GLOBAL FINANCIAL STABILITY

NOTES

The US Banking Sector since the March 2023 Turmoil: Navigating the Aftermath

Tobias Adrian, Nassira Abbas, Silvia L. Ramirez, and Gonzalo Fernandez Dionis

NOTE/2024/001

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March 2024

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Abbreviations

AFS	available for sale
BTFP	Bank Term Funding Program
CRE	commercial real estate
FDIC	Federal Deposit Insurance Corporation
FHLB	Federal Home Loan Banks
FRB	First Republic Bank
HTM	held to maturity
KRI	Key Risk Indicator
RMBS	residential mortgage-backed securities
SBNY	Signature Bank of New York
SVB	Silicon Valley Bank

Abstract

In March 2023, the US banking sector turmoil sent a shockwave through the global financial system. Silicon Valley Bank (SVB), the 16th largest bank in the country, collapsed in a matter of days, followed by Signature Bank (SBNY) and First Republic Bank (FRB), marking the largest bank failures after Washington Mutual Bank in 2008. Triggered by sizable deposit outflows, this event raised concerns about the soundness of the rest of the US banking sector, in particular, other banks of similar or smaller size with large amounts of uninsured deposits, unrealized losses, and commercial real estate exposures. The March turmoil is a powerful reminder of the challenges posed by the interaction between tighter monetary and financial conditions and the buildup in vulnerabilities—challenges amplified by ineffective interest, liquidity, and credit risk management practices at some banks. This note offers an analysis of the main attributes of the affected banks to assess the extent to which vulnerabilities persist in a weak tail of banks.[1] Furthermore, the note provides a prospective assessment by evaluating the medium-term risks to financial stability posed by this weak tail.

[1] SVB, SBNY, and FRB were considered large banking organizations given the size of their balance sheets according to the Federal Reserve's supervisory classification. However, market participants qualified them as super-regional banks because they were larger than community banks and smaller than the largest banks in the United States. For more details, Federal Reserve Board - Approaches to Bank Supervision.

Introduction

In March and April of 2023, the global financial system experienced the most significant banking stress since the global financial crisis. The collapse of a few US banks, classified as large institutions, highlighted the lack of preparedness of some financial institutions for the higher interest rate environment after a long period of low rates. Between March 2022 and September 2023, amid stubbornly high inflation, the Federal Reserve increased the effective federal funds rate by 525 basis points—the fastest monetary tightening cycle since the 1980s, bringing the policy rate to levels not seen since before the global financial crisis.[2] After years of extremely low interest rates and easy financial conditions, the tightening of monetary policy to bring inflation back to target unmasked lingering fragilities in a weak tail of banks that required forceful action by the US authorities to prevent a systemic risk event that would have endangered the broader financial system.

Could the March turmoil have been anticipated? Several factors contributed to the banking stress and some of them could have acted as warning signals about the soundness of some banks in a higher rate environment. Indeed, despite clear communication by monetary authorities, the speed, and the magnitude of the increase in interest rates turned out to be a challenge for some institutions. Some bank management teams failed to adequately manage the associated interest rate and liquidity risks, presumably assuming inflation would be transitory. However, the unprecedented policy support deployed during the pandemic to keep the economy afloat led to an exceptional rise in savings. These savings fueled a surge in banks 'deposits, a large part of which had been invested by banks in longer-duration securities with considerable interest rate risk. Initially, strong loan growth and slower repricing of deposits contributed to a widening in net interest margins. As interest rates continued to rise, however, banks faced increased financing costs and a decline in the market value of their securities' holdings. This resulted in a sharp increase in unrealized losses on held-to-maturity (HTM) and available-for-sale (AFS) portfolios. Moreover, depositors moved into higher-return products like money market funds, which led to an acceleration of deposits' outflows. Although traditionally higher interest rates benefit banks' profitability, the events in March of last year showed how underestimated duration risk had been in the current monetary policy tightening cycle.

The failure of SVB in March 2023 acted as a catalyst and revealed structural challenges facing the business models of some US banks. Market sentiment became self-fulfilling and led to deposit outflows at certain institutions,[3] further feeding into investors' concerns. The March 2023 turmoil potentially showed the growing influence of technological advances, such as mobile banking and the rapid spread of information through electronic communications, could have contributed to the speed of the deposit run.[4] Within days, SVB and SBNY failed, marking the second- and third largest bank failures in US banking history.[5]

The US banking sector stress added to market uncertainty. Global stock markets recorded a sharp decline, with bank indices losing ground very quickly and volatility increasing sharply.
The forceful response by policymakers to stem systemic risks avoided broader contagion by providing emergency liquidity and safeguarding depositors. The Federal Reserve played a pivotal role in limiting

[2] Federal Reserve Financial Stability Report, October 2023, p. 26, Financial Stability Report October 2023 (federalreserve.gov); and FDIC Quarterly, p. 46, FDIC Quarterly 2023 Vol 17 No 4

[3] Banks above $250 billion in total assets received deposit inflows during the period suggesting a re-allocation of deposits from small banks to large banks. Federal Reserve Bank of New York Liberty Street Economics, May 11, 2023,

[4] For more details: Michael S. Barr, 2023. "The Importance of Effective Liquidity Risk Management." December 1. For a historical comparison of past bank runs, see "Global Financial Stability Report: A New Look at Global Vulnerabilities" (IMF 2023

[5] Until the failure of FRB when they became the third- and fourth-largest bank failures in US banking history.

contagion to the rest of the US banking sector and avoiding market dysfunction. A new facility (the Bank Term Funding Program or BTFP) provided banks with funding at par with no margin applied to the eligible collateral and contributed to the restoration of confidence in the US banking system. In addition, the Federal Deposit Insurance Corporation made uninsured depositors of SVB and SBNY whole, based on the "systemic risk exception." Given the interconnectedness of the financial system, the SVB collapse showed that even a non-global systemically important institution can pose serious risks to financial stability.

US regional banks have experienced a broad recovery since the turmoil of March 2023. Following the acute stress triggered by the collapse of SVB, aggregate financial indicators of the group have shown improvements. Between March 2023 and January 31, 2024, deposit outflows stabilized, and the KBW Regional Bank Equity Index rebounded. However, vulnerabilities in the US banking sector persist. Shifts in market expectations regarding the timing and pace of interest rate cuts in the United States, coupled with substantial losses announced by a major US regional bank heavily exposed to commercial real estate (CRE), prompted a 10 percent decline in corresponding index,[6] highlighting that investor confidence in the sector remains unsteady. Concerns persist towards banks that have high levels of unrealized losses stemming from the recent interest rate increase and large potential liquidity pressures arising from uninsured deposits. Other forms of less stable funding and are now particularly salient for banks with concentrated exposures to CRE.

This note offers an analysis of the key attributes of the affected banks to assess the extent to which key vulnerabilities persist in a weak tail of banks. The classification of banks follows the Federal Reserve's supervisory definition and considers regional those banks with assets between \$10 billion and \$100 billion, large banks those with assets above \$100 billion, and small banks below \$10 billion.[7] This split can potentially lead to a heterogenous group of banks with differing business models under the same "large bank" category, but the banks in this group are not the main focus of this note. SVB and others large banks do not fall under this category according to the Federal Reserve definition, even though market commentary often refers to them as "regional banks." In addition, the analysis superimposes the key risk indicators methodology developed by the October 2023 *Global Financial Stability Report* chapter, "A New Look at Global Banking Vulnerabilities" on a subset of publicly listed institutions to identify a weak tail of banks. The note also provides a forward-looking assessment by evaluating the medium-term risks to financial stability posed by this weak tail and conclude with a set of policy considerations focusing mainly on the market perspective.[8]

1. Financial Markets Shaken by Silicon Valley Bank Failure

The collapse of SVB triggered a substantial impact on financial markets. This stress was the most important sector-specific shock since the global financial crisis. Stock prices of small and regional banks plummeted. Market volatility increased sharply. The stress rapidly extended to the short-term funding market, resulting in a sharp tightening of financial conditions (Figure 1, panels 1 and 2). The banking turmoil also led to a sudden flight to quality in the sovereign bond market and an unprecedented repricing of market rate expectations. Bank equity has broadly recovered since the March 2023 turmoil, whereas aggregate deposit indicators also show improvements (Figure 2, panel 1).

It is worth noting that unlike the 2008 subprime crisis, which rippled across the entire financial system, the current stress seems to be more contained, so far. However, investors remain particularly vigilant towards

6 KBW Regional Bank Equity Index

7 For more details, Federal Reserve Board - Approaches to Bank Supervision.

8 For a supervisory perspective of the events, see "Good Supervision: Lessons from the Field" (IMF 2023) and the blog coauthored by Tobias Adrian, Marc Dobler, Marina Moretti, "How Last Year's Bank Failures Offer Lessons for Further Reforms."

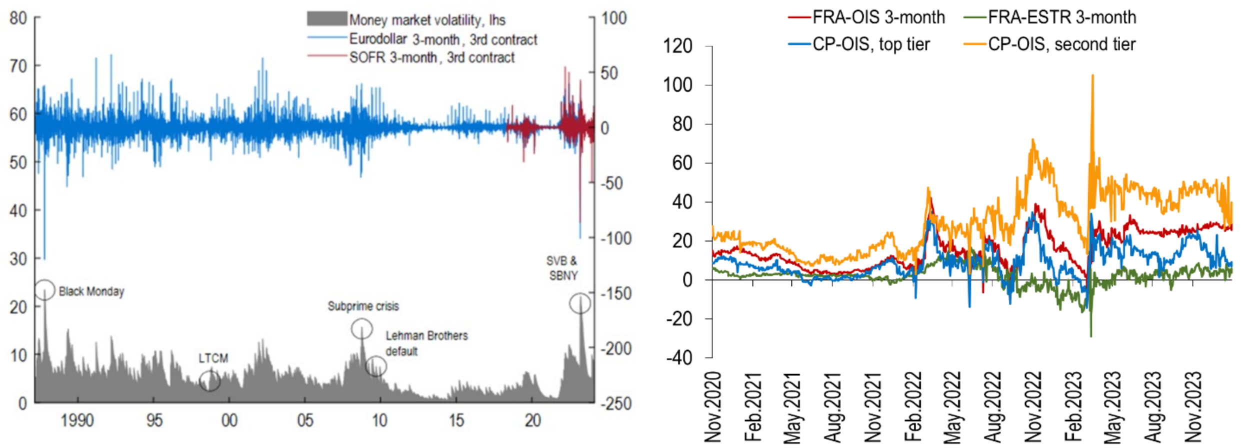
the developments in the regional banking system (banks with assets between $10 billion and $100 billion) given the role it plays in the financing of the real economy, in particular local businesses and the CRE sector.

Figure 1. Financial Markets Grappling with a New Banking Turmoil

Financial Markets experienced a sharp volatility and some tensions in the short-term markets.

1. US Changes in Near-Term Policy Expectations vs. Main Risk Events *(Basis points)*

2. Interbank Funding Spreads in the United States and the Euro Area *(Basis points)*



Sources: Bloomberg Finance L.P., Federal Reserve, and IMF staff calculations. Note: CP= US commercial paper index; CP-OIS = CP-OIS; FRA-OIS= FRA-OIS; FRA-ESTR= FRA-ESTR; FRA = Forward rate agreement; ESTR= Euro short-term rate; OIS= Overnight index swap; LTCM = Long-Term Capital Management; SBNY = Signature Bank of New York; SVB = Silicon Valley Bank ; SOFR = Secured overnight financing rate.

The fear of a broader contagion has been top of mind for policymakers since the onset of the March 2023 turmoil. To contain further fallout, US financial regulators enacted a series of bold measures. US authorities[9] announced on March 12, 2023, a guarantee of all SVB and Signature Bank of New York (SBNY) uninsured deposits by using the systemic risk exception.[10] While such guarantees are explicitly prohibited from being extended to all banks and may raise the question of moral hazard and risks to the public sector balance sheet, markets felt reassured that US regulators would do "whatever it takes" to prevent a broader contagion.

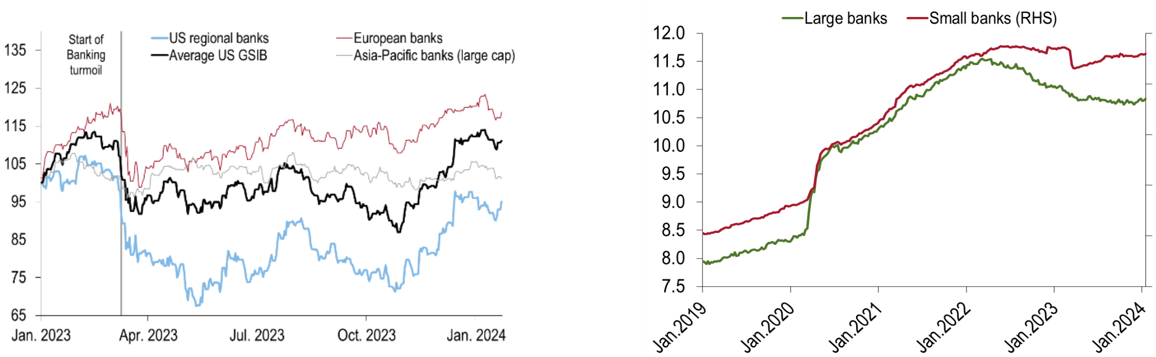
[9] The Secretary of Treasury, in consultation with the President, approved the systemic exemption. See announcement through joint statement of the Treasury, Federal Reserve, and FDIC: https://www.fdic.gov/news/press-releases/2023/pr23017.html

[10] FDIC Press Release: PR-17-2023 3/12/2023

Figure 2. Bank Equity Indices and US Banks' Deposits

The banking sector has broadly recovered since March, except for US regional banks while deposit outflows stabilized.

1. Selected Equity Indices *(Prices, indexed January 1, 2023, = 100)* **2. US Bank Deposits** *(Trillions of US dollars)*



Sources: Bloomberg Finance L.P., Federal Reserve, and IMF staff calculations.
Note: US Regional Banks index refers to the KBW Bank Index which broadly includes banks between $10 and $110 billion in assets; GSIB = Global systemically important bank.

In addition, the Federal Reserve responded quickly and put in place a temporary liquidity facility, the BTFP, which provide US depository institutions an alternative to the discount window in support of its role as the lender of last resort. The loans are longer dated than discount window operations and can be extended up to one year at an interest rate equal to the overnight index swap rate plus 10 basis points (fixed for the life of the advance). The very attractive conditions of this facility allowed banks to generate liquidity to ensure banks "have the ability to meet the needs of all depositors," without selling securities and crystallizing mark-to-market losses caused by higher interest rates. The program will terminate in March 2024, after which no new loans will be accepted, but banks will be able to continue paying back loans until the end of their initial term).[11] Banks borrowed $12 billion on March 15, 2023. The borrowing amount has been increasing since then, reaching $165 billion as of February 20, 2024. This increase is explained by the attractiveness of the rate offered leading to some arbitrage with the rate offered on reserves. On January 24, the Federal Reserve announced a floor on the rate for new borrowings such that the rate on new BFTP loans equals the rate paid on reserves.

2. A Forward-Looking Assessment of the US Banking Sector[12]

After the collapse of SVB and its ripple effects on other large banks,[13] investors immediately shifted their attention to a wider group of banks that also faced challenges from the high interest rate environment. In this section, we apply the common set of characteristics that defined the weak tail of banks and made them more vulnerable to potential bank runs during the March 2023 turmoil to the US banking system. We provide certain data points by asset size to highlight important differences in trends across bank categories. We acknowledge that this split can potentially lead to a heterogeneous group of banks with differing business models under the same "large bank" category.

[11] On January 24, 2024, the Board of Governors of the Federal Reserve announced the end of the BTFP as scheduled on March 11, 2024.

[12] For a more comprehensive analysis of bank characteristics for the weak tail of banks, see: The US Banking Sector since the March 2023 Turmoil: Navigating the Aftermath" (Abbas and others 2024 in the *Euro Yearbook 2024* (ed. F. Fernandez) Fundacion Analistas Financieros and Fundacion ICO.

[13] See box 1 and 2.

SVB, SBNY, and FRB had a high concentration of uninsured deposits, substantial unrealized losses, and/or high CRE concentration prior to failure. In March after the failure of SVB and SBNY, depositors and investors became concerned, first about liquidity and then about the financial soundness of banks matching a certain profile with various attributes including: (1) sizable deposit outflows; (2) high concentrations of uninsured deposits; (3) reliance on borrowing and higher use of liquidity facilities, (4) substantial unrealized losses; and (5) high exposure to CRE. Although, the high level of uninsured deposits and sizable deposit outflows were unique characteristics of the failed institutions (SVB, SBNY, and FRB), our analysis identifies a group of small and regional banks that have sizable uninsured deposits to total deposits, sizable unrealized losses, high concentration to CRE, and increased reliance on borrowings after the March 2023 stress.

1. Deposit flows

Bank deposits surged in a period of low interest rates following the onset of the COVID-19 pandemic. In the first quarter of 2020, deposits recorded the largest quarterly growth since the early 1980s (Figure 6, panel 1). Several factors contributed to the surge in deposits: (1) cash payments to segments of the population as part of fiscal stimulus measures to boost the economy; (2) a high personal savings rate; (3) the creation of deposits by the Federal Reserve's asset purchase program; and (4) the drawdown in commercial and industrial credit lines. By the end of 2021, deposits reached $18.9 trillion and were 39 percent above pre-pandemic levels. As interest rates increased, deposit costs rose slowly, and deposits declined in 2022.

This trend accelerated in the first quarter of 2023 as the opportunity cost of holding deposits increased due to considerably better yields in money-market mutual funds (Box 2, Figure 2, panel 1). Broader concern about the solvency of certain banking institutions also led to deposit outflows and quarterly data showed the largest decline (Figure 3, panel 1). About 11 percent of the total of number banks in the sample experienced uninsured deposit outflows greater than 5 percent of total deposits in the first quarter of 2023, with a larger number of regional banks reporting deposit outflows than other banks.[14] Contrarily, banks above $250 billion experienced deposit inflows in March 2023 suggesting a reallocation of deposits from small banks to large banks during the stress period.[15]

Rapid government intervention and the availability of funding facilities restored confidence in the banking sector. Deposits stabilized at $18.6 trillion in the second quarter as small and regional banks increased deposits (Figure 2, panel 2). Deposits stood at $18.7 trillion in the fourth quarter of 2023, up 1 percent from the second quarter of 2023.

2. Increased reliance on other sources of borrowing

Banks turned to other sources of borrowing as a precautionary measure to help address investors' concerns and to safeguard their liquidity against the possibility of increased volatile behavior from their deposit base. They resorted to advances from the Federal Home Loan Banks (FHLB), credit from the Federal Reserve discount window and emergency lending program and brokered deposits. In the first quarter of 2023, FHLB lending surged after SVB's collapse, increasing significantly more for regional banks and large banks compared to small banks. Similarly, other non-FHLB borrowings also increased as banks accessed the BTFP facility, with non-FHLB borrowing increasing more for regional banks than for small and large banks. This trend suggested regional banks were potentially the main users of the BTFP

[14] Estimates of uninsured deposits are only available for banks with total assets greater than $1 billion.

[15] See footnote 3.

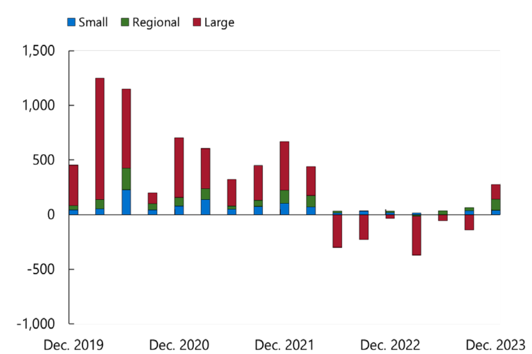
program. The median ratio of total borrowings, comprised of FHLB and non-FHLB borrowing, increased more for regional and large banks compared to small banks (Figure 3, panel 2).

Figure 3. Deposit Outflows Led to Higher Other Borrowing, and Higher Unrealized Losses Led to Less Liquidity, for Regional Banks in Particular

The banking system reported its largest quarterly deposit drop during the March 2023 turmoil…

1. Quarter Change in Deposit Balances

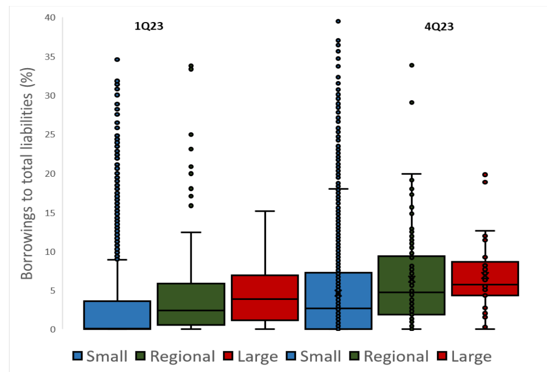
(Billions of US dollars)



…leading to sharp quarterly increases in FHLB and other borrowings for small and regional banks

2. Median Borrowings to Total Liabilities

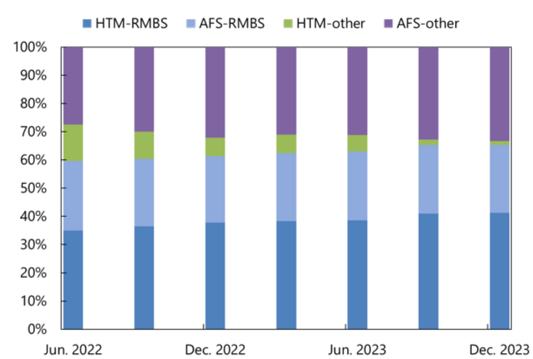
(Percent)



Changes in the value of RMBS holdings led to higher unrealized losses as interest rates rose.

3. Composition of Unrealized Losses

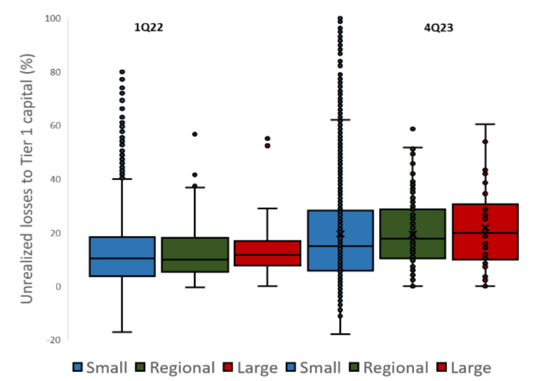
(In percentage of total unrealized losses)



Unrealized losses remain elevated relative to Tier 1 capital in the third quarter 2023.

4. Median Unrealized Losses to Tier 1 Capital

(Percent)



Sources: Bloomberg LP, S&P Capital IQ Pro, and IMF staff estimates.

Note: In panel 2, other types of borrowing include all other debt except Federal Home Loan Bank (FHLB) advances. Panels 2 to 4 are based on 4,528, or 98 percent of, deposit-insured banks, accounting for 99.8 percent of total bank assets in the third quarter of 2023. Following the Federal Reserve's supervisory classification, small banks correspond to banks with less than $10 billion in total assets, regional banks correspond to banks with assets of $10 billion to $100 billion, and large banks correspond to banks with assets above $100 billion. In panel 2, noncore funding includes other borrowed money FHLB and other borrowed money other. In panel 3, AFS = available for sale; HTM = held to maturity; Other comprises securities other than RMBS; RMBS = residential mortgage-backed securities.

3. Unrealized losses

Banks responded to the surge in liquidity from higher deposits following the pandemic by investing in longer-term securities, particularly RMBS. When interest rates rose sharply in 2022 and 2023, the market value of securities holdings depreciated significantly, leading to large unrealized losses on bank' balance sheets. Rising interest rates reduce the value of securities that yield a fixed interest rate and are classified as HTM or AFS securities. HTM securities are reported at amortized cost, and unrealized losses are not generally reflected in equity or regulatory capital while AFS securities are reported at fair market value, and unrealized gains and losses are reflected in equity and regulatory capital for some banks.[16]

Unrealized losses from holdings of RMBS represented nearly two-thirds of total unrealized losses and were driven by increases in mortgage rates, as the 30-year fixed rate national average increased 209 basis points from the first quarter of 2022 to the fourth quarter of 2023 (Figure 3, panel 3). Unrealized losses continued to mount alongside rising interest rates and remained elevated at $477 billion in the fourth quarter of 2023, even after posting a significant drop due to the repricing of forward rates in December 2023 (Box 2, Figure 1, panel 2). The median ratio of unrealized losses to Tier 1 capital is high, and there are large dispersions across banks (Figure 3, panel 4).

3. Sizable Exposure to Commercial Real Estate Compounds Financial Conditions of Some US Banks Already Burdened by Unrealized Losses

The US banks that have been affected by the March 2023 turmoil have experienced a broad recovery lately. Yet a sizable subgroup of institutions still grapples with significant challenges. Underlying concerns persist, with fears that the failure of one institution could precipitate a broader loss of confidence in the sector. Beyond the unrealized losses due to higher interest, the credit risk carried by some institutions, particular their exposure to CRE, is at the center stage of investors' fears today. Small and regional banks are substantially exposed with about two thirds of the $3 trillion in CRE exposures in the US banking system (Figure 4, panel 1). In January 2024, shifts in market expectations regarding the timing and pace of interest rate cuts in the United States, coupled with substantial losses announced by a large bank heavily exposed to CRE, prompted a 10 percent decline in the regional bank's stock index.

The high concentration of CRE exposures represents a serious risk to small and large banks amid economic uncertainty and higher interest rates, potentially declining property values, and asset quality deterioration. In the fourth quarter of 2023, a subset of banks remained with exceptionally high CRE concentration for which losses could compromise their safety and soundness. High concentration is defined as CRE exposure to Tier 1 capital plus the allowance for loan losses greater than 300 percent.[17] One-third of US banks, mostly small and regional banks, held exposures to CRE exceeding 300 percent of their capital plus the allowance for credit losses, representing 16 percent of total banking system assets (Figure 4, panel 2). Within these categories, the share of regional banks with high CRE concentration exceeds 50 percent, significantly higher than small banks (32 percent) and large banks (3 percent). In addition, more than 100 banks, which represent about 3 percent of banking system assets, have high concentration in CRE, unrealized losses greater than 25 percent of Tier 1 capital and uninsured deposits to total deposits greater than 25 percent (Figure 4, panel 3).

[16] See, news release: FDIC: PR-55-2023 7/27/2023.

[17] Criteria developed following supervisory guidance that considers high concentration as the ratio of CRE exposure to total risk-based capital greater than 300 percent. Managing Commercial Real Estate Concentrations, July 10, 2023. FDIC: Managing Commercial Real Estate Concentrations – Winter 2007 Vol. 4, Issue 2

As the CRE sector grapples with declining property prices and rising vacancy rates, the nonperforming CRE loan rate for US banks by the end of 2023 doubled, reaching 0.81 percent from just 0.41 percent at the end of 2022, with large banks reporting a shaper increase (+153 basis points) compared to small (+44 basis points) and regional banks (+49 basis points). Over the past year, banks have continued to increase provisions for CRE non-performing loans, albeit at a slower pace than the rise in non-performing loans themselves. As a result, the CRE coverage ratio— the ratio of loan loss reserves to cover future losses to nonperforming loans— fell to 154 percent from 200 percent for the banking sector, with a more pronounced decrease for US global systemically important banks compared to other banks. Despite this decline, the coverage ratio remains relatively high, suggesting that banks are anticipating additional defaults. There are reasons to expect non-performing loans to climb further in the coming quarters—for example, in the United States, quarterly CRE nonperforming loans and losses did not peak until nine quarters after the start of the global financial crisis in mid-2007.[18]

Figure 4. Commercial Real Estate (CRE) Concentration

Small and regional banks hold nearly two-thirds of CRE exposures in the banking system.

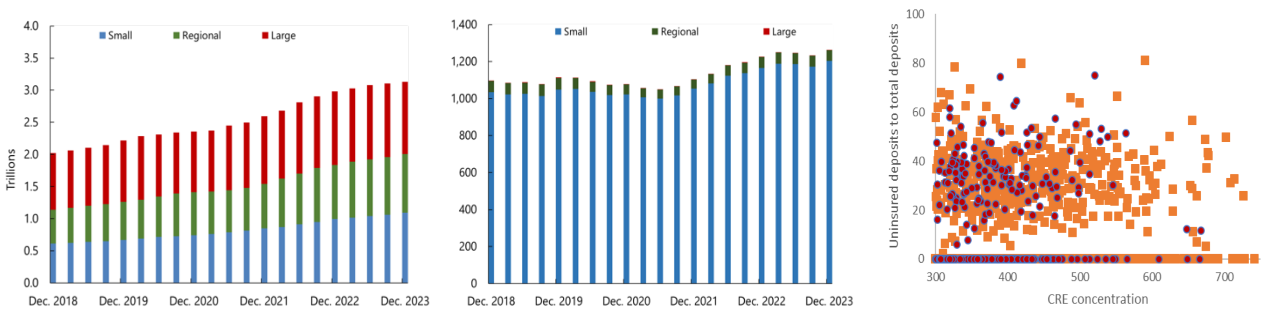
1. CRE Exposure
(In trillions of US dollars)

One-third of banks have high CRE concentration to Tier 1 capital in fourth quarter 2023

2. Number of Banks with CRE Concentration Above Regulatory Guidance (>300 percent) by Bank Size *(Number)*

Regional banks with high CRE exposure, insured deposits, and unrealized losses

3. Black Diamonds Correspond to Regional Banks with Unrealized Losses Greater than 25 Percent of Tier 1 Capital
(Percentage)



Sources: Bloomberg LP, S&P Capital IQ Pro, and IMF staff estimates.
Note: Panel 1 is based on regulatory data; panels 2 to 6 are based on a data set including 4,528, or 98 percent of, deposit-insured banks, accounting for 99.8 percent of total bank assets in the third quarter of 2023. Following the Federal Reserve's supervisory classification, small banks correspond to banks with less than $10 billion in total assets, regional banks correspond to banks with assets of $10 billion to $100 billion, and large banks correspond to banks with assets above $100 billion.

4. A Market-Based Assessment of the US Banking Sector

Bank valuations remain at a discount compared with those of January 2023 (Figure 5, panel 1). Average price-to-book values for the KBW Regional Bank Index [19] have suffered because of uncertainty around medium-term prospects for their current business models and the potential for heightened regulation and increases in required capital drive uncertainty and deter investors. A prime example is the sharp deterioration in consensus forecasts for the one-year forward return on equity, which has fallen below 9 percent and is now materially below those of peers (Figure 5, panel 2).

[18] Based on FDIC QBP Times Series Spreadsheet, Balance Sheet, FDIC: Quarterly Banking Profile

[19] KBW Regional Index currently comprises banks broadly between $10-$110 billion. If you exclude NYCB, second largest bank has $75 billion in assets.

To identify a weak tail of banks the key risk indicators methodology developed by the October 2023 *Global Financial Stability Report* chapter, “A New Look at Global Banking Vulnerabilities” have been superimposed on a subset of publicly listed institutions. This approach was used to produce a real-time monitor of forward-looking risks by incorporating short-term consensus analyst forecasts on future bank balance sheet, valuation, and profitability metrics for approximately 200 publicly traded individual banks. These metrics, or key risk indicators (KRIs), have been selected for their ability to the predict financial stress of individual banks and acute stress events, such as large declines in stock prices or deposit outflows. Banks are flagged if they have outlier characteristics across multiple risk dimensions and hence are at elevated risk of severe stress. Since such outcomes are rare, the KRIs are not designed to predict bank failures with a high degree of certainty. Instead, they provide an important tool for tracking the overall level of stress in the global banking system over time, and for identifying banks meriting closer examination for signs of weakness.

There is an indication that the number of banks in the monitoring list in the United States remains elevated, although it has shrunk since the onset of the pandemic (Figure 5, panel 3). Although the number of weak banks has declined since September 2023, driven by stabilized deposit flows and strategic efforts by some banks to bolster liquidity, a sizable cohort continues to signal challenges across earnings, liquidity, and other KRIs (IMF 2023).[20] This weak tail of banks assessed as of the fourth quarter 2023, collectively represents an estimated $5.5 trillion in total assets, constituting almost 23 percent of total banking assets. The distribution densities for flagged banks now show a fatter tail of weak banks, representing a larger number of banks with flags in for four and five key risk indicator categories (Figure 5, panel 4, yellow line) as the difference in balance sheet and earnings quality makes the difference between banks at risk and “healthy” banks more evident.

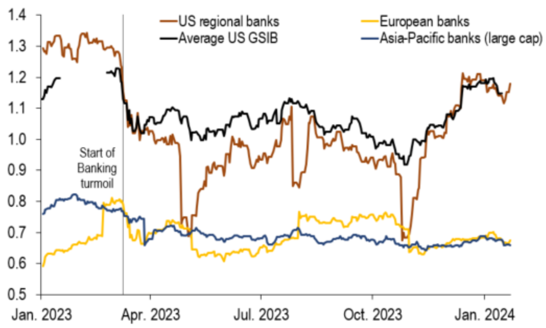
[20] Provided a methodology to develop a real-time monitor of forward-looking risks that incorporates balance sheet, income statement, valuation, and consensus forecast metrics to measure financial stress of individual banks. Banks are measured along five KRI dimensions: capital, asset quality, earnings, liquidity, and market metrics.

Figure 5. Weak Tail of Banks Remains in Most KRI Risk Dimensions

Bank valuation remains at a discount compared with that in March because the outlook is uncertain.

1. Price-to-Book Values

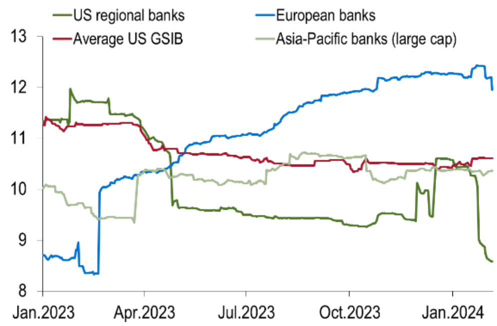
(Price to book)



Return on equity forecast for US regional banks has fallen dramatically.

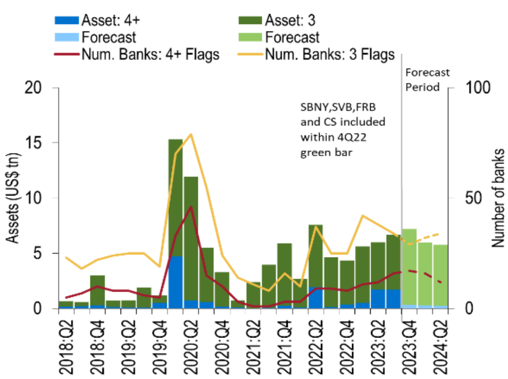
2. One-Year Forward Return on Equity

(Bloomberg consensus one-year forward EPS/equity)



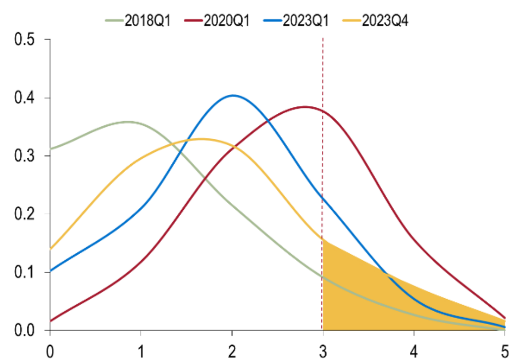
The number of US banks on the global monitoring list remains elevated for 2024.

3. Banks Signaling in a Majority of KRI Risk Dimensions



The distribution of weak banks now shows more banks with 4 and 5 flags.

4. Distribution Densities for Flagged Banks (Number of banks)



Dotted line represents majority of KRIs

Sources: Bloomberg Finance L.P., Visible Alpha, and IMF staff calculations.

Note: Panels 3 and 4 data include results based on historical data from the first quarter of 2018 to the fourth quarter of 2023, aggregate consensus forecasts for the fourth quarter of 2023 if actual data were not available, and aggregate consensus forecast data for the first and second quarters of 2024. CS = Credit Suisse; FRB = First Republic Bank; GSIB= Global systemically important bank; KRI = key risk indicator; SBNY = Signature Bank of New York; SVB = Silicon Valley Bank.

5. Policy Considerations

Last year's bank failures in the United States have shown shortcomings in many dimensions that became a clear threat to the soundness of the banking sector and global financial stability. They also shed light on many other dimensions that policymakers, risk managers, supervisors and regulators should consider in strengthening the current regulatory framework especially in a context where technology advances play a critical role in bank transactions and liquidity management.

As critical as the regulatory framework is, though, it needs to be articulated by supervisors. The IMF paper, [Good Supervision: Lessons from the Field, Financial Stability Needs Supervisors with the Ability and Will to Act],[21] reflects on both the turmoil as well as 10 years of Fund surveillance and capacity building work, and draws the attention to the role of supervisors in curtailing "irresponsible and excessive risk taking."[22] Indeed, similar to the findings of the US authorities themselves, the IMF paper observes that, around the globe, vulnerabilities in supervision persist. Deficiencies include gaps in tools available and use of corrective and sanctioning powers. Supervisors need to be able to require banks to meet higher than minimum standards when risks require it; to allocate adequate resources to smaller banks where risks can reside; ensure that effective decision-making and escalation processes are in place; and be equipped with adequate reserves of expertise. Globally, more than half of the jurisdictions do not have independent bank supervisors with a clear safety and soundness mandate, with sound internal governance, or with resources appropriate to their assigned responsibilities. But supervisors cannot do it alone. The institutional architecture needs to be supported by other policymakers, including parliaments, if we are to achieve the vigilant, independent, well resourced, and accountable supervisory bodies needed for financial stability.

The turmoil also serves as a stark reminder of the impact that rapidly rising interest rates can have by interacting with underlying financial vulnerabilities. It also demonstrated how a group of weak banks, even if not individually systemic, can prompt emergency action by authorities to limit contagion to healthy bank organizations.

The analysis shows that vulnerabilities persist in a weak tail of banks. Beyond the unrealized interest-rate driven losses, the US banking sector is also grappling with higher credit risk derived from its exposure to CRE and the structural challenges brought on by the pandemic. The CRE sector is challenged by stressed market conditions for some property sectors as well as a growing number of defaults. Against this backdrop, continued vigilance is warranted to monitor vulnerabilities and concentrations in the CRE sector to minimize potential risks to lenders and financial stability risks. Some authorities have already warned about the consequences of shortcomings in risk management and called for appropriate measures to address this specific risk. In the United States, the Federal Reserve has taken steps to strengthen supervisory efforts to address the lessons learned from the failure of large banks and its supervision of SVB. These efforts include improving supervision of liquidity and interest rate risks by conducting target reviews at banks exhibiting higher interest rate and liquidity risk profiles. The Federal Reserve is also monitoring for "potential credit deterioration" in CRE and consumer lending segments. In particular, US authorities have been monitoring very closely risks stemming from the CRE market (such as concentration risk, risk exposures, and risk management) and have emphasized the importance of adequate capital buffers to withstand potential future losses.[23, 24]

If financial stability is threatened, maintaining confidence is paramount. As highlighted in the April 2023 Global Financial Stability Report, policymakers should act swiftly and provide liquidity support to prevent systemic events that could undermine the resilience of the global financial system. In this regard the bold and swift action taken by the US authorities allowed it to contain an immediate threat to financial stability.

[21] https://www.imf.org/en/Publications/WP/Issues/2023/09/06/Good-Supervision-Lessons-from-the-Field-538611 + https://www.imf.org/en/Blogs/Articles/2023/09/18/financial-stability-needs-supervisors-with-the-ability-and-will-to-act

[22] Letter of US Senators to Vice Chair Barr, March 21, 2023.

[23] Supervision with Speed, Force, and Agility, Speech by Vice Chair for Supervision Barr on bank supervision - Federal Reserve Board

[24] Federal Reserve, Supervision and Regulation Report, November 2023. Supervision and Regulation Report, November 2023 (federalreserve.gov)

Box 1: SVB: A Complex and Concentrated Business Model Tested by a Higher-for-Longer Interest Rate Environment

SVB defined itself as the “go-to financial partner” for investors in the innovation ecosystem (start-ups and venture capital). Benefiting from the enormous expansion of the technology sector, SVB nearly quadrupled in size between 2016 and 2023, with deposits surpassing $175 billion compared to $40 billion in 2016 (Figure 1, panel 1). The bank was unique in many ways. First, its client base was especially homogenous, composed of mainly wholesale deposits with a high sectoral and geographical concentration in Silicon Valley in northern California. This led to a high degree of uninsured deposits (86 percent of total deposits), exposed to the same type of shock, as they tend to be more interest rate sensitive (Figure 1, panel 2). Second, management invested heavily in long-term residential mortgage-backed securities (RMBS), which were highly exposed to interest rate risk. Third, enhanced supervision and regulatory requirements for large banks did not apply to SVB or had only recently applied because of its rapid growth. Fourth, SVB’s access to the Federal Reserve’s discount window was not operationally active (Board of Governors of the Federal Reserve System 2023).

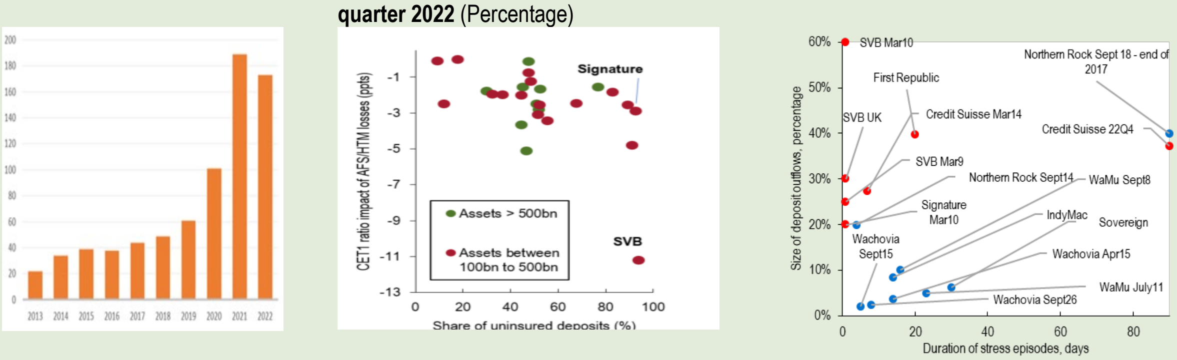
During the end of 2022 and the beginning of 2023, the slowdown in technology-related activity increased deposit withdrawal, whereas low venture capital activity froze funding inflows. As the volume of unrealized losses expanded, SVB became exposed to a sudden liquidity risk that the existing weak risk management and poor leadership foresight did not anticipate. In early March 2023, a plan to raise capital as part of a balance sheet restructuring plan failed. The news triggered concerns by depositors and quickly transformed into a bank run. Reportedly $42 billion of deposits left the bank on March 9, with another $100 billion forecast to flow out the next day, marking the fastest and largest deposit run this century (Figure 1, panel 3).[1] Prior to failure, at end of 2022, SVB’s unrealized losses were equivalent to 104 percent of Tier 1 capital. The bank was closed on March 10 by the California Department of Financial Protection and Innovation, and the Federal Deposit Insurance Corporation (FDIC) was appointed receiver (Federal Deposit Insurance Corporation 2023a).

Figure 1. Fast-Growing Deposits, Large Share of Uninsured Deposits, and Fastest Deposit Run

Rapid deposit growth
1. Total Deposits
(Billions of US dollars)

Unrealized losses and deposit mix
2. Share of Uninsured Deposits and Impact on Available-for-Sale (AFS)/Held-to-Maturity (HTM) Losses on CET1 Ratio as of fourth quarter 2022 (Percentage)

Fastest and largest deposit run
3. Deposit Runs
(Percentage of total deposits and number of days)



Sources: Ennis and Keister 2009; Federal Deposit Insurance Corporation 1997; Federal Reserve, bank financial reports; Investigation Commission of Althing 2010; Kobrin 2011; Levy-Yeyati, Martinez Pería, and Schmukler 2010; Nakaso and Hattori 2002; Nascimento 1991; Northern Rock Applicants v Caldwell & HM Treasury (UKUT 408, 2011); Rose 2015; Schumacher 2000; Shin 2009; Simorangkir 2011; and IMF staff calculations.

1/ Review of the Federal Reserve’s Supervision and Regulation of Silicon Valley Bank, April 2023.

Box 2: Ripple Effect on Other Large Banking Organizations: Signature Bank and First Republic Bank Failures

The collapse of SVB sparked a broader re-evaluation of the stability of the US banking system. Investors began to assess the liquidity and solvency of certain institutions after adjusting for haircuts from mark-to-market of their assets, in particular held-to-maturity securities (Figure 1, panel 2) and CRE loans, while assuming un-insured deposits were less sticky than before.

SBNY ($110 billion in assets), with a large exposure to volatile crypto assets and high share of uninsured deposits (90 percent), quickly became a target of contagion, and a run on the bank followed almost immediately after SVB's collapse.[25] Prior to failure, at end of 2022, SBNY had a high CRE concentration, above 300 percent of Tier 1 capital (334 percent) and unrealized losses to Tier 1 capital of 32 percent. The New York State Department of Financial Services and the FDIC closed the institution on March 12 after it lost more than 70 percent of its equity value within days (Federal Deposit Insurance Corporation 2023b).

FRB, with $212 billion in assets, focused on high-net worth individuals. Its business model provided preferential long-term rates for these types of customers. In exchange, FRB managed their wealth, mostly by keeping their large savings as uninsured deposits in the bank. Almost half of the loan book was in residential real estate mortgages, which had lost significant value because of the the repricing from increased interest rates.

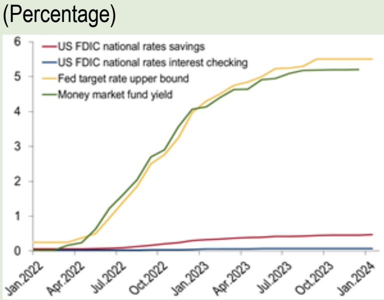
On March 16, 2023, a consortium of 11 publicly listed banks led by JPMorgan Chase deposited $30 billion in FRB to boost liquidity and provide a strong signal to the market of support in the US banking sector. However, sentiment around the bank's stability did not improve, leading to the bank's closure by the California Department of Financial Protection and Innovation. Prior to failure, end of March 2023, FRB's uninsured deposits represented 49 percent of total deposits, CRE concentration was elevated at 209 percent of Tier 1 capital, and unrealized losses to Tier 1 capital stood at 30 percent. The FDIC was appointed receiver, and JPMorgan Chase acquired all deposit accounts and nearly all assets on May 1 (Federal Deposit Insurance Corporation 2023c). FRB's failure marked the second-largest bank failure in US banking history and the largest since Washington Mutual Bank failed in 2008 (Figure 1, panel 3).

After the March turmoil, the US banking sector has remained under scrutiny by market participants. Although global banking is now much more capitalized than during the global financial crisis because of international regulatory reforms, fragilities remain. For example, the gap between interest rates and deposit pricing remains large, putting pressure on funding costs and margins. In addition, the aggregate size of unrealized losses in banks' balance sheet amounts to $477 billion as of the fourth quarter of 2023 (Figure 1, panel 2).

Figure 1. Large Unrealized Losses in the US Banking Systems as Interest Rates Continued to Climb

As interest rates climb rapidly, deposits were repriced slowly, initially…

1. Selected Benchmark Rates
(Percentage)



… but US banks face large unrealized losses on investment securities.

2. US Banking Sector Unrealized Gains and Losses on Securities (Billions of US dollars)

FRB was the largest failure since Washington Mutual Bank in 2008

3. Ten largest US Bank Failures by Total Assets
(Billions of US dollars)

Name	Date of failure	Total assets
Washington Mutual	2008	307
First Republic Bank	2023	233
Silicon Valley Bank	2023	212
Signature Bank of New York	2023	110
Continental Illinois National Bank and Trust	1984	40
IndyMac	2008	31
American Savings and Loan Association	1988	30
Colonial bank	2009	26
Guaranty Bank	2009	14

Sources: American Banker "Hall of Shame: 10 biggest bank failures", Bloomberg LP, Crane, Federal Reserve and Federal Deposit Insurance Corporation.

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