financial-stability-report/2023/stabrep_2023/0_en/stabrep_2023.en.pdf, retrieved on 16.01.2024.

[149] Huang, Z. (2023). Op. Cit., p. 78.

observed in these cases[150] (due, for example, to the facilities provided by digitalization and the speed in the flow of information and contagion enabled by the Internet and social networks) call into question the definition of some of the parameters on which the LCR is based. Among others, it is worth highlighting the weights (outflow ratios) given to assets such as deposits (especially those not covered) or the period of time in which the design of the standard is defined (30 days). Scholars note that "in light of the 2023 runs on U.S. midsized banks, the LCR currently seems woefully inadequate. For example, it assumes a run-off rate of 10% within 30 days for uninsured deposits, whereas virtually all SVB's deposits either fled or sought to flee within 24 hours. Beyond 30 days, the LCR assumes a run-off rate of zero; while that is true in the case of SVB, it is so only because supervisors closed the bank on the second day of the run."[151] Regarding the first of these elements, given the high deposit withdrawals observed in the cases of US banks, some analysts began to carry out alternative LCR calculations in which they granted withdrawal rates higher than those set for retail deposits. It should also be remembered that the US entities involved in these cases were not subject to the liquidity requirements defined in the Basel framework. Indeed, as Basel III states "the liquidity coverage ratio (LCR) should be greater than 100% in the short term to cope with short-term liquidity shocks, but examples such as Silicon Valley Bank prove that the agreement is too broad and under-

[150] Király, J., & Mikolasek, A. (2023). Op. Cit.
[151] Cecchetti, S. G., & Schoenholtz, K. L. (2023). Making banking safe. *Available at SSRN*, p. 19.

regulated […], resulting in a lack of effective responses by banks when facing liquidity risks."[152]

An additional issue that has come up for debate and further analysis is the definition of HQLA[153]. Currently, the prudential framework does not require eligible assets to be carried at market value for accounting purposes to be eligible as HQLA. It does require that they be measured by their market value for calculation as HQLA in the liquidity ratios (so variations in this will have an impact on the regulatory ratio, but not on the entity's profit and loss account). The direct effect of introducing this modification would be that unrealized capital losses would have a direct impact on capital. However, this would result in greater volatility of the capital of the entities that would not necessarily reflect the expected final effect (to the extent that, in operating companies, those assets would be held until the maturity of the instrument). There are additional avenues that could be considered, such as stress tests[154] focused on liquidity (and its interaction with solvency) that could address situations where unrealized losses are of an unmanageable dimension, to ensure confidence of the agents on the solvency of the entity (such as what happened in the case of SVB).If we

152 Peng, X. (2023). Assessment of Banking Risk Management under COVID-19. *Highlights in Business, Economics and Management*, *15*, 188-193, p. 192.

153 The definition of LCR is "the ratio between High Quality Liquid Assets (HQLA) and the estimated value of net outflows over the next 30 days." For more information see Basel Committee on Banking Supervision. (2019). LCR Liquidity Coverage Ratio LCR30 High-quality liquid assets. BIS. Available online: https://www.bis.org/basel_framework/chapter/LCR/30.htm, retrieved on 16.01.2024.

154 Montanaro, E. (2023). Twenty years of prudential rules: Unfulfilled promises and challenges ahead. In *The Future of Multilateralism and Globalization in the Age of the US–China Rivalry* (pp. 110-131). Routledge.

consider recent cases, it can be claimed "that US stress tests failed to encompass – with hindsight fairly obvious – scenarios that eventually led to the demise of Silicon Valley Bank: pronounced and fast interest rate hikes."[155] From this perspective, the are commentators who argue that bank stress tests are a must for regulators, and especially "developing macro-prudential stress tests that simulate financial risk contagion and take into account all potential crisis scenarios to the extent possible; Build a financial risk monitoring indicator system, enrich the toolbox of prudent policies, further enrich the scenario indicators of stress test, include stock prices, unemployment rate, GDP growth rate and inflation rate of other countries and regions into the scenario indicators, and comprehensively evaluate the stability of the banking system under macroeconomic shocks from both domestic and international aspects, so as to prevent systemic financial risks."[156]

In any case, beyond the assessment that can be made about the functioning of the liquidity framework in relation to recent events, it is important to keep in mind that although effective[157], liquidity buffers cannot prevent extreme situations. There are scholars[158] who consider that

[155] Holzmann, R., & Nationalbank, O. (2023). Monetary policy in uncertain times: Towards robustness and resilience., Opening remarks for the 50th OeNB Economic Conference and the 60th SUERF Anniversary Conference on 22 May 2023, pp. 1-10, p. 7.
[156] Huang, Z. (2023). Op. Cit., p. 78.
[157] Chu, J. C. (2023). Bank asset problem and financial stability. *Available at SSRN 4649359*.
[158] González, F., & Triandafil, C. M. (2023). The European significant risk transfer securitization market. *ESRB: Occasional Paper Series*, *23*, pp. 1-39.

the significant risk transfer (SRT) securitization market stands as a solution in this case. According to González & Triandafil, "collapses of Silicon Valley Bank, Signature Bank and Credit Suisse might encourage banks to start using securitization more frequently to reap capital and liquidity benefits. The forced wipe-out of all Credit Suisse AT1 bonds imposed by the Swiss authorities triggered a surge in the premia demanded by investors for bank debt and common equity. More expensive funding and tougher capital raising conditions could incentivize banks to issue more securitizations for cost reasons."[159]

Finally, it is worth reflecting on the nature of standards such as the LCR, which, as observed in the stress period generated by the pandemic, could exacerbate pressures in times of turbulence when entities try to maintain levels above 100percentiles.[160] Analysis carried out by the BCBS indicated that banks are reluctant to use the liquidity provided by these standards, which, in practice, means that they can function as minimum requirements instead of as buffers.[161]

Based on what happened, it is necessary to find an answer to the following question: are there banks in which the same phenomenon is taking place? That is, having very short-term deposits, very exposed to short-term volatilities, and in return having assets that, although safe, are generating

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159 González, F., & Triandafil, C. M. (2023). Op. Cit., p. 36.

160 Basel Committee on Banking Supervision. (2022d). Evaluation of the impact and efficacy of the Basel III reforms. Available online: https://www.bis.org/bcbs/publ/d544.htm, retrieved on 17.01.2024.

161 Basel Committee on Banking Supervision (BCBS). (2021). Early lessons from the Covid-19 pandemic on the Basel reforms, July, Available online on: www.bis.org/bcbs/publ/d521.pdf, retrieved on 17.01.2024.

a low return or alternatively their market value has fallen. If this is the situation of a bank, the bank is in imbalance and runs the risk of suffering the same path as the previously mentioned banks. Unless, of course, the monetary authorities of the different countries guarantee the liquidity positions of the banks. One of the key elements that must be reviewed by regulation in this case is the deposit insurance policy, particularly in the U.S. There are voices who consider that "policymakers should reform deposit insurance to make resolutions less costly and to reduce the incentives for bank depositors to run. One option would be to expand coverage for critical business transaction accounts, while eliminating the existing regulatory arbitrage that permits coverage far in excess of per-account limits."[162]

3.Risk identification. Treatment of interest rate risk in the portfolio management (IRRBB[163]). This has been one of the most analyzed areas in the cases of US entities described in the previous sections also identified by the Federal Reserve among the four broad themes "with the goal of achieving soundness of financial institutions and the stability of the financial system as a whole."[164] The key question - beyond other more technical considerations - is whether the current treatment based on a Pillar 2

162 Acharya, V. V., Cecchetti, S. G., & Schoenholtz, K. L. (2023). Op. Cit., p. 148.

163 Interest rate risk in the banking book. In this vein see: Basel Committee on Banking Supervision. (2023). Standards. Interest rate risk in the banking book. April 2016. Available online: https://www.bis.org/bcbs/publ/d368.pdf, retrieved on 17.01.2024.

164 Anginer, Deniz and Liu, Jinjing and Schipani, Cindy A. and Seyhun, H. Nejat, Executive Compensation and Bank Stability (December 14, 2023). Fordham Journal of Corporate and Financial Law, Forthcoming, Available at SSRN: https://ssrn.com/abstract=4666896, pp. 26-27.

(supervisory approach) and Pillar 3 (market information) framework adequately addresses this risk[165]. The recent crises of American regional banks and of the crisis of Credit Suisse, have shown the dramatic effects of inadequate supervisory policies, as well as the failure to implement prudential rules on the IRRBB and risk of concentration, both of which are part of Pillar 2, that of supervision[166].

On the one hand, there are arguments in favor that the correct implementation of the standard agreed after the global financial crisis (through pillars 2 and 3) would be sufficient to mitigate said risk, including the cases observed in which US entities were not subject to all the requirements of the standard. Accordingly, the implementation of such a framework captures future impacts of movements in interest rates, including those that may arise from unrealized losses due to changes in rates. In addition, public disclosure requirements impose the market discipline necessary for banks to manage prudent risk.

On the other hand, there are arguments that would support the development of a Pillar 1 framework to ensure consistency in internationally capital requirements. These are based on the idea that the information collected about risk and how banks identify and measure it

[165]Dasgupta, K. (2023). Information Content and Pillar 3 Disclosures. In Mandatory Financial Disclosures and the Banking Sector: A Principal-Agent Framework (pp. 107-148). Cham: Springer Nature Switzerland.

[166] Montanaro, E. (2023). La vigilanza bancaria. Storia, teorie, prospettive di Lorenzo Esposito e Giuseppe Mastromatteo: un articolo di recensione. *Moneta e Credito*, *76*(302), 133-155, pp. 134-135.

would not be enough to homogenize the capital requirements on an internationally scale or to address such risks.

4.Treatment of portfolio maturity. As explained the previous sections, unrealized losses resulting from increases in interest rates were determining factors in the problems experienced by these entities. This debate[167]is not a new one, but was already present before the crises of these entities. Given that, in times of stress, entities may need to sell such securities, since accounting for them at market value would ensure that banks have sufficient capital to absorb the associated losses. However, such a drastic measure would increase the volatility and procyclicality of regulatory capital. In addition, the regulatory framework already has other tools (such as liquidity standards, IRRBB or supervisory actions via Pillar 2) that are responsible for evaluating and addressing the problems associated with these unrealized losses regardless of their accounting classification. In this respect, in July 2023 ECB issued a report in which "collected data on the unrealized losses of significant institutions under its direct supervision with a view to enhancing the assessment of risk in the held-to-maturity portfolios of euro area banks and to furthering its monitoring of interest rate risk and liquidity risk."[168]

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[167] Knaup, M., & Wagner, W. (2012). A market-based measure of credit portfolio quality and banks' performance during the subprime crisis. *Management Science*, *58*(8), 1423-1437; Entrop, O., Memmel, C., Ruprecht, B., & Wilkens, M. (2015). Determinants of bank interest margins: Impact of maturity transformation. *Journal of Banking & Finance*, *54*, 1-19.

[168] European Central Bank. (2023). Unrealized losses in banks' bond portfolios measured at amortized cost. 28 July 2023, p. 1. Available online:

5.Role of additional Tier 1 capital (AT1). The Credit Suisse case, in which AT1 instruments (convertible bonds, or CoCos) were redeemed assuming losses before CET1[169], gave rise to a debate on the priority order of AT1. In this case, the entity continued paying coupons and recording losses, while reaching the point of non-viability, before reaching the threshold of automatic conversion into shares (also calibrated, in Switzerland, at 7% CET1, higher than that established in the Basel Framework, which corresponds to 5.125% CET1). In contrast, according to article 34(1)(a) of the European Bank Recovery and Resolution Directive[170] ('BRRD') 'Member States shall ensure that … resolution action is taken in accordance with the following principles: (a) the shareholders of the institution under resolution bear first losses …'[171]. In spite of this regulation, "the bonds were written down, and CS's shareholders received UBS shares worth USD 3.25 billion under the bailout deal."[172]

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https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.Report_unrealised_losses~445dcf8a99.en.pdf, retrieved on 17.01.2024.

[169] Common Equity Tier 1. For more information see: Basel Committee on Banking Supervision. (2011). Basel III definition of capital – Frequently asked questions September 2017 (update of FAQs published in December 2011), Available online: https://www.bis.org/bcbs/publ/d417.pdf, retrieved on 17.01.2024.

[170] Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council Text with EEA relevance, OJ L 173, 12.6.2014, p. 190–348.

[171] Idem, art. 34(1)(a).

[172] Paz Valbuena, J., & Eidenmüller, H. (2023). Bailout Blues: the Write-Down of the AT1 Bonds in the Credit Suisse Bailout. *European Corporate Governance Institute-Law Working Paper*, (705), p. 2.

This has once again called into question the ability of these instruments to absorb losses. In the past, the BCBS has evaluated the functioning of these instruments and has shown that investors would react negatively to the suspension of an AT1 coupon payment, which, furthermore, would occur only in exceptional circumstances, since a message would be sent to the market about the non-viability of the issuing bank.[173] In the case of Credit Suisse, in the justification of their decision to write down AT1 bonds, FINMA stated it was first the (1) contractual basis since "the AT1 instruments issued by Credit Suisse contractually provide that they will be completely written down in a "Viability Event", in particular if extraordinary government support is granted. As Credit Suisse was granted extraordinary liquidity assistance loans secured by a federal default guarantee on 19 March 2023, these contractual conditions were met for the AT1 instruments issued by the bank;"[174] and second, the (2) Federal Council's Emergency Ordinance which authorized "FINMA to order the borrower and the financial group to write down Additional Tier 1 capital."[175] This was harshly criticized and conducted to "legal action by the affected bondholders, which is ongoing in the courts."[176] Therefore,

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[173] Basel Committee on Banking Supervision. (2022d). Op. Cit.

[174] FINMA. (2023). Press release FINMA provides information about the basis for writing down AT1 capital instruments. Available online: https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/8news/medienmitteilungen/2023/03/20230323-mm-at1-kapitalinstrumente.pdf?sc_lang=en&hash=821DB4A410097CE21C86C97030BE5022, retrieved on 18.01.2024.

[175] Idem.

[176] Shikha, N., & Kapsis, I. (2023). Op. cit., p. .See also Walker, O., Morris, S., & Smith, R. (2023). Credit Suisse staff prepare to sue regulator FINMA over lost AT1 bonuses.

the case of Credit Suisse shows that situations of value transfer from investors in AT1 to shareholders can occur, and these instruments have limitations in being able to be amortized, which raises the need to reconsider its design and improve the transparency of its characteristics to the market. The EU authorities[177] quickly made perfectly clear that a similar treatment of AT1 bondholders is not viable in the eurozone.

5. Conclusions

The world economy faces a new phase in the process of searching for new balances after the accumulation of shocks in recent years. And in that transition, for the first time in the last decade, it will be tested the dual mandate of central banks - inflation and financial stability - once the intense tightening of financial conditions begins to give rise to sources of tension. A decade after the last financial crisis, supervision and regulation must adapt to new challenges.

The Silicon Valley Bank crisis (along with the other banking crises from the U.S.) and its reverberations in Europe (Credit Suisse) has not been a game changer, but a notice that financial stability, supervision and

Financial Times, May 23. Available online: https://www.ft.com/content/b93216e7-b54b-42a1-a283-ce0dc5b476b4, retrieved on 18.01.2024.

[177] ECB. (2023a). ECB Banking Supervision, SRB and EBA statement on the announcement on 19 March 2023 by Swiss authorities 20 March 2023, available online: https://www.bankingsupervision.europa.eu/press/pr/date/2023/html/ssm.pr230320~9f0ae34dc5.en.html, retrieved on 25.01.2024.

regulation of the financial system face new challenges, almost a decade after the changes applied after the Great Financial Crisis. What is clear is that, nine months after the beginning of the tensions in the US, the focus of financial stress seems quite controlled and, although it is too early to estimate the impacts, we are very far from a situation of credit-crunch. In addition, so far, "the US banking sector remains resilient, with significant risk-absorbing capacities."[178]Contagion from the US has been limited, with the exception of Credit Suisse, which already had significant reputation problems. Even the AT1 market (convertible contingent bonds) has been gradually recovering in spite of having caused a major disruption when the investors in these instruments at Credit Suisse lost the entire value of their investments before shareholders, altering the order of priority. The Swiss National Bank recognized in its latest Stability Report[179] that the Credit Suisse crisis has revealed that: 1) liquidity buffers were insufficient to address such an intense outflow of deposits, 2) the triggers to execute the AT1 were inadequate, since they did not trigger when the financial health of the bank was already very precarious and 3) the excess capital did not function as a safety net. On the American side, in its latest Financial Stability Report, the FED[180] detected the main points of fragility: 1) "asset valuations, 2) borrowing by businesses and households, 3) financial-sector

[178] Munteanu, B. (2023). Banking Distress-A Comparative Approach of Two Business Cases in the Banking Sector in USA in 2023. *Europolity-Continuity and Change in European Governance*, *17*(1), p. 123.
[179] SNB. (2023). Op. Cit.
[180] Board of Governors of the Federal Reserve System ("Federal Reserve"). (2023a). Financial Stability Report October 2023.

leverage, and 4) funding risks"[181]. The banking crises that occurred between March and May 2023 have been the main test for the sector since the global financial crisis. Despite the differences in each case, it is possible to draw a series of relevant conclusions for the authorities:

1.Risk management by entities, their ability to develop their business model in a sustainable manner and the governance by which they are governed are very important in avoiding crises such as those analyzed.

2. The importance of supervision and the importance of their ability to identify problematic practices and to act quickly to correct them.

3. The need to complete the full and coherent implementation of internationally agreed regulatory standards, which have been shown to have increased the resilience of the banking sector. In parallel, it is advisable to continue reviewing the operation of elements of the regulatory framework identified in these cases.

In summary, the recent financial tensions resulting from the worsening financial position of Silicon Valley B, Signature Bank, First Republic Bank and Credit Suisse have caused a new disruption, forcing supervisors and regulators to face exceptionally high levels of uncertainty. In this context, the future decisions must be guided by prudence.

This has led international organizations such as the BCBS or the IMF to focus on the need to strengthen the effectiveness of supervision to ensure

[181] Board of Governors of the Federal Reserve System ("Federal Reserve"). (2023a). Financial Stability Report October 2023, p. 1. Available online: https://www.federalreserve.gov/publications/files/financial-stability-report-20231020.pdf, retrieved on 19.01.2024.

that problems of this type can be identified and corrected in time. For this reason, projects are already being developed on a global scale (and also nationally, in countries such as the United States, U.K. or Switzerland) that aim to address these aspects. On the other hand, although these cases have put the regulatory framework back on the table, it will be necessary to continue analyzing and evaluating, on the basis of robust empirical evidence, the functioning of said framework before drawing conclusions about the suitability, or not, to adjust it.

The financial turbulence has been moderating in recent months, reflecting the idiosyncratic nature of the SVB, Signature Bank, First Republic Bank and Credit Suisse episodes and the adequate response of the affected central banks. This first episode of crisis caused by monetary tightening has highlighted both the weaknesses in the business models of some American regional financial entities, as well as the failures in their regulation and supervision. Such marked and intense increases in interest rates constitute a demanding stress test for entities that present weaknesses in solvency and/or liquidity. The positive news is that the contagion has been quite limited. But we must be aware of the difficulties that central banks will face as they approach the final moment of the process of raising interest rates. Once again it becomes clear that the financial chain is only as strong as its weakest link, which implies the need to have high standards of supervision and regulation, regardless of the size of the entities. Thus, it is necessary to investigate whether due to the possibility of this type of phenomena occurring, differentiated banking

regulation by size of the organizations is justified, in which the largest banks face more demanding regulation than medium-sized banks and little ones.

This story of the 2023 Banking Crisis is just being written. It is necessary to continue monitoring it to prevent it from deepening and to mitigate greater risks. Finally, the question is where the next sources of instability may be.