Rushing to Judgment and the Banking Crisis of 2023

Steven Kelly and Jonathan Rose

March 2025

WP 2025-04

https://doi.org/10.21033/wp-2025-04

FEDERAL RESERVE BANK of CHICAGO

Rushing to Judgment and the Banking Crisis of 2023

Steven Kelly and Jonathan Rose[1]

March 2025

Abstract

This article critically reviews the 2023 banking crisis with the benefit of two years of hindsight. We highlight seven facts that depart from the standard account of the crisis that has developed. We describe the crisis as a reaction to bank business models that focused on providing banking services to certain economic sectors, crypto-asset firms and venture capital, that had come under economic pressure during the preceding year. We argue this view of the crisis provides a more precise explanation of which banks were affected compared to an explanation focused solely on banks' balance sheet metrics. We also argue that this view of the crisis has different policy implications, more focused on surveilling bank business models and institutional depositors.

JEL Codes: G01, G21, G28, H12

Keywords: Banking Crisis of 2023, business model risk, Silicon Valley Bank, uninsured deposits, unrealized losses

Disclaimer: The views expressed in this paper are only the views of the authors. These views are not necessarily shared by anyone else associated with the Federal Reserve System.

[1] Kelly is the associate director of research at the Yale Program on Financial Stability – steven.kelly@yale.edu. Rose is a senior economist & economic advisor at the Federal Reserve Bank of Chicago and historian of the Federal Reserve System – jonathan.rose@chi.frb.org.

I. INTRODUCTION

In March 2023, the US banking system came under considerable strain as depositors rushed to judgment about their banks. Postmortems on the episode and a wide-ranging academic literature also rushed to judgment about what went wrong. Both depositors and researchers were responding to an urgent need for information on fast-moving events. Two years later, it is time to step back and closely examine the explanations and accounts of the Banking Crisis of 2023.[2] This effort is essential because efforts to reform banking practices and policies are ongoing, and these efforts would benefit from an enhanced understanding of the crisis.

In this article, we critically review the standard account of the crisis ("the standard account") that has developed. The standard account typically starts by focusing intensely, if not exclusively, on Silicon Valley Bank (SVB). The standard chronology begins with SVB's failure, the cause of which is attributed to sudden scrutiny of unrealized losses on securities combined with extremely high levels of uninsured deposits. The standard account describes the crisis as spreading from SVB as depositors suddenly began to scrutinize other banks with elevated unrealized losses and uninsured deposits, coordinating on social media and using new digital banking apps to withdraw funds at lightning speed. Altogether, this account suggests that bank practices and supervisory policies should adapt to a new age in which banks are subject to social-media driven, sudden, and large withdrawals on all types of uninsured deposits.

The standard account captures many important aspects of the episode but leaves some puzzling gaps. For example, why did the crisis start in early March 2023, even though unrealized losses had been elevated in the banking system for several quarters? Why would market participants have ignored these problems until March 2023, when the losses were falling? Why did some of the failed banks have such extremely low insurance coverage? Why was Signature Bank, of all the banks in the US, the next bank to fail after SVB? Why were the deposit runs so rapid? We help answer these questions by setting out a more complete chronology and account of the crisis, centered around the following seven facts.

[2] There is a debate over whether the episode should be called a crisis. We call it a crisis on the basis of there having been a systemic run on a material swath of the banking system—underlined by policymakers' invocation of the FDIC's systemic risk exception, which requires a threat of "serious adverse effects on economic conditions or financial stability," and of the Federal Reserve's Section 13(3) authority, which requires "unusual and exigent circumstances."

1. **Silvergate Bank, rather than SVB, was the first bank to fail and the first bank to have a run.**

Silvergate's failure is overlooked for the technical reason that it voluntarily chose to close. Beginning the chronology with its failure, however, helps clarify the timing and nature of the crisis. Silvergate, with its ties to the crypto-asset sector, suffered an enormous run after FTX's failure in November 2022. Silvergate's run culminated in it announcing its closure in the same half hour that SVB announced that it needed to raise capital. Silvergate also provides a direct reason why Signature was the next bank affected after Silvergate's and SVB's failures, because Silvergate and Signature banks had long been linked together as the most crypto-focused banks in the US.

2. **Bank business models that materially focused on the venture capital and crypto sectors were at the center of the crisis.**

The 2023 crisis was a crisis of a certain bank business model. Silvergate, SVB, Signature, and First Republic failed; Pacific Western Bank (PacWest) and Western Alliance Bank narrowly escaped failure. These six most-affected banks built their business models around the crypto and venture capital (VC) sectors. These sectors had been growing rapidly—amid booming crypto prices and record VC fundraising—but had limited options for their specialty banking needs. As a result, such companies accumulated deposits in the specialty banks able and willing to serve them. Their uninsured deposits are best viewed as a result of this business model rather than a choice about how to raise funds.[3] When VC and crypto contracted sharply in 2022, banking business models centered on them came under pressure. While the most-affected banks had strong *deposit franchises* in the traditional sense—they were known for their low-cost deposits obtained through high-touch service and, in turn, customer loyalty—markets had, by March 2023, deemed their *business models* nonviable.

3. **Unrealized losses and uninsured deposits are inadequate explanations of which banks experienced runs in 2023.**

[3] See Chang, Cheng, and Hong (2024) for a further discussion of this statement.

We propose a view of the 2023 crisis centered on business models rather than the simple balance sheet metrics of unrealized losses and uninsured deposits. These metrics would have flagged only some of the banks that did experience runs in 2023, while also implicating several that did not. Moreover, neither banking history (inclusive of 2023) nor economic reasoning suggests that banks need to have SVB-like levels of uninsured deposits or asset losses to experience market discipline. By focusing on business models, we provide a more precise explanation for which banks came under pressure and deemphasize the importance that the standard account places on uninsured deposits and unrealized losses.

4. **While the crisis affected midsize "regional" banks in general, the most severely impacted banks were geographically clustered around the tech- and crypto-heavy West Coast.**

The standard account often refers to Banking Crisis of 2023 as a "regional banking crisis," but this appellation casts too wide a net. "Regional bank" refers to midsize banks in the US, typically between $10 billion and $250 billion, which are dispersed across the country. Yet, five of the six most-affected banks were headquartered on the technology-heavy West Coast. Moreover, while the six most-affected banks fell into the $10 billion – $250 billion range, their deposit outflows and stock price depreciation were orders of magnitude worse than those of other regional banks. The stock prices of regional banks in general were slightly punished by the market during the contagion phase of the crisis for their lack of scale and diversification—and the pursuant stability—but they did not experience the same devastating runs as the banks focused on VC and crypto.

5. **Affected banks had been under considerable prior market pressure in 2022 and were not suddenly scrutinized for the first time in March 2023.**

Our account of the crisis does not rely on improbable ignorance by market participants. We observe that affected banks had already incurred significant deposit losses and/or steep stock price declines before March 2023. We suggest that this prior scrutiny helps explain why these banks failed in quick succession, as market participants were primed to react to bad news about them. Moreover, the new information that arrived in March 2023 was not about uninsured deposits and unrealized losses; rather, it cast doubt on the viability of the business model that the most-affected banks had in common.

6. **The historically unprecedented speed of the 2023 bank runs is not well explained by social media or digital banking applications.**

The runs on the affected banks in 2023 were primarily runs of institutional depositors, consistent with historical bank runs. The mobile banking and social media apps blamed in the standard account of the crisis are phenomena that apply to retail depositors. Most of the withdrawals took place through wire transfers, which have been lightning fast for institutional depositors for several decades. Moreover, technological changes are only capable of speeding up bank runs by several hours to a couple of days at most, while the fastest runs in 2023 were at least several days faster than previous bank runs.

7. **The crypto and VC sectors had a special role in triggering the 2023 runs because the affected banks had business models focused on them. Once the runs were initiated, other large, sophisticated depositors ran with roughly the same speed and severity.**

The 2023 crisis has raised the question of whether crypto and VC depositors are inherently less stable. During normal times, this is likely the case. Both crypto and VC deposits are likely more macroeconomically sensitive than other deposits, and crypto depositors are particularly prone to sectoral shocks given that sector's empirically high level of volatility. Crypto and VC depositors might have had a special role in triggering the 2023 bank runs because the affected banks had business models focused on them and the depositors had mechanisms in place to coordinate with one another. Once the run began, though, it's not clear that crypto and VC depositors were quicker or more able to withdraw than any other large, sophisticated depositor.

*

With this set of facts in mind, we draw very different policy conclusions than the standard account. On liquidity reforms, our view that a broad suite of institutional depositors participated in the run, and that the speed and severity of the runs was due to the nature of the business models of the affected banks, suggests against raising stressed liquidity outflow assumptions for specific types of institutional depositors. Moreover, even with greater liquidity insurance—whether on balance sheet or contingently available from the central bank—we view the incentives to run on a bank that is ultimately nonviable as very difficult to fully extinguish, and that organic outflows over longer time periods will continue to occur. On reforms to supervision, we deemphasize (but do not reject) the importance of monitoring social media, while elevating the importance of monitoring business model risk. Federal banking agencies had begun to identify crypto-asset business model risks prior to March 2023. They had not, however, put in place a general policy of supervising the macroeconomic vulnerability of deposit bases, the kind that—as we saw with crypto and tech in 2022—can experience sharp organic runoff well before bank runs occur. We similarly suggest that interest rate risk is most effectively evaluated in the context of the particular bank's business model.

This paper proceeds as follows. Section II sets the table with a timeline of the Banking Crisis of 2023. Section III details the evidence and analysis of the seven facts. Section IV concludes with policy implications.

II. TIMELINE

Table 1: Banks that closed during the Banking Crisis of 2023

Bank	Event	Date	Assets on Dec. 31, 2022	Headquarters
Silvergate Bank	Voluntarily liquidated	March 8, 2023	$11 billion	La Jolla, CA
Silicon Valley Bank	FDIC appointed receiver	March 10, 2023	$209 billion	Santa Clara, CA
Signature Bank	FDIC appointed receiver	March 12, 2023	$110 billion	New York, NY
First Republic Bank	FDIC appointed receiver	May 1, 2023	$213 billion	San Francisco, CA

Four US banks failed from March to May 2023, as listed in Table 1. The events of the crisis, detailed in Figure 1, started on Wednesday, March 8, 2023 at 4:06 p.m. Eastern Time, when Santa Clara, CA-based Silicon Valley Bank (SVB) issued a press release announcing a greater reduction in deposit balances than previously forecast, a sale of its $24 billion of available-for-sale securities at a $1.8 billion after-tax loss, and the intent to raise capital.[4] Within the same half hour, at 4:30 p.m., La Jolla, CA-based Silvergate Bank announced it was voluntarily liquidating.[5] Moody's announced later that night that it was downgrading SVB by one notch.[6]

[4] SVB 2023; Cohan 2023

[5] Sigalos 2023; Silvergate 2023b

[6] Moody's 2023

The next day, March 9, SVB received $42 billion of withdrawal requests, about 25 percent of its $165 billion of deposits; it expected over $100 billion of additional withdrawals the next day.[7] Regulators closed SVB slightly before it opened on the West Coast on the morning of Friday, March 10.[8] The FDIC originally announced on that Friday that uninsured depositors would not be immediately paid out in full.[9] Also on March 10, New York, NY-based Signature Bank incurred $18.6 billion of withdrawals, 20% of its deposits.[10] San Francisco, CA-based First Republic incurred $25 billion of deposit outflows on March 10, 14% of its deposits.[11]

Over the weekend, on Sunday March 12, regulators seized Signature Bank. The FDIC invoked the systemic risk exception, upon the recommendation of its board, the Federal Reserve Board, and the Treasury Secretary in consultation with the president. This authority allowed the FDIC to protect the uninsured depositors of both SVB and Signature.[12] The FDIC placed both banks' depositors into newly operational bridge banks, Silicon Valley Bridge Bank (SVBB) and Signature Bridge Bank (SBB).[13] The FDIC prepared a bridge bank for First Republic that weekend as well, but ultimately did not utilize it after assessing it would be able to fund itself on Monday.[14] Also on the night of Sunday, March 12, the Federal Reserve invoked its Section 13(3)

[7] Barr 2023; CADFPI 2023a

[8] CADFPI 2023c

[9] FDIC 2023b

[10] NYDFS 2023

[11] FDIC 2023g; FRC 2023. Reports differ on First Republic's total deposit balance as of March 9, but it seems likely the correct number is $173.5 billion. First Republic ended 2022 with $177 billion of deposits, and it had been experiencing deposit growth in recent quarters (see, quarterly Call Reports—charted in Figure 2). First Republic reported the $173.5 billion figure for March 9 on April 24, 2023 (First Republic 2023b). The First Republic postmortems from both the FDIC and its Office of Inspector General say that on March 10, the $25 billion withdrawal represented 17% of First Republic's $148 billion of deposits; however, that appears to be an error of subtracting the $25 billion first, as though the bank started March 10 with [$173 billion - $25 billion] of deposits. Both the FDIC report and FDIC Office of Inspector General are consistent with other reports in dating the beginning of First Republic's run to March 10, and the FDIC report notes that on March 9, First Republic "received a material net **inflow** of deposits" (emphasis added). Thus, it seems the First Republic-reported number of $173.5 billion is the correct deposit balance for March 9.

[12] Treasury, Federal Reserve, and FDIC 2023

[13] FDIC 2023d; FDIC 2023c

[14] SRAC 2023

authority and created the Bank Term Funding Program (BTFP).[15] The BTFP's most material term was that it lent to banks against the *par* value of their government securities.[16]

As the following week began, First Republic incurred a further $40 billion of deposit outflows on Monday, March 13.[17] On Thursday, March 16, a consortium of 11 large banks made a $30 billion (uninsured) deposit in First Republic with an initial term of 120 days.[18] First Republic's deposit outflows then slowed "considerably," and stabilized two weeks later.[19] First Republic would ultimately borrow substantially from both the standing discount window and the BTFP, a combined $109 billion at peak. It was the only one of the failed banks to borrow from the BTFP.[20] A month later, on April 24, First Republic reported its Q1 earnings and revealed its deposit losses to be worse than the market had expected, leading to a second wave of its run.[21] Regulators seized the bank that weekend and sold it JPMorgan.[22]

---

[15] Federal Reserve 2023b

[16] This term effectively enabled the Fed to provide liquidity support banks against the value of their deposit franchises; see: Glancy et al. 2024; Kelly 2024a.

[17] FDIC 2023g

[18] Consortium 2023; First Republic 2023a; Treasury et al. 2023

[19] First Republic 2023b

[20] Federal Reserve 2024a; First Republic 2023a; Kelly 2024b

[21] FDIC OIG 2023

[22] FDIC 2023e; CADFPI 2023b

Figure 1: Timeline

Date	Event
March 8, 2023 4:06 p.m. ET	Santa Clara, CA-based Silicon Valley Bank (SVB) announces above-forecast deposit runoff, the sale of its AFS portfolio, and the intent to raise capital.
March 8, 2023 4:30 p.m. ET	La Jolla, CA-based Silvergate Bank announces it is voluntarily liquidating.
March 8, 2023	Moody's announces it is downgrading SVB from A3 to Baa1.
March 9, 2023	SVB, with $165 billion of deposits going into the day, receives $42 billion of withdrawals and expects over $100 billion the next day.
March 9, 2023	San Francisco, CA-based First Republic experiences deposit inflows.
March 10, 2023 11:39 a.m. ET	Regulators close SVB slightly before it opens on the West Coast (mid-morning Eastern Time). FDIC announces that uninsured depositors will not be paid out in full.
March 10, 2023	New York, NY-based Signature Bank experiences $18.6 billion of withdrawals, 20% of its deposits.
March 10, 2023	First Republic experiences $25 billion of deposit withdrawals, 14% of its deposits.
March 12, 2023	The FDIC (with the concurrent recommendation of the Fed and the Treasury Secretary) invoked the "systemic risk exception," allowing the FDIC to protect all depositors of SVB and Signature.
March 12, 2023	The FDIC creates two newly operational bridge banks for SVB and Signature, to protect all depositors and continue operations. The FDIC does not move forward with its prepared bridge bank for First Republic.
March 12, 2023	The Fed invokes its Section 13(3) emergency authority to announce the Bank Term Funding Program, which lent to banks against the par value of their US government securities.
March 13, 2023	First Republic experiences another $40 billion of deposit withdrawals.
March 16, 2023	A consortium of 11 large banks makes a $30 billion term deposit in First Republic.
April 24, 2023	First Republic announces earnings and reports worse-than-expected deposit figures; this leads to a second wave of the run on First Republic.
May 1, 2023	Regulators seize First Republic, and the FDIC immediately sells it to JPM, whose bid protected all depositors of First Republic.

III. Seven Facts on the Banking Crisis of 2023

1. Silvergate Bank, rather than SVB, was the first bank to fail and the first bank to have a run.

Most accounts of the beginning of the 2023 banking crisis focus exclusively on Silicon Valley Bank, describing it as the first bank that failed. These accounts correctly state that it failed on the morning of Friday, March 10, 2023—followed by the failure of Signature Bank two days later and First Republic Bank on May 1. Indeed, these three banks are the only banks listed as failing from March to May 2023 on the FDIC's "Failed Bank List."

Few accounts of the banking crisis mention Silvergate Bank, which actually failed two days prior to SVB. Silvergate does not appear on the FDIC's list because it closed itself, announcing its voluntary liquidation on Wednesday, March 8 without being seized by a regulator.[23] In fact, the bank technically continued to operate until June 30, 2024, though only to wind down its business while subject to consent orders with banking regulators.

By any common notion of failure, Silvergate failed. It announced its closure because it could no longer survive as an ongoing business. Seven days before it announced its liquidation, it had disclosed concerns about the "viability of the Company's digital asset focused business," and, on March 4, it had discontinued its flagship product, the Silvergate Exchange Network.[24] It also had experienced two rounds of catastrophic deposit outflows, one in November 2022 and another in March 2023 before its March 8 announcement.[25] In 2022-Q4, Silvergate lost about 50 percent of its deposits in a matter of days after the failure of FTX in November 2022.[26] This was a bank experiencing a financial crisis so severe that it could not continue to operate as a going concern. The fact that it "survived the run" and resolved itself rather than going through FDIC resolution is a technical point that misses the key dynamics.

Silvergate's buildup of stress and its closure announcement likely exacerbated the withdrawals at SVB, since Silvergate's announcement came at 4:30 p.m. ET that day, the same half hour as SVB's 4:06 p.m. ET announcement that it would raise capital.[27] This was quite an unlucky proximity that SVB officials could not have anticipated. SVB's CEO, Gregory Becker, testified that the financial press had linked SVB and Silvergate together because the latter had experienced losses on its securities holdings it had sold to meet the withdrawals that began in November.[28] The chair of the FDIC also noted that "the failure of SVB, following the March 8,

---

[23] Sigalos 2023; Silvergate 2023b

[24] Lang and Sharma 2023; Silvergate 2023a

[25] Fed OIG 2023

[26] Benoit 2023; Rose 2023

[27] Silvergate 2023b; SVB Financial Group 2023b

[28] Becker 2023

2023 announcement by Silvergate Bank that it would wind down operations and voluntarily liquidate, signaled the possibility of a contagion effect to other banks."[29]

Silvergate's announcement also likely had a key role in precipitating withdrawals at Signature. Silvergate and Signature had long been linked together, and for good reason: they were the two banks in the US most focused on providing services to crypto-asset companies. The chairman of the board at Signature, Scott Shay, testified that a key event leading to its bank run was that "a bank with strong ties to the digital asset sector announced it was going out of business."[30] CNBC's story reporting Silvergate's closure described Silvergate as, "one of the two main banks for crypto companies, along with New York-based Signature Bank."[31]

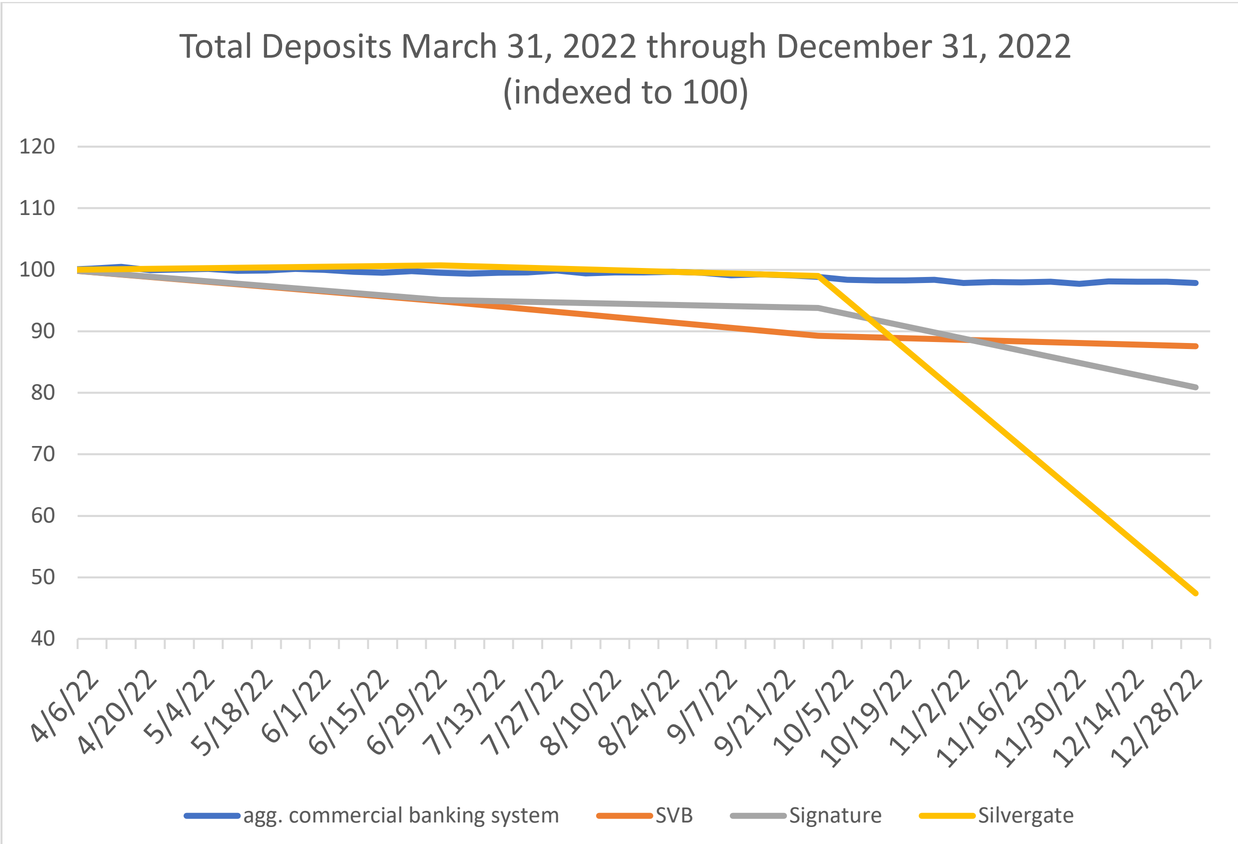
Altogether, Silvergate's omission from standard accounts of the crisis leads most of those accounts to focus on SVB as the starting point of the crisis. Yet Silvergate was the first bank to close in March 2023. Once we add Silvergate to the list of failed banks, we must also add its deposit runs to the list of deposit runs. Just as Silvergate was the first bank to fail, it was also the first bank to experience a run. Signature also experienced large deposit declines in 2022-Q4. These deposit outflows are shown in Figure 2. Based on this figure, Silvergate and Signature were likely the two banks in the country under the most pressure at the end of 2022.

[29] Gruenberg 2023

[30] Shay 2023

[31] Sigalos 2023

Figure 2: Total deposits indexed to 100 as of 3/31/2022



Sources: FRED; individual bank call reports

2. **Bank business models that materially focused on the venture capital and crypto sectors were at the center of the crisis.**

Crypto-asset firms and venture capital-sponsored startups have had a couple of economic challenges in in common. First, they have high economic betas, in the sense that they tended to be more cyclically volatile than other sectors. Second, they have had some difficulty obtaining banking relationships. A small number of banks chose to orient their business models around meeting these needs, including Silvergate and Signature for crypto-asset firms and SVB, First Republic, PacWest, and Western Alliance for VC. Over 2020 and 2021, as crypto and venture capital reaped funding inflows, deposits piled into these banks that were willing and able to serve crypto and tech startup firms.

The economic cycle began to change in late 2021 as the Fed shifted its monetary stance, ultimately rapidly increasing short-term interest rates and reducing its securities holdings in early

2022.[32] Empirically, different industries experience the effects of monetary policy tightening at different paces, with those more sensitive to business and financial cycles particularly sensitive to rate changes; for instance, Che et al. (2023) show that asset returns in the crypto-asset industry correlates strongly with the technology industry and was particularly affected by monetary tightening. Both the crypto-asset and tech sectors were contracting beginning in 2022, even impacting the tech-heavy West Coast at a macro level: While the national unemployment rate continued to fall into 2023, the states of the West Coast—California, Oregon, and Washington—saw their unemployment rates start increasing in 2022.[33]

Crypto and VC deposit outflows began well in advance of the March 2023 crisis as those industries came under pressure. Crypto-asset prices reached a cyclical peak in November 2021, when the so-called "crypto winter" set in. Falling prices for crypto-assets revealed a number of fraudulent schemes such as Terra/Luna and Celsius. Crypto hit its low point at the end of 2022, following a swift fall from grace of famed crypto exchange FTX and its founder, Sam Bankman-Fried, under revelations of fraud.

At this point, Silvergate began experiencing sharp deposit outflows, losing over 50% of the deposits it started the fourth quarter with by the end of the year. Signature Bank's deposits had peaked in 2022-Q1, but its outflows similarly sharpened in 2022-Q4. By the end of 2022, Signature had lost 20% of its deposits relative to nine months prior.[34]

The venture capital sector also experienced a severe slowdown. US venture capital fundraising peaked in 2022-Q1, and VC deals began declining.[35] Venture funds with 2021 vintages began substantially underperforming in 2021, and overall returns for venture funds turned negative in 2022-Q3.[36] Meanwhile, the IPO market dried up—a significant development because that market provides venture capital and other private fund investors with an "exit" from past investments

[32] Ihrig and Waller 2024

[33] Rubin and Mai-Duc 2023

[34] It explained some of this as a business decision to reduce its reliance on crypto deposits, but it's also likely the business decision was driven by the market's increasingly negative view of such a banking model.

[35] Hammond 2024; Jin 2023a; Chernova 2023. See also: Vartabedian, Chernova, and Loten 2023. Crypto VC deals fell precipitously after peaking in Q1-2022 (Miller 2024).

[36] Chernova and Vartabedian 2024; Jin 2023b

and fresh cash infusion.[37] The elevated rate of venture firm "cash burn" was part of what SVB had to report in its emergency 8-K filing that sparked its run (see Fact #3).

SVB lost 12.5% ($25 billion) of its deposits over the last three quarters of 2022. Its deposits would fall by an additional $10 billion by March 8, 2023, before the bank run began on March 9.[38] Thus, in less than a year, and before any bank run, SVB had experienced a total erosion of 17.5% of its deposit base. In contrast, in the banking system as a whole, deposits peaked in April 2022 and had fallen just 3.1 percent by March 1, 2023.[39] This kind of cyclical sensitivity shown in Silvergate's, Signature's, and SVB's deposit erosion is distinct from a weak deposit franchise, which is typically a reference to deposits that are particularly rate-sensitive or otherwise flighty, such as brokered or internet deposits. The felled banks of 2023, by contrast, were famous for their high-touch services provided to particularly loyal depositors. Yet, these relationships could not prevent organic runoff of deposits as the serviced industries experienced cyclical decline.

There is a large academic literature showing that banking crises tend to follow business cycle peaks.[40] While the Banking Crisis of 2023 might look like an exception to that general pattern at first glance, the parts of the economy that these banks' business models exposed them to had very much been in recession ahead of this crisis.[41]

---

[37] Driebusch 2023; Statista 2023; 2024

[38] SVB 2023

[39] FRED n.d.. Deposits in the banking system began declining in the aggregate in April 2022 and didn't hit a trough until April 2023—falling 5.4% from peak to trough.

[40] See, e.g., Gorton 2018, 10–11

[41] While SVB and Signature are famous for the speed and severity of the bank runs—25% and 20% of their deposits in one day, respectively—that ultimately closed them down, it's worth keeping them in the context of the historically large slow-burning run they had already experienced in the preceding quarters. Wachovia lost just 10% of its deposits in the year prior to experiencing the run of 4.4% of its deposits in 15 days that ultimately felled it. WaMu had lost less than 5% of its deposits in the four quarters before that of its failure-inducing bank run—10.1% of its deposits in 12 business days (Rose 2023). Moreover, while 2023's bank runs were quicker and more severe, they followed a long deposit attrition more severe than even the GFC. If SVB and Signature had been closed by regulators after losing the percentage of their peak deposits that WaMu or Wachovia had lost before their failures, both would have been shut down in 2022.

3. Unrealized losses and uninsured deposits are inadequate explanations of which banks experienced runs in 2023.

The standard account of the March 2023 banking crisis broadly identifies two factors in tandem as the proximate causes: uninsured deposits and interest rate risk. For example, Acharya et al. (2023) emphasizes that the crisis was the result of the "compound error" of these two factors. The standard story combines the two factors because focusing on unrealized losses or uninsured deposits alone casts too wide a net. We suggest that even taken together, the net is still miscast for understanding which banks experienced the most stress.

Uninsured deposits. Silvergate, SVB, and Signature do stand out in this dimension, with 89%, 94%, and 89% of their deposits uninsured, respectively. Yet, a handful of other banks also had levels of uninsured deposits around this magnitude. Those banks were operating under substantially different business models—a common one being custody and trust services—an immediate sign of the importance of a bank's business model in understanding its balance sheet characteristics. While First Republic had an elevated rate of uninsured deposits at 67%, several other banks that were unaffected by runs shared this level of insurance. PacWest and Western Alliance were both within 10 percentage points of the industry average of 45%; see Table 2.

Unrealized losses. Many banks had levels of unrealized losses comparable to those of the failed banks and escaped failure. For example, S&P Global Market Intelligence reported that, after adjusting banks' tangible common equity (TCE) for unrealized losses on held-to-maturity (HTM) securities, 54 had negative TCE ratios in 2022-Q3, while a further 86 were under 2% and an additional 470 had TCE ratios under 5%.[42] A now-declassified internal Fed presentation from February 2023 reported that as of the end of 2022-Q3, 722 banks had unrealized losses on HTM securities alone that exceeded 50% of their tier 1 capital.[43] Moreover, these figures do not account for unrealized losses on held-for-investment loans, which were likely around three times as large as HTM securities losses.[44]

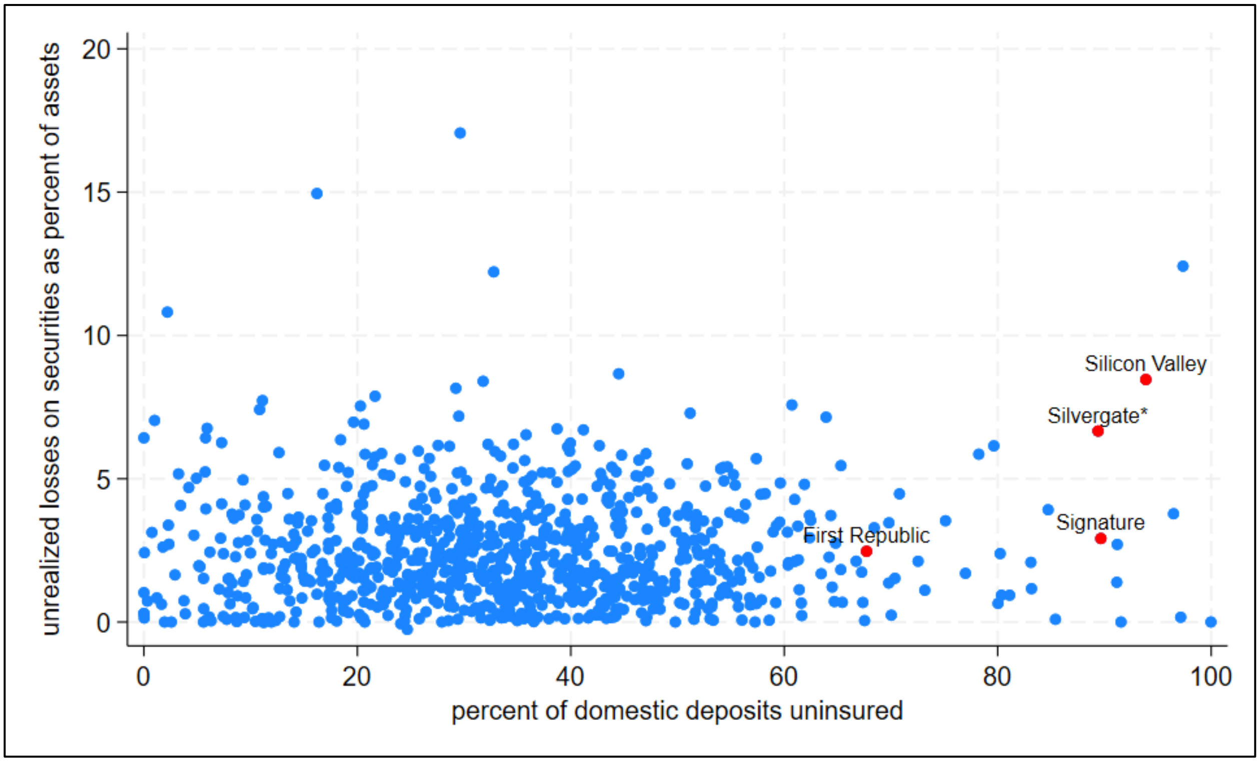
[42] Seay and Villaluz 2023

[43] Federal Reserve 2023a

[44] Drechsler et al. (2023); Flannery and Sorescu (2023); Jang, Sun, and Yang (2024); Granja et al. (2024); Jiang et al. (2023). See fn 52.

To narrow the field of troubled banks, the standard account emphasizes that only banks with both unrealized losses and the highest levels of uninsured deposits experienced runs. Figure 3 plots these two variables for banks with assets above $1 billion, consistent with the standard account, measures unrealized losses only on securities holdings for simplicity.

Figure 3 – Unrealized securities losses and uninsured deposits



Sources: Call reports as of December 31, 2022, except Silvergate, for which we used data from September 30, 2022. Banks with assets of at least $1 billion are included.

Interpreting this scatterplot requires resolution of two problems. First, there is little economic reason to single out banks with extremely high levels of uninsured deposits as uniquely vulnerable to runs, whether in reaction to unrealized losses or other fundamentals. Banks with levels of uninsured deposits at, say, 40 or 50 percent should also be subject to market discipline from uninsured depositors in the presence of asset losses. While a bank with 90 percent uninsured deposits might experience more outflows than one with 50 percent uninsured deposits, the relevant question is whether the one with 50 percent uninsured deposits would experience enough outflows for it to fail. Our view is that the upper right area of Figure 3 is not a unique danger zone. Widespread withdrawals by uninsured depositors controlling just 50 percent of deposits are quite capable of overwhelming a bank. In fact, we suggest that bankers and policymakers should be surprised and concerned if average levels of insurance coverage are inadequate for the purpose of market discipline. US federal deposit insurance has been partial by design since its inception in 1934. Its express purpose is to safeguard retail depositors while maintaining market discipline through large uninsured depositors, and that theory has never rested on 90 percent being uninsured. Indeed, many banks with average levels of insurance coverage have suffered devastating runs and failed. Examples from recent memory include Wachovia, Washington Mutual, and Indymac in 2008, which had uninsured deposits of 39%, 26%, and 11% respectively. In 1991, Bank of New England had only 15% of deposits uninsured but failed after a run.[45]

Average levels of uninsured deposits can put severe pressure on a bank if withdrawn even to a moderate degree. An IMF report using US banks' end-2022 balance sheets noted that, in a valuation shock like that of 2023 and assuming no new borrowing, advanced economy banks would generally need to dip into their held-to-maturity assets after a runoff of just 5-10% of their deposits.[46] Jiang et al. (2023) similarly calculated that that 190 banks could fail if "only half" of uninsured depositors were to withdraw. Yet depositors did not withdraw en masse at 190 different banks, nor have 190 additional banks failed.

Econometric analyses have generally found the standard account's balance sheet metrics have some predictive power for bank runs, but the estimated effect is too small to explain the severity of the 2023 runs, and much variation in the data remains unexplained. Glancy et al. (2024), for example, find an average run of 4 cents of every dollar of uninsured deposits, rising to 10 cents if interacted with unrealized losses at the 90th percentile of losses across banks.[47] These are large economic effects but still far below the outflow rates at the banks that failed. Cipriani, Eisenbach, and Kovner (2024) also find predictive power for uninsured deposits, but one of their main findings is that significant numbers of banks with weak balance sheet metrics did not experience runs. They compare the 22 banks that experienced deposit runs from March 9-14,

[45] US Congress 1991, 113

[46] IMF 2023, chap. 2

[47] Notably, the authors make some exclusions from their sample, including custody banks. Presumably, this is because custody banks operate with high, but relatively stable, uninsured deposits due to their unique business model. But this exclusion, which seems like an obvious choice from an econometric analysis perspective, underlines our point for exactly the reason the exclusion is so obvious: a simple read of those banks' balance sheet metrics, such as uninsured deposits, would lead to incorrect conclusions about exactly how risky those businesses are.

2023 to the rest of the banking system. Analyzing cash holdings, capital ratios, uninsured deposits, and HTM securities losses, they find that 9 of the 22 banks are not in the worst decile of any of the four measures and 10 are in the worst decile for only one measure. While they keep bank identities confidential, the results indicate that at least 19 of the 22 banks that experienced runs were not in the worst decile of both uninsured deposits and unrealized securities losses, the two variables that the standard account emphasizes as together explaining the crisis.[48]

The standard account's focus on uninsured deposits and unrealized losses provides the neatest explanation for SVB but frays upon closer examination of the most-affected banks. Focusing on the interaction of unrealized losses and uninsured deposits struggles to explain why Signature Bank, which lacked substantial unrealized losses, fell quickly after SVB and Silvergate, or why First Republic—with an uninsured deposit share substantially lower—was put on life support at effectively the same time. It also struggles to explain why the next-most impacted banks were PacWest and Western Alliance (see Fact #4). In Table 2, we display these banks' uninsured deposits and unrealized interest rate losses—the combined total for both securities and loans.

[48] The authors also find that while run-on banks generally had worse balance sheet ratios than non-run banks across several metrics, there is considerable overlap in the distributions: "The weakest 25% non-run banks have balance sheet characteristics similar to or worse than the median run bank." The authors then compare the run banks to subgroups of the weakest *non-run* banks and are unable to establish statistically significant differentiating characteristic, inclusive of testing a subgroup of banks above the 70th percentile in both uninsured deposits and unrealized losses. While the authors refer to this as "sunspot outcome," we instead find it still consistent with a view based on economic fundamentals—just not fundamentals easily captured in balance sheet ratios, but ones still well understood by the market. Namely, we think the sunspots can be explained by the perceived (non)viability of the banks' business models, an omitted variable in econometric studies.

Table 2: Uninsured deposits and unrealized interest rate losses as of December 31, 2022

Bank	Uninsured deposits/Total Assets	Uninsured deposits/Total deposits	Unrealized losses/assets (both securities & loans)	Unrealized losses/equity
Silvergate	78%	89%	3%	32%
SVB	72%	94%	7%	87%*
Signature	72%	89%	2%	27%
First Republic	56%	67%	13%	154%
PacWest	42%	50%	5%	49%
Western Alliance	44%	54%	6%	75%
Industry-wide (approximate)	39%	45%	6%	65%

Deposits and total assets data are from call reports for 12/31/2022; unrealized losses and equity data are from Form 10-Ks for 2022. Since Silvergate did not file a 2022 10-K, its data are from its 9/30/2022 call report and the corresponding Form 10-Q. Industry-wide data on deposits, assets, and GAAP equity are from the FDIC and FRED. Industry-wide data on duration-related loss estimates are from Drechsler et al. (2023), adjusted to avoid double-counting of losses on available-for-sale securities, which are already reflected in GAAP equity; see fn 52.
** SVB reported an unrealized gain of almost $1 billion on its held-for-investment loan portfolio. Ignoring that gain would take its unrealized losses/equity ratio to 93%; the ratio to total assets would still round to 7%.*

The industry average share of deposits that were uninsured was approximately 45%.[49] The industry average of unrealized losses due to interest rate repricing was approximately 65% of equity.[50] PacWest had just 50% of its deposits uninsured at the end of 2022—and even less when including those eligible for pass-through insurance—with unrealized losses (on both securities and loans) of just 49% of its equity, and less than its tangible common equity.[51] Western Alliance's deposits were 54% uninsured at end-2022 (and likewise lower when accounting for pass-through insurance), and its unrealized losses ate through just 75% of its equity and were less

[49] FDIC 2023f

[50] Drechsler et al. (2023) finds $1.7 trillion of duration-related losses as of the end of 2022; we have added back the $277 billion of unrealized losses that the FDIC (FDIC 2023a) reports were on available-for-sale securities—and would thus already be reflected in GAAP equity—to avoid double-counting. The net $1.423 trillion of losses is thus consistent with the hand-collected data on individual banks we have used throughout this paper. Drechsler et al. (2023) is the median estimate among itself, Flannery and Sorescu (2023), Jang, Sun, and Yang (2024), Granja et al. (2024), and Jiang et al. (2023).

[51] PacWest Bancorp 2023b; 2023c; 2023a

than its tangible common equity.[52] Signature's unrealized losses offset just 27% of its equity, and Silvergate's just 32%—substantially lower than the industry average of 65%.

The economic underpinnings of the standard account rely on the idea that large unrealized losses relative to equity threaten the ability to pay out depositors at par and therefore can spark a run. However, withdrawal incentives can be affected by a number of other factors. Because of those other factors, even a demonstrated ability to fully cover uninsured depositors does not seem to have been a failsafe for the most-impacted banks in the 2023 crisis:

- Prior to Silvergate's closure, it was regularly communicating that it had cash assets in excess of digital asset deposits (which represented effectively all of it deposits).[53] Its run continued. It voluntarily liquidated and did pay out depositors in full.
- SVB UK, an SVB *subsidiary* that met its own capital and liquidity requirements, also experienced a severe run on March 10, 2023 and was seized over the weekend. As a UK subsidiary, SVB UK faced specific capital charges for interest rate risk in the banking book (IRRBB) and sectoral concentration—in contrast to its US sibling. As the BIS noted, "it is likely that [SVB UK] would have had enough assets to pay out all depositors (insured and uninsured), given the size of its overall capital and their alignment with the risks the bank was taking, especially due to Pillar 2 add-ons for concentration risk and IRRBB."[54] That did not prevent SVB UK from experiencing a run in parallel with its US parent.
- When SVB reopened on Monday, March 13 as Silicon Valley Bridge Bank (SVBB), it began communicating that it had unlimited FDIC coverage for existing *and new* deposits.[55] Even so, it continued to experience net outflows until the end of the week.[56]

[52] Western Alliance Bank 2023b; 2023d; 2023a

[53] See, e.g., Lane 2022; SCC 2023a; SCC 2023b.

[54] BIS 2023

[55] SVBB 2023a; SVBB 2023b. As SVBB's CEO would later say, "Despite the creation of the bridge bank and the extension of the deposit protection to all deposits, which was extremely valuable, obviously Silicon Valley's clients were actively considering whether they should take their business elsewhere. And, understandably, lots of them did that. Similarly, key employees . . . were being actively recruited away by competitors" (SRAC 2023).

[56] SRAC 2023. SVBB would ultimately borrow $126.5 billion from the Fed's discount window in its two-week existence, some of it undercollateralized (Kelly 2024b).

- First Republic's run came in two bouts. The first began on March 10; the run reignited following First Republic's Q1 financial disclosures on April 24, 2023.[57] This second run occurred despite First Republic showing a ratio of available liquidity to uninsured deposits (excluding the term deposit placed by the bank consortium) of over 250%.[58]
- PacWest put out a press release on March 17, 2023 updating the market on its financial picture—inclusive of saying, "Available cash exceeds total uninsured deposits."[59] On March 22, it gave another update, this time putting specific numbers on it; its available cash represented 120% of uninsured deposits.[60] However, it remained vulnerable to further outflows. It would lose a little over 3% of its deposits between April 25 and May 2, with First Republic having failed on May 1.[61] News that it was exploring a sale broke after hours on May 3; it responded with a press release which included a statement that, "Our cash and available liquidity remains solid and exceeded our uninsured deposits, representing 188% as of May 2, 2023." Yet, it experienced significant outflows the next two days. It reported a deposit decline of 9.5% on the week of May 1–May 5, "with a majority of that decline occurring on May 4th and May 5th."[62]

There are also examples of the opposite, in which banks with elevated unrealized losses and uninsured deposits did not incur runs. The Wall Street Journal published an article focused on Amalgamated Bank on July 15, 2023 that highlighted that the bank's unrealized losses matched its total equity and that 62% of its deposits were uninsured.[63] Yet, unless you read that story, this is likely the first time you're hearing about Amalgamated in the context of the 2023 crisis. Its stock price rose the week of that story, and its total deposits increased that quarter. As the WSJ reported, Amalgamated focuses on banking nonprofits and unions—a business model not as cyclically sensitive as one focused on VC or crypto (see Fact #2).

---

[57] FDIC OIG 2023

[58] First Republic Bank 2023

[59] PacWest Bancorp 2023c

[60] PacWest Bancorp 2023e

[61] Doherty and Natarajan 2023; PacWest Bancorp 2023h. Notwithstanding the 3% figure, PacWest said in its May 3 release that "the bank has not experienced out-of-the-ordinary deposit flows following the sale of First Republic Bank and other news" (PacWest Bancorp 2023h).

[62] PacWest Bancorp 2023i

[63] Weil 2023

We propose that the stability of the business model is the key attribute that differentiates the banks that failed or nearly failed from those that did not. Severe unrealized losses were commonplace across the banking industry. The extremely high levels of uninsured deposits at Silvergate, SVB, and Signature reflect the unusual nature of their business models that proved to be exceptionally unstable. Critically, the unusual nature of the business model caused the severity of the runs, not the level of insurance itself. Moreover, the interaction of high uninsured deposits and unrealized losses offers an unsatisfying explanation for the most severe bank runs of 2023 beyond the SVB case.

4. **While the crisis affected midsize "regional" banks in general, the most severely impacted banks were geographically clustered around the tech- and crypto-heavy West Coast.**

The standard account of the 2023 banking developments often refers to the episode as a regional banking crisis. In the US, "regional banks" refers to midsize banks, which have no standard definition but can be thought of roughly as ranging anywhere from $10 billion to $250 billion in size. This appellation gets some things right. First, the banks that failed were in that size range, while smaller banks faced less pressure, and larger banks even benefited in some ways.[64] Second, the negative stock market responses to the crisis were harshest for these midsize banks, which, like those banks that failed, tended to lack a diversity of business lines (unlike the GSIBs) while still facing public markets (unlike small banks). Regional banks as a category therefore were the most punished by deposit flows *after* the crisis had begun, suggesting this category of banks was the most punished by contagion effects.[65]

Yet, there are so-called regional banks in every region of the country; the standard account of this crisis being one of regional banks does not dwell on the lack of geographic diversity among failures and near failures. Silvergate, SVB, and First Republic were all California-based banks. Aside from Signature, which was based in New York but had adopted a similar business model,[66]

[64] Luck, Plosser, and Younger 2023

[65] Caglio, Dlugosz, and Rezende 2024; Luck, Plosser, and Younger 2023

[66] The NYDFS even reported that Signature told regulators on the weekend that it was ultimately closed that it was expecting substantial inflows from clients that withdrew their money from SVB (NYDFS 2023). The NYDFS viewed this claim as "overly optimistic.")

the two banks that were next-most under market pressure were the Beverly Hills, CA-based PacWest Bank and the Phoenix, AZ-based Western Alliance Bank—two banks with substantial venture capital businesses.[67]

Figure 4: A Regional Banking Crisis, Just not a Crisis of Regional Banks

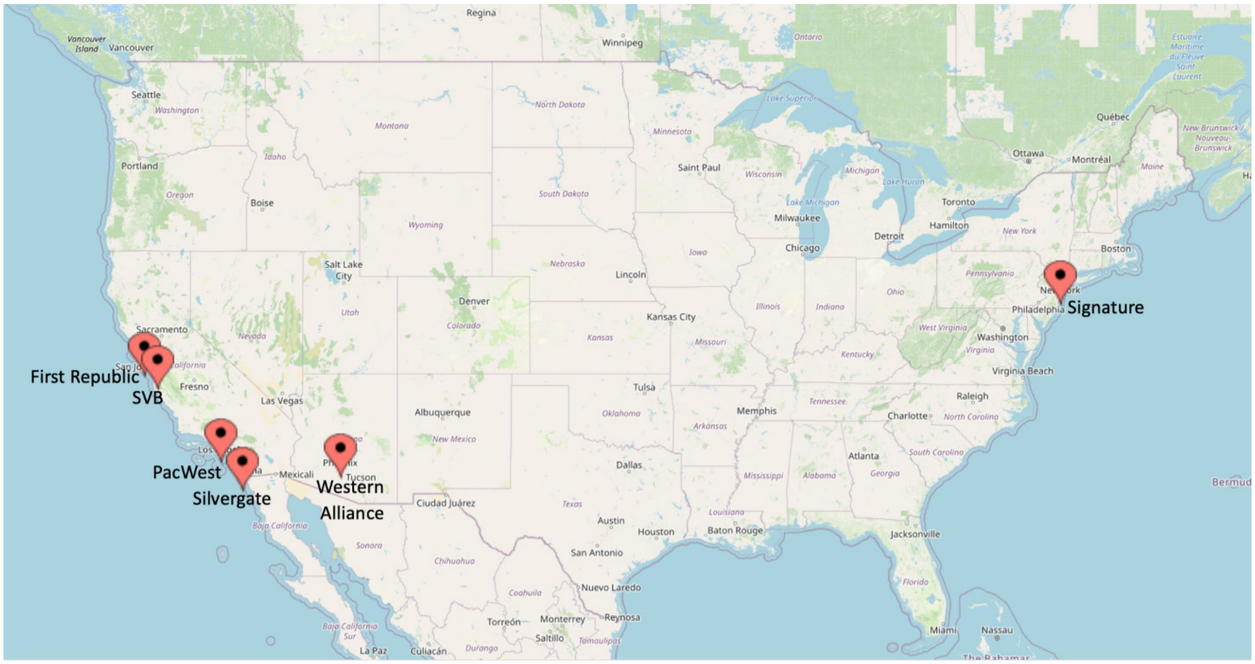


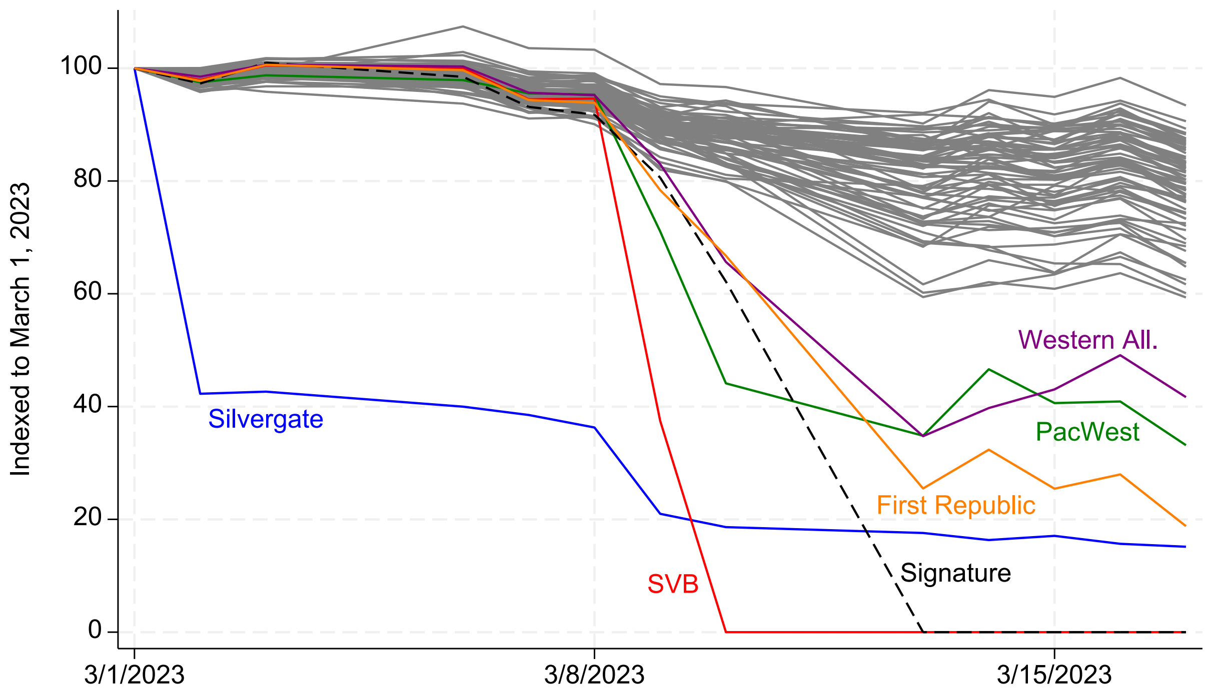
Figure 4: The most affected banks' headquarters cluster on the West Coast, given their venture and crypto focuses.

PacWest lost 20% of its deposits in 2023-Q1, while Western Alliance lost 15% of its deposits across Friday, March 10 and Monday, March 13.[68] These six banks also saw the sharpest stock price declines in March 2023 of all the banks in the KBW Bank and KBW Regional Bank indexes; see Figure 3 (we have added Silvergate, which was not a constituent of the KBW indexes). The six banks all breached a 60% decline while the other 69 banks in the indexes had declines of around 40% or less.

[67] R. Copeland 2023; Doherty and Natarajan 2023; Heeb and Wallace 2023; PacWest Bancorp 2023c; Seay and Portes 2023; Western Alliance Bank 2023c

[68] Fitzgerald 2024; Franklin and Gandel 2023

Figure 5: Bank equity prices, indexed to 100 as of March 1, 2023



Source: Bloomberg. Includes all 74 constituents of the KBW Bank Index (BKX) and KBW Regional Bank Index (KRX)—and adds Silvergate.

Western Alliance, which was more diversified than the failed banks, was able to fend off failure by maintaining the strength of its deposit franchise: It provided large depositors with confidential information about its financial health and was able to repeatedly report relatively strong deposit numbers.[69] PacWest survived by merger.[70]

Unlike SVB, First Republic did not provide commercial loans directly to the venture capital ecosystem, which likely helped protect it from the commercial deposit runoff that SVB had experienced prior to its run. However, as the FDIC reported of First Republic, "by virtue of its market and business model, it served customers employed in and related to the venture capital and tech industries."[71] Indeed, on March 9, the first day of the run on SVB, First Republic

[69] Alix 2024; R. Copeland 2023; Fitzgerald 2024; Reyes 2023a; 2023b; Seay and Portes 2023; Western Alliance Bank 2023c; 2023d

[70] Surane, Natarajan, and Doherty 2023; Thomas et al. 2023

[71] FDIC 2023g

experienced material deposit *inflows*, suggestive of an overlapping customer base with preexisting accounts at both banks.[72] A report from the FDIC Office of Inspector General (FDIC OIG) noted a market perception that First Republic was similar to SVB "due to First Republic's location in the same geographic market and similarities in customer bases."[73] It added that many First Republic and SVB customers also knew and communicated with each other.[74] PacWest and Western Alliance were similarly affected by what was the most severe vector of contagion in March 2023: that of the business model.[75]

One indication of the regional concentration of the affected banks was that emergency discount window loans were concentrated at the Federal Reserve Bank of San Francisco, as noted by a Wall Street Journal analysis. That article, after conservatively ascribing as of the much emergency borrowing volume as possible to the failed banks, showed that at least $36 billion of emergency lending remained, all of it in the San Francisco Fed district.[76]

5. Affected banks had been under considerable prior market pressure in 2022 and were not suddenly scrutinized for the first time in March 2023.

The banking system's aggregate unrealized losses peaked in 2022-Q3, six months before the crisis. Indeed, SVB's annual financials, which it published in February 2023, showed its unrealized securities losses had been declining in recent quarters. The standard account of the crisis holds that "depositors, investors, and supervisors turned a blind eye to the routine quarterly disclosure of these [unrealized securities] losses until the run started in March 2023," (Acharya et al. 2023), but in fact these banks were already under much scrutiny.

Equity prices provide one measure of investors assessing the exposures of banks to unrealized losses and uninsured deposits. Both Chang, Cheng, and Hong (2024) and Choi, Goldsmith-Pinkham, and Yorulmazer (2023) find that equity investors had priced in vulnerabilities associated with uninsured deposits well before the March 2023 crisis. These papers do not find

[72] FDIC 2023g; FSB 2023; Roffler 2023

[73] FDIC OIG 2023

[74] FDIC OIG 2023

[75] Notably, PacWest, Western Alliance, and First Republic had not experienced organic deposit runoff prior to the run episode—unlike the other failed banks. PacWest and Western Alliance were more diversified across industries, while First Republic's exposure to venture/tech was more indirect, as discussed.

[76] Timiraos 2023

the same discounts for unrealized securities losses, but equity market analysts were widely evaluating the problem. Equity analysts posed questions to SVB officials about its bond portfolio marks and client cash burn rates in several quarterly earnings calls prior to March 2023.[77] Choi, Goldsmith-Pinkham, and Yorulmazer (2023) also finds that "the same banks that suffered more after the SVB failure had also underperformed in the previous year," suggesting the risks that investors anticipated were directionally correct but not captured in balance sheet metrics like HTM securities losses. In fact, of the 74 bank stocks in the KBW Bank Index and KBW Regional Bank Index, the largest three price declines from March 1, 2022 to March 1, 2023 were Signature, SVB, and PacWest; First Republic was the fifth largest. Silvergate was not large enough to be a constituent of either index but experienced a sharper decline in that window than all of them.

Prior scrutiny also included the financial press. The risks to Silvergate and Signature from providing services to crypto-asset companies were widely discussed in 2022. For example, a July 2022 *Financial Times* article described market perceptions of Signature as a crypto bank and concerns over its profitability, liquidity, and supervisory standing, especially in light of the ongoing crypto winter.[78] SVB was the subject of a February 2023 *Financial Times* article that discussed how the bank's unrealized losses had weighed on its stock and attracted short sellers.[79] The article also compared SVB with what it dubbed its "smaller rival Silvergate," noting Silvergate's realization of securities losses in late 2022 in the face of crypto deposit outflows.

We propose that risks from business models, asset losses, or uninsured deposits were not ignored by investors, analysts, or the media. These risks were baked into market pricing with some probability. The acute phase of the crisis began after March 8 with new information—i.e., an "information event."[80] Notably, the new information was not that SVB had unrealized losses or uninsured deposits. The two new pieces of information on March 8 were that (a) Silvergate announced its failure (see Fact #1), and (b) that SVB had experienced unexpectedly steep deposit outflows, and it would need to raise capital—which it was only partially able to raise privately.

[77] SVB Financial Group 2022a; 2022b; 2023a

[78] McCrum and Franklin 2022

[79] Kinder et al. 2023

[80] See, e.g., Dang, Gorton, and Holmström 2020; Gorton 2018 and the sources therein.

SVB announced that "client cash burn has remained elevated and increased further in February, resulting in lower deposits than forecasted"; that is, even greater *organic* deposit runoff than expected (see Fact #2). Against the backdrop of that higher cash burn, SVB was selling $24 billion of available-for-sale (AFS) securities—effectively its entire AFS book.[81] This raised the market's perception of the probability of SVB realizing the unrealized losses in its HTM book, thus changing the economics of HTM assets.[82] SVB also announced it was seeking to raise $2.25 billion of capital, but had only raised (a contingent) $500 million through private placement, which was suggestive of a failed, or at least rushed, private placement. This implied that SVB's situation was deteriorating faster than previously understood, or that SVB had showed potential investors confidential details on its financial picture and those investors had rejected making an equity investment.[83] Both were true.[84]

Timing the crisis to these new pieces of information, rather than spontaneous market scrutiny, supports the conclusion that the market was primed to react negatively to bad news because of longstanding concerns about the business model shared by the affected banks.

6. The historically unprecedented speed of the 2023 bank runs is not well explained by social media or digital banking applications.

The most remarkable feature of the 2023 crisis was the speed of the deposit runs. Rose (2023) compares the speed of the runs on the failed banks along with a few selected historical comparisons from other bank runs in 1984 and 2008. The speed of the runs in 2023 was extraordinary and historically unprecedented.

Many commentators have pointed to technology and social media as increasing the speed of runs. Acharya et al. (2023) states that "In the latest incarnation, [runs] are electronically engineered and propagated via social media." Benmelech, Yang, and Zator (2023) states that "recent technological advances in online banking enabled banks to attract deposits from nonlocal

[81] SVB 2023; Cohan 2023

[82] Hughes and Lacey 2023

[83] As Bloomberg reported, "Silicon Valley Bank's collapse and the ensuing market chaos could have been mitigated if its last-gasp $1.3 billion stock offering had been more fully negotiated in secret, dealmakers say" (Singer 2023). See also: Coben 2023. See Surane, Natarajan, and Doherty (2023) for the contrast with PacWest's equity deal.

[84] Andriotis, Driebusch, and Gottfried 2023; Cohan 2023; Hoffman 2023; Hughes and Lacey 2023; Primack 2023; Singer 2023

customers," which they view as more likely to run. Koont, Santos, and Zingales (2024) emphasizes that "moving money from a deposit to a money market fund can be done with a single mouse click without leaving your sofa."[85] The FDIC judged that "in retrospect, it does not appear that banks or banking regulators had sufficient appreciation for the risks that large concentrations of uninsured deposits could present in a social media-fueled liquidity event."[86]

The main challenge for technology and social media centered explanations for speedy deposit outflows is that banking apps and social media are retail phenomena. It's internally inconsistent to suggest the 2023 crisis was both a run of uninsured depositors—that is, those with cash balances above $250,000—and centered around retail apps and social media. Bank runs are institutional and led by large corporate depositors, necessarily so since deposit holdings are concentrated in their hands.[87] Indeed, in examining confidential, transaction-level wire data covering the banking system from March 9–14, 2023, Cipriani, Eisenbach, and Kovner (2024) reports that "we see almost no evidence of runs by retail depositors."

Mobile banking apps cannot reasonably increase the speed withdrawals by corporate treasurers by several days. Corporate treasurers have had methods to withdraw funds quickly for decades—and they do not depend on Twitter/X discourse for financial news. Indeed, Rose (2023) discusses how the 1984 run on Continental Illinois lasted more than a week even as it largely occurred through automated wire transfers on the behalf of large, sophisticated counterparties.

It's also worth noting that digital apps typically impose four- or five-figure daily withdrawal limits; while they may hasten the movement of retail savings to the highest-rate offerings, they

[85] Benmelech, Yang, and Zator (2023) similarly finds that banks with "low branch density"—that is, banks with relatively low brick-and-mortar presence (and higher online presence) for their size—saw more negative stock price reactions around the bank failures of 2023. They also show that a one-standard-deviation decrease in branch density was associated with an additional outflow of 4.4% of uninsured deposits in the first *quarter* of 2023—a notable amount, but not an outcome-changing impact in 2023. Moreover, using branch density as a proxy may be overly encompassing. For instance, the study notes that SVB, Signature, and First Republic had branch densities well below the 10th percentile; yet, these banks notoriously grew due to their high-touch, niche service—not rigorous competition for internet deposits. To the extent a low branch density is a proxy for a lack of diversification, it may be indicative of the business model issues discussed throughout this paper, rather than just gathering "hot money" from the internet. Moreover, the findings of higher deposit betas in these data is likely impacted by the sharpness and severity of the most recent rate hiking cycle; as Greenwald, Schulhofer-Wohl, and Younger (2023) shows, deposit betas are convex, increasing in the level of rates.

[86] FDIC 2023g

[87] See, for example, A. Copeland, Martin, and Walker 2014; Covitz, Liang, and Suarez 2013; Gorton and Metrick 2012; Pozsar 2011; Rose 2023; Shin 2009; Singh and Aitken 2009

cannot facilitate something like a lightning-quick withdrawal of seven-plus-figure balances—i.e., something like 2023. For instance, Signature's March 10 run consisted of just 1,600 withdrawals, an average $11.6 million each.[88] Silvergate's largest 10 depositors accounted for 48 percent of its deposits, averaging $630 million each.[89] More broadly, adding one or two days to 2023's runs to simulate historically slower payments tech would not change its unprecedented speed.[90] The speed is thus more correctly interpreted as a statement on the viability of the run banks.

The most widely cited paper on social media, Cookson et al. (2023), finds that banks that received high amounts of Twitter attention prior to the crisis lost 4.3% more stock value. They find larger effects during the run period for banks with greater balance sheet vulnerabilities. They also find that a one-standard-deviation increase in the interaction of Twitter pre-exposure, unrealized securities losses, and uninsured deposits predicted an additional outflow 2.1% of uninsured deposits in the first *quarter* of 2023—notable, but relatively minor in the scope of the 2023 crisis.

Just because we can *observe* aspects of bank runs on social media, does not mean social media is the *source* of the run—or that the specific form of communication is particularly important. If Instant Bloomberg (IB), the Bloomberg Terminal's chat function ubiquitous on Wall Street, had all its messages from 2008 published online, we could similarly observe bank runs playing out in real time. Yet, no one would argue that IB chats caused the Global Financial Crisis. Going back further in history, bank runs were exacerbated by the visibility of physical lines that stretched outside; we wouldn't have let policymakers get away with blaming the lines.

Broadcasting concerns about a bank on social media would undermine the reason for the running, which is to be first to withdraw (and hope you can soon return your funds safely).

[88] NYDFS 2023

[89] Silvergate 2022

[90] Koont, Santos, and Zingales (2024) identifies what the authors call "digital bank walks," reporting that banks with digital apps face higher deposit betas and greater deposit outflows than those without. At its most extreme, the case of a digital bank that also has a brokerage, the authors find the deposit franchise could be as much as 14-22% less valuable. This is a very important finding, but it has fewer implications for the behavior of bank runs, the 2023 version of which certainly did not occur overnight as a result of unwillingness of a bank to raise deposit rates—nor did deposit betas experience an above-trend increase after the runs (Luck and Plosser 2024). Despite substantial unrealized losses across the banking system in 2022 and 2023, bank net interest margins remained healthy and stable; the Financial Times reported $1 trillion of additive net interest income for the banking system because of the Fed's rate hikes—with banks retaining 66% of the income from higher rates and passing the rest to customers. This was only slightly lower share than in past cycles but is clearly still a substantial (Franklin and Gandel 2024).

Depositors engaging in a run do not have an incentive to broadcast their withdrawals or encourage others to withdraw. As the Wall Street Journal reported of the SVB run: “Some [VCs] debated if they should wait to warn startups to buy themselves more time to move their own, much bigger, balances.”[91] Similarly, *Bloomberg News* reported, “In many cases, investors moved to warn companies in private, perhaps seeking to both safeguard their investments and avoid a larger bank run.”[92] *Bloomberg News* added (our emphasis):

> **Channels like messaging platform WhatsApp, email chains, texts and other closed forums were full of chatter over the bank’s financial precarity well before those fears showed up Twitter.** In tech, where executives’ networks can dictate whether companies have access to the best information, warnings about SVB had been simmering for a while when they boiled over into wider view online. […] **By the time most people figured out that a bank run was a possibility on Thursday, March 9, it was already well underway.**

Information on Twitter therefore lagged other forms of communication and was more consistent with observation of a bank run than a cause of the run. Social media attention is less of a coordination tool for institutional runners and more about a retail fallout, which is not typically a meaningful component of modern bank runs.

Some additional perspective on the role of technology and social media can be gleaned by returning to the crypto-asset sector. In 2022, several crypto-asset firms that offered investment products experienced severe runs. If technology has caused all runs to be faster, these firms should also have similarly experienced the fastest runs in history. None of these firms had any brick-and-mortar presence. Their investors had always interacted with them electronically and generally through mobile apps that made investments and withdrawals quite easy. Likewise, if social media-based coordination sped up runs, crypto-asset firms would be similarly affected, given the large and extensive discussions of these companies on so-called “crypto Twitter.” These investors also had no deposit insurance, or any reasonable expectation that the federal government would bail them out in any way. Patel and Rose (2023) describe the speed of runs at five crypto-asset platforms: Celsius, Voyager Digital, BlockFi, Genesis, and FTX. By any

[91] Foldy, Ensign, and Baer 2023

[92] Rai et al. 2023

standard, these runs were severe, but these episodes averaged durations of 10 days and outflows of about 21% of funds—and were therefore not even in the same ballpark as the runs that occurred on the four banks that failed in March-May 2023.

7. **The crypto and VC sectors had a special role in triggering the 2023 runs because the affected banks had business models focused on them. Once the runs were initiated, other large, sophisticated depositors ran with roughly the same speed and severity.**

Some accounts of the crisis have proposed that crypto and venture capital depositors, by their nature, are faster to withdraw funds during a run than others, and thus their presence at the failed banks can explain the speed of those banks' runs.[93] High-net-worth individuals have also been labeled as a category of depositors likely to run. Indeed, high-net-worth individuals may indeed warrant recalibration if they behave more like institutional depositors than retail ones (see Section IV, Liquidity reforms), but it is important to separate two different mechanisms that apply to crypto or VC depositors. Crypto-assets and tech startups are risky areas of business, and depositors from those sectors may therefore be more susceptible to shocks and more likely to withdraw in the normal course of business. Crypto-asset shocks may affect banks, like the failure of FTX did. The concentration of depositors connected to each other through the crypto or VC industries may have also been an important coordination mechanism that helped the runs on those banks begin. But once the March 2023 runs began, it is not clear that venture capital or crypto-related depositors ran any faster than other institutional depositors. To evaluate this idea, we must look past SVB, which had a deposit base almost exclusively VC-related, and Silvergate, whose depositors were effectively all from the crypto-asset sector. Signature and First Republic had large exposures to depositors in these sectors but also served depositors in several other sectors.

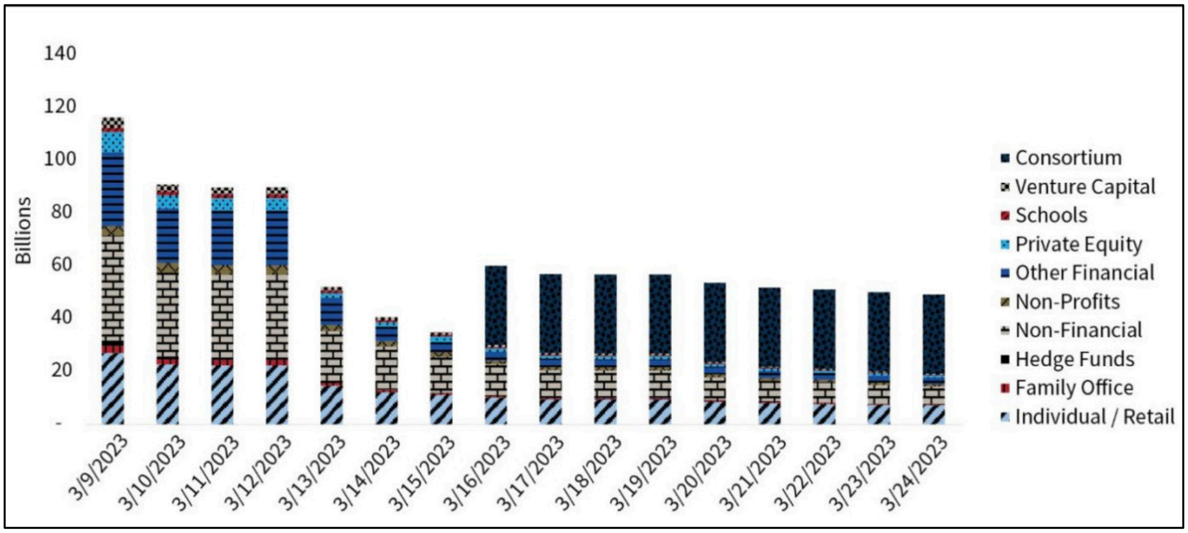
The New York State Department of Financial Services (NYDFS) reported in its postmortem of Signature that "the percentage of digital asset customer withdrawals on March 10 was relatively proportional to the percentage of digital asset customers in the deposit base overall." That is, the run by crypto clients was as extreme as for the other 82% of Signature's (largely uninsured)

[93] Barr 2024

deposit base.[94] The NYDFS added that "The bigger issue for Signature was that the Bank had a high concentration of uninsured deposits **and was perceived as a crypto bank**" (emphasis added).

Similarly, the FDIC's postmortem on First Republic shared the chart shown in Figure 6.[95] It shows First Republic losing a substantial share of its VC-related deposits—but also similar shares of its deposits from other industries.

Figure 6: First Republic Daily Uninsured Deposit Balances by Industry Type



Source: FDIC (2023g)

IV. Conclusions and Implications for Policy

1. Liquidity reforms

The 2023 banking crisis raises the question of whether liquidity policies and practices should be altered in light of the speed and severity of the withdrawals. Proposals have included changes to the Liquidity Coverage Ratio or greater prepositioning of assets at the Federal Reserve's discount window.[96] Such proposals have many precedents, including former Bank of England Governor Mervyn King's "pawnbroker for all seasons" concept in which a bank's available liquidity—inclusive of haircut-adjusted collateral posted to the central bank—should exceed 100% of short-

[94] Hayes 2023; NYDFS 2023

[95] FDIC 2023g

[96] Ackerman 2024; Barr 2024

term liabilities.[97] The Group of 30 has recently proposed a broadly similar requirement that available liquidity exceed 100% of runnable liabilities (their definition of which excludes insured deposits).[98]

If changes in technology and social media have made all depositors more likely to run, then the implication for liquidity reform would be that bank liquidity should be bolstered across the board. If particular types of depositors are more likely to run, such as crypto-asset, tech startup, or high-net-worth depositors, then the implication would be that elevated liquidity holdings should be targeted for those groups in liquidity stress regulations. Our conclusions are a bit different. We suggest the 2023 crisis supports a focus on institutional depositors rather than retail depositors and on the macroeconomic sensitivity of certain sectors' deposit balances—but not much differentiation among institutional depositors once a run has begun. We do view the concentration of the failed banks' deposits at crypto-asset and tech deposits as being an integral part of the crisis, but mostly because those deposits signified the broader business models of the banks as revolving around those sectors.

The episode does suggest that high-net-worth depositors may be more likely to behave like institutional depositors than like other retail depositors. High-net-worth depositors likely have several characteristics that make them behave more like institutional or brokered deposits than retail ones. Such depositors are more likely to exceed deposit insurance caps and more likely to have accounts at multiple banks which can speed up transfers. Some depositors who withdrew from SVB, for instance, were delayed by the need to establish new accounts at different banks, consistent with their somewhat limited access to banking services, a factor that generally does not apply as much to high-net-worth depositors.[99] Additionally, high-net-worth depositors are likely more attuned to financial news than the typical retail depositor and more likely to be receiving institutional-level advice, such as from a broker or wealth advisor. For instance, on the

[97] King 2016

[98] Group of 30 (2024). The G30 Report shows that almost all banks would be able to meet this requirement with their existing balance sheets, assuming they underwent such prepositioning of their assets. They note that the primary expectation for such a rule should be ameliorating contagion. The G30 Report also adds the important caveat that while the proposal would require less banking system restructuring than the PFAS proposal, "the amount of constraint and the resulting adjustments require more detailed analysis. Does the proposal strike the appropriate balance between constraining extreme bank business models and not impacting the ability of the banking system to perform its financial intermediation function?"

[99] Rai et al. 2023

day SVB was closed, "several large money center banks began advising their clients to pull their funds from First Republic."[100]

If and when reforms to liquidity practices are implemented, and were they to turn out to be beneficial, bank runs will still be hard to eliminate, and it will continue to be beneficial for banks and regulators to be prepared for deposit withdrawal episodes when they occur.

The first mover advantage can be very powerful. Certainly, all else equal, greater liquidity holdings or access can be a stabilizing force for individual banks and can limit contagion. Without complete assurance of 100 percent fund availability, however, a first-mover advantage may still exist and give depositors an incentive to withdraw.[101] Indeed, several banks sought to stave off market concerns during the acute phase of the 2023 crisis by putting out press releases noting their available liquidity exceeded 100% of uninsured deposits.[102] Yet, financial history suggests that depositors may still withdraw even with a 100 percent assurance of fund availability. For example, depositors at Continental Illinois in 1984 continued to withdraw funds from the institution even after it received a 100 percent guarantee from the FDIC, though the withdrawals became more spread out over time rather than in a frenzied run, and the contagion fears died down. Depositors cited a number of factors in continuing to withdraw. Some were concerned about headline risk of being associated with a troubled bank or the bother of justifying the exposure to managers, investors, and counterparties. Some cited ambiguities about how the at-first-glance unambiguous 100 percent guarantee actually applied to particular cases such as foreign depositors. Some were concerned about delays in receiving their deposits even if guaranteed.[103]

That is, even if a bank can demonstrate its ability to pay out depositors at par, depositors may have other reasons to run on a foundering bank—as was the case repeatedly in the 2023 crisis. If a bank's business model is nonviable, such par convertibility may come under threat in the

[100] FDIC OIG 2023

[101] Hill 2024

[102] See, e.g., Bank of Hawaii Corporation 2023; East West Bancorp 2023; First Citizens BancShares 2023; Metropolitan Commercial Bank 2023; PacWest Bancorp 2023f; 2023d; 2023g; Presence Bank 2023. (Notably, UMB Financial Corporation explicitly reported having just 52% coverage, inclusive of other collateralized lending sources (UMB Financial Corporation 2023).)

[103] Carlson and Rose 2019

future—incentivizing an immediate run rather than waiting. A bank that can pay out at par but is otherwise weak is likely not a reliable partner to a business on a go-forward basis as its financial weakness may constrain its lending or other risky services in the future; this thus incentivizes the depositor/borrower (often one and the same) to start building a new banking relationship as quickly as possible.[104] A similar calculus exists for employees, who want to be confident their employer will continue to operate as a going concern indefinitely.[105] A weak bank is liable to lose scale, profits, equity share value, and freedom to operate free from undue supervisory oversight—all of which can threaten its employee retention.[106] Departing employees seeking greener pastures may take loan and deposit clients and other franchise value with them.[107]

Finally, uninsured depositors will continue to be a source of organic outflows over a period of weeks or months. We have described how the banks that came under severe pressure in March 2023 had already experienced substantial organic deposit outflows over the prior year. These outflows were largely the result of these banks' business models which focused on sectors that were in contraction during 2022, as opposed to depositor fear over their lack of insurance. Proposals to increase the coverage of deposit insurance therefore may not have much effect on organic outflows of this kind. Such deposit outflows can be warning signs for banks and supervisors, albeit a noisy one, regarding the sensitivity of a bank business model to macroeconomic or sector-specific conditions.

2. Supervisory practices

In the wake of the 2023 Banking Crisis, there have been proposals that banking supervisors should monitor social media to understand the risks of bank runs. Our view is that social media applies mostly to retail depositors, who were not the key drivers of the 2023 deposit runs. We instead stress the importance of bank business models that focused on serving specific economic sectors for understanding the 2023 banking crisis. This aspect of the crisis has important

[104] In re: 2023, see, e.g., Alix 2024; Fitzgerald 2024. Western Alliance CEO Kenneth Vecchione ascribed some of his firm's survival and recovery of market confidence to the firm's strategic decision to continue with all planned loan deals following SVB's failure.

[105] In re: 2023, see, e.g., SRAC 2023

[106] In re: 2023, see, e.g., McCrum and Franklin 2022; SRAC 2023

[107] In re: 2023, see, e.g., HSBC poaching dozens of bankers from SVB as "part of an effort by HSBC to acquire start-up and venture capital clients that may be looking for new banking relationships following SVB's collapse" (Franklin 2023; Mitchell 2023).

implications for supervisory practices. Banking supervisors already expend some effort in identifying risky business models, and had already identified risks associated with crypto-asset-focused business models in advance of the March 2023 crisis, including joint communications in January and February 2023.[108] The January joint statement said "the agencies have significant safety and soundness concerns with business models that are concentrated in crypto-asset-related activities or have concentrated exposures to the crypto-asset sector." While these statements were careful to note that banks were "neither prohibited nor discouraged" from engaging in crypto-asset related activities, these communications identified risks and established a supervisory nonobjection process for such activities.

Still, it is possible that supervisory practices might benefit from a more general application of business model analysis. While the guidance on crypto-asset focused business models likely applied to Silvergate and Signature, we are not aware of similar guidance that would have applied to Silicon Valley Bank or First Republic. General vulnerabilities can arise from a concentration of franchise value in a macroeconomically vulnerable sector. For example, the Federal Reserve's Office of Inspector General (Fed OIG) report on Silvergate Bank noted that the Board's examiner guidance as a general matter does not include information related to "deposits that are highly concentrated in one industry."[109] The Board concurred with recommendations—from the Fed OIG's reviews of both Silvergate and SVB—to expand guidance to address "concentrated business models."[110] Likewise, the Bank for International Settlements has announced that it will publish in early 2025 an update on its work developing tools for supervisors that respond to the 2023 events—and that this will be inclusive of supervisory "assessment of the sustainability of banks' business models."

In contrast, the standard account of the crisis instead implies that supervisors were not paying attention to interest rate risk or uninsured deposits, which are readily observed from financial statement data. The challenge for this account is that these financial statement variables flagged large amounts of banks that did not come under severe pressure. While focusing on business

---

[108] OCC, Federal Reserve, and FDIC 2023a; 2023b. These joint statements followed individual supervisory non-objection letters from the OCC, FDIC, and Fed in November 2021, April 2022, and August 2022, respectively (OCC 2021; FDIC 2022; Federal Reserve 2022).

[109] Fed OIG 2023

[110] Fed OIG 2024

models might have helped narrow the field, business models are a challenging area for supervision.[111] A 2022 BIS report noted that “in practice, some supervisors prefer not to take supervisory actions against banks with unsustainable business models when such banks still fully comply with all regulations and standards. This approach is driven, at least in part, by concerns that supervisory actions in response to vulnerabilities in banks’ business models may be perceived as a direct involvement of the financial authority in the day-to-day business of the firm and in its strategic decision-making process.”[112] However, traction might be most possible in establishing supervisory *policy* around specific areas with clear connections to the March 2023 crisis, such as the business models focused on volatile sectors that give rise to particularly vulnerable banking franchises. To the extent that banks and supervisors consider changes to liquidity or capital practices, these policies may benefit from provisions related to such business models.

For instance, calls that have emerged since 2023 for explicit capital requirement add-ons for interest rate risk in the banking book (IRRBB) may be overly prescriptive if interest rate risks hinge on business model conditions. Unlike peer jurisdictions, the US has not established Basel’s so-called “Pillar 2” requirements for IRRBB. However, US banks with a robust business model and deposit franchise have been able to avoid realizing much of the unrealized interest rate losses.[113] Supervision can perhaps be a more precise tool in this space than a mechanical capital requirement: With more engaging supervision of business models—and the macroeconomics thereof—supervision can develop a greater understanding of which banks have strong enough franchises to bear unrealized losses and which do not.[114]

[111] Barr (2023) and NYDFS (2023) cite a lack of forcefulness in supervisors’ escalation of issues they already raised with banks, such as SVB’s 31 supervisory “matters requiring attention” at the time of its failure. Yet, it’s also worth noting that First Republic had 0 such matters when it failed (Financial Services Committee 2023, 35; FDIC OIG 2023, 23).

[112] Coelho et al. 2022

[113] The banking system’s interest margins remained very stable throughout the Fed’s rate-hiking cycle as deposit betas rose slowly and remained below 1 (FDIC 2024; Luck and Plosser 2024). In September 2024, *The Financial Times* reported that higher rates had largely been accretive to bank profits, supplementing them by $1 trillion since the Fed began its rate-hiking campaign; banks passed on just one-third of higher interest revenue to their depositors (Franklin and Gandel 2024). That underlines that the bank structure remains more capable at bearing interest rate risk than is implied by mark-to-market pricing.

[114] US capital rules provide bank regulators with a reservation of authority to raise a bank’s capital requirement if the requirement is “not commensurate” with the bank’s “credit, market, operational, or other risks” (Code of Federal

Similarly, relative to mechanical discount window pre-positioning ratios, supervisory expectations for banks' pre-positioning that are tailored to the riskiness of banks' business models may more effectively balance a desire to tighten liquidity requirements for vulnerable banks while avoiding the potential disintermediation costs of steep across-the-board pre-positioning requirements.

Regulations Title 12. Ch. I, II, III). See also: Barr 2025, which recently suggested "the Fed should preserve its discretion to set individually binding capital requirements on firms based on supervisory judgment."

References

(Acharya et al. 2023) Acharya, Viral V., Matthew P. Richardson, Kermit L. Schoenholtz, Bruce Tuckman, Richard Berner, Sehwa Kim, Thomas Philippon, Stephen G. Ryan, Alexi Savov, Philipp Schnabl, and Lawrence J. White. 2023. "SVB and Beyond: The Banking Stress of 2023," July 17, 2023.
https://papers.ssrn.com/abstract=4513276

(Ackerman 2024) Ackerman, Andrew. 2024. "A Century-Old Lending Lifeline for Troubled Banks Has a Major Flaw. The Fed Wants to Fix It.," April 19, 2024.
https://www.wsj.com/finance/regulation/federal-reserve-discount-window-banks-e59d6dbf

(Alix 2024) Alix, Laura. 2024. "How Western Alliance and Its Board Navigated a Crisis," September 18, 2024.
https://www.bankdirector.com/article/how-western-alliance-and-its-board-navigated-a-crisis/

(Andriotis, Driebusch, and Gottfried 2023) Andriotis, AnnaMaria, Corrie Driebusch, and Miriam Gottfried. 2023. "How Goldman's Plan to Shore Up Silicon Valley Bank Crumbled," March 15, 2023.
https://www.wsj.com/articles/how-goldmans-plan-to-shore-up-silicon-valley-bank-crumbled-96bb44bb

(Bank of Hawaii Corporation 2023) Bank of Hawaii Corporation. 2023. "Bank of Hawaii Form 8-K." Form 8-K 1–6887, March 15, 2023.
https://www.sec.gov/Archives/edgar/data/46195/000156459023003643/boh-8k_20230315.htm

(Barr 2023) Barr, Michael S. 2023. "Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank," April 28, 2023.
https://www.federalreserve.gov/publications/review-of-the-federal-reserves-supervision-and-regulation-of-silicon-valley-bank.htm

(Barr 2024) Barr, Michael S. 2024. "On Building a Resilient Regulatory Framework," May 20, 2024.
https://www.federalreserve.gov/newsevents/speech/barr20240520a.htm

(Barr 2025) Barr, Michael S. 2025. "Risks and Challenges for Bank Regulation and Supervision," February 20, 2025.
https://www.federalreserve.gov/newsevents/speech/barr20250220a.htm

(Becker 2023) Becker, Gregory W. 2023. "Written Testimony before the U.S. House of Representatives Committee on Financial Services Subcommittee on Financial Institutions and Monetary Policy Subcommittee on Oversight and Investigations," May 17, 2023.
https://docs.house.gov/meetings/BA/BA20/20230517/115923/HHRG-118-BA20-Wstate-BeckerG-20230517.pdf

(Benmelech, Yang, and Zator 2023) Benmelech, Efraim, Jun Yang, and Michal Zator. 2023. "Bank Branch Density and Bank Runs." Working Paper 31462, July 2023. https://www.nber.org/papers/w31462

(Benoit 2023) Benoit, David. 2023. "Silvergate Raced to Cover $8.1 Billion in Withdrawals During Crypto Meltdown," January 5, 2023. https://www.wsj.com/articles/silvergate-raced-to-cover-8-1-billion-in-withdrawals-during-crypto-meltdown-11672895207

(BIS 2023) Bank for International Settlements (BIS). 2023. "Report on the 2023 Banking Turmoil," October 5, 2023. https://elischolar.library.yale.edu/ypfs-documents2/4351

(CADFPI 2023a) CADFPI. 2023a. "Order Taking Posession of Property and Business – Silicon Valley Bank," March 10, 2023. https://dfpi.ca.gov/wp-content/uploads/sites/337/2023/03/DFPI-Orders-Silicon-Valley-Bank-03102023.pdf

(CADFPI 2023b) State of California Department of Financial Protection and Innovation (CADFPI). 2023b. "First Republic Bank - Order Taking Possession," May 1, 2023. https://dfpi.ca.gov/wp-content/uploads/sites/337/2023/04/First-Republic-Order-Taking-Possession-under-FC-592-FINAL.pdf

(CADFPI 2023c) CADFPI. 2023c. "Review of DFPI Oversight and Regulation of Silicon Valley Bank," May 8, 2023. https://dfpi.ca.gov/review-of-dfpi-oversight-and-regulation-of-silicon-valley-bank/

(Caglio, Dlugosz, and Rezende 2024) Caglio, Cecilia, Jennifer Dlugosz, and Marcelo Rezende. 2024. "Flight to Safety in the Regional Bank Crisis of 2023," January 8, 2024. https://papers.ssrn.com/abstract=4457140

(Carlson and Rose 2019) Carlson, Mark, and Jonathan Rose. 2019. "The Incentives of Large Sophisticated Creditors to Run on a Too Big to Fail Financial Institution," April 2019. https://www.sciencedirect.com/science/article/pii/S1572308919301639

(Chang, Cheng, and Hong 2024) Chang, Briana, Ing-Haw Cheng, and Harrison G. Hong. 2024. "The Fundamental Role of Uninsured Depositors in the Regional Banking Crisis," July 19, 2024. https://papers.ssrn.com/abstract=4497863

(Che, Copestake, Furceri, and Terracciano 2023) Che, Natasha X, Alexander Copestake, Davide Furceri, and Tammaro Terracciano. 2023. "The Crypto Cycle and US Monetary Policy," August 4, 2023. https://www.imf.org/en/Publications/WP/Issues/2023/08/04/The-Crypto-Cycle-and-US-Monetary-Policy-534834

(Chernova 2023) Chernova, Yuliya. 2023. "More Startups Throw in the Towel, Unable to Raise Money for Their Ideas," June 9, 2023.

https://www.wsj.com/articles/more-startups-throw-in-the-towel-unable-to-raise-money-for-their-ideas-eff8305b

(Chernova and Vartabedian 2024) Chernova, Yuliya, and Marc Vartabedian. 2024. “Why Venture Capital Is Weighed Down by Its 2021 Vintage,” June 25, 2024. https://www.wsj.com/articles/why-venture-capital-is-weighed-down-by-its-2021-vintage-d120feb6

(Choi, Goldsmith-Pinkham, and Yorulmazer 2023) Choi, Dong Beom, Paul Goldsmith-Pinkham, and Tanju Yorulmazer. 2023. “Contagion Effects of The Silicon Valley Bank Run.” Working Paper 31772, October 2023.
https://www.nber.org/papers/w31772

(Cipriani, Eisenbach, and Kovner 2024) Cipriani, Marco, Thomas M. Eisenbach, and Anna Kovner. 2024. “Tracing Bank Runs in Real Time,” May 20, 2024.
https://www.newyorkfed.org/research/staff_reports/sr1104.html

(Coben 2023) Coben, Craig. 2023. “Dissecting Goldman’s Gory $2.25bn SVB Equity Issue,” March 14, 2023.
https://www.ft.com/content/7e7fdddb-724c-42fd-98ee-5d7248d53334

(Code of Federal Regulations Title 12. Ch. I, II, III) Code of Federal Regulations. Title 12. Ch. I, II, III. “Title 12 of the CFR -- Banks and Banking,” Title 12. Ch. I, II, III.
https://www.ecfr.gov/current/title-12

(Coelho, Monteil, Pozdyshev, and Svoronos 2022) Coelho, Rodrigo, Amélie Monteil, Vasily Pozdyshev, and Jean-Philippe Svoronos. 2022. “Supervisory Practices for Assessing the Sustainability of Banks’ Business Models,” April 7, 2022.
https://www.bis.org/fsi/publ/insights40.htm

(Cohan 2023) Cohan, William D. 2023. “The Last Days of SVB,” March 19, 2023.
https://puck.news/the-last-days-of-svb/

(Consortium 2023) Citigroup (Consortium). 2023. “Bank of America, Citigroup, JPMorgan Chase, Wells Fargo, Goldman Sachs, Morgan Stanley, BNY-Mellon, PNC Bank, State Street, Truist and U.S. Bank to Make Uninsured Deposits Totaling $30 Billion into First Republic Bank.” Press Release, March 16, 2023.
https://www.citigroup.com/global/news/press-release/2023/bank-of-america-citigroup-jpmorgan-chase-wells-fargo-goldman-sachs-morgan-stanley-bny-mellon-pnc-bank-state-street-truist-and-u-s-bank-to-make-uninsured-deposits-totaling-30-billion-into-first-republic-bank

(Cookson, Fox, Gil-Bazo, Imbet, and Schiller 2023) Cookson, J. Anthony, Corbin Fox, Javier Gil-Bazo, Juan Felipe Imbet, and Christoph Schiller. 2023. “Social Media as a Bank Run Catalyst,” April 18, 2023.
https://papers.ssrn.com/abstract=4422754

(A. Copeland, Martin, and Walker 2014) Copeland, Adam, Antoine Martin, and Michael Walker. 2014. Repo Runs: Evidence from the Tri-Party Repo Market. Federal Reserve Bank of New

York.
https://www.newyorkfed.org/research/staff_reports/sr506.html

(R. Copeland 2023) Copeland, Rob. 2023. "'Do You Even Want Us to Exist?' A Bank Chief Fights to Survive.," June 14, 2023.
https://www.nytimes.com/2023/06/14/business/western-alliance-regional-banks.html

(Covitz, Liang, and Suarez 2013) Covitz, Daniel, Nellie Liang, and Gustavo A. Suarez. 2013. The Evolution of a Financial Crisis: Collapse of the Asset-Backed Commercial Paper Market. Journal of Finance.
https://ypfs.som.yale.edu/node/3761

(Dang, Gorton, and Holmström 2020) Dang, Tri Vi, Gary Gorton, and Bengt Holmström. 2020. "The Information View of Financial Crises," November 1, 2020.
https://www.annualreviews.org/content/journals/10.1146/annurev-financial-110118-123041

(Doherty and Natarajan 2023) Doherty, Katherine, and Sridhar Natarajan. 2023. "PacWest Says Deposits Now Stable After Turmoil Slammed Stock," April 25, 2023.
https://www.bloomberg.com/news/articles/2023-04-25/pacwest-says-deposits-now-stable-after-turmoil-slammed-stock

(Drechsler, Savov, Schnabl, and Wang 2023) Drechsler, Itamar, Alexi Savov, Philipp Schnabl, and Olivier Wang. 2023. "Deposit Franchise Runs." Working Paper 31138, April 2023.
https://www.nber.org/papers/w31138

(Driebusch 2023) Driebusch, Corrie. 2023. "The IPO Market Is Open Again! At Least for the Moment.," September 24, 2023.
https://www.wsj.com/finance/stocks/ipo-market-arm-instacart-klaviyo-stocks-ee65206

(East West Bancorp 2023) East West Bancorp. 2023. "East West Bancorp Form 8-K." Form 8-K 000–24939, March 15, 2023.
https://www.sec.gov/Archives/edgar/data/1069157/000106915723000029/ewbc-20230315.htm

(FDIC 2022) FDIC. 2022. "FIL-16-2022: Notification of Engaging in Crypto-Related Activities," April 7, 2022.
https://www.fdic.gov/news/financial-institution-letters/2022/fil22016.html

(FDIC 2023a) FDIC. 2023a. "FDIC Quarterly Banking Profile," 2023.
https://www.fdic.gov/quarterly-banking-profile

(FDIC 2023b) FDIC. 2023b. "FDIC Creates a Deposit Insurance National Bank of Santa Clara to Protect Insured Depositors of Silicon Valley Bank, Santa Clara, California," March 10, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23016.html

(FDIC 2023c) FDIC. 2023c. "FDIC Establishes Signature Bridge Bank, N.A., as Successor to Signature Bank, New York, NY," March 12, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23018.html

(FDIC 2023d) FDIC. 2023d. "FDIC Acts to Protect All Depositors of the Former Silicon Valley Bank, Santa Clara, California," March 13, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23019.html

(FDIC 2023e) FDIC. 2023e. "JPMorgan Chase Bank, National Association, Columbus, Ohio Assumes All the Deposits of First Republic Bank, San Francisco, California," May 1, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23034.html#

(FDIC 2023f) FDIC. 2023f. "Options for Deposit Insurance Reform," July 14, 2023.
https://www.fdic.gov/analysis/options-deposit-insurance-reform

(FDIC 2023g) FDIC. 2023g. "FDIC's Supervision of First Republic Bank," September 8, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23073.html

(FDIC 2024) FDIC. 2024. "FDIC Quarterly Banking Profile - Second Quarter 2024," September 5, 2024.
https://www.fdic.gov/quarterly-banking-profile/fdic-quarterly-banking-profile-second-quarter-2024

(FDIC OIG 2023) Office of Inspector General of the FDIC (FDIC OIG). 2023. "Material Loss Review of First Republic Bank," November 28, 2023.
https://www.fdicoig.gov/sites/default/files/reports/2023-11/EVAL-24-03.pdf

(Fed OIG 2023) Office of Inspector General of the Fed Board (Fed OIG). 2023. "Review of the Supervision of Silvergate Bank," September 27, 2023.
https://oig.federalreserve.gov/reports/board-review-silvergate-sep2023.htm

(Fed OIG 2024) Office of Inspector General of the Fed Board (Fed OIG). 2024. "Open Recommendations Made to the Board of Governors of the Federal Reserve System," September 30, 2024.

(Federal Reserve 2022) Federal Reserve. 2022. "SR 22-6/CA 22-6: Engagement in Crypto-Asset-Related Activities by Federal Reserve-Supervised Banking Organizations," August 16, 2022.
https://www.federalreserve.gov/supervisionreg/srletters/SR2206.htm

(Federal Reserve 2023a) Federal Reserve. 2023a. "Impact of Rising Rates on Certain Banks and Supervisory Approach," February 14, 2023.
https://www.federalreserve.gov/supervisionreg/files/board-briefing-on-impact-of-rising-interest-rates-and-supervisory-approach-20230214.pdf

(Federal Reserve 2023b) Federal Reserve. 2023b. "Federal Reserve Board Announces It Will Make Available Additional Funding to Eligible Depository Institutions to Help Assure Banks Have the Ability to Meet the Needs of All Their Depositors," March 12, 2023.
https://www.federalreserve.gov/newsevents/pressreleases/monetary20230312a.htm

(Federal Reserve 2024a) Federal Reserve. 2024a. "Additional Information on Other Credit Extensions," January 4, 2024.

https://www.federalreserve.gov/monetarypolicy/additional-information-on-other-credit-extensions.htm

(Federal Reserve 2024b) Federal Reserve. 2024b. “Federal Reserve Board Requests Comment on Proposal to Expand the Operating Days of the Federal Reserve Banks’ Two Large-Value Payments Services, Fedwire Funds Service and the National Settlement Service, to Include Weekends and Holidays,” May 3, 2024.
https://www.federalreserve.gov/newsevents/pressreleases/bcreg20240503a.htm

(Financial Services Committee 2023) Financial Services Committee. 2023. “Joint Hearing Entitled: Continued Oversight Over Regional Bank Failures,” May 17, 2023.
https://www.govinfo.gov/content/pkg/CHRG-118jhrg52935/pdf/CHRG-118jhrg52935.pdf

(First Citizens BancShares 2023) First Citizens BancShares. 2023. “First Citizens Bank Announces Acquisition of Silicon Valley Bridge Bank, N.A.,” March 27, 2023.
https://www.sec.gov/Archives/edgar/data/798941/000119312523079743/d488575dex991.htm

(First Republic 2023a) First Republic Bank (First Republic). 2023a. “Reinforcing Confidence in First Republic Bank,” March 16, 2023.
https://elischolar.library.yale.edu/ypfs-documents2/4792

(First Republic 2023b) First Republic Bank (First Republic). 2023b. “First Republic Reports First Quarter 2023 Results,” April 24, 2023.
https://ir.firstrepublic.com/static-files/013f57fb-b980-4353-bbb3-0e7a3b27f20a

(First Republic Bank 2023) First Republic Bank. 2023. “First Republic Reports First Quarter 2023 Results,” April 24, 2023.
https://firstrepublic.gcs-web.com/static-files/013f57fb-b980-4353-bbb3-0e7a3b27f20a

(Fitzgerald 2024) Fitzgerald, Kate. 2024. “A Regional Bank’s Survival Saga,” March 10, 2024.
https://arizent.brightspotcdn.com/09/9b/7fe262c24fb6acb4fe5b8112906b/abm0324.pdf

(Flannery and Sorescu 2023) Flannery, Mark J., and Sorin M. Sorescu. 2023. “Partial Effects of Fed Tightening on U.S. Banks’ Capital,” April 19, 2023.
https://papers.ssrn.com/abstract=4424139

(Foldy, Ensign, and Baer 2023) Foldy, Ben, Rachel Louise Ensign, and Justin Baer. 2023. “How Silicon Valley Turned on Silicon Valley Bank,” March 12, 2023.
https://www.wsj.com/articles/how-silicon-valley-turned-on-silicon-valley-bank-ee293ac9

(Franklin 2023) Franklin, Joshua. 2023. “HSBC Hires Dozens of SVB Bankers in US Push,” April 11, 2023.
https://www.ft.com/content/c7887baf-95a8-4839-9219-722870f0ed92

(Franklin and Gandel 2023) Franklin, Joshua, and Stephen Gandel. 2023. “PacWest Secures $1.4bn of Cash from Atlas after Deposits Fall 20%,” March 22, 2023.
https://www.ft.com/content/5da23163-82ad-4775-aca2-28268b1c7006

(Franklin and Gandel 2024) Franklin, Joshua, and Stephen Gandel. 2024. "Fed's High-Rates Era Handed $1tn Windfall to US Banks," September 22, 2024.
https://www.ft.com/content/4c013d3b-796b-47a3-a964-02f753d39846

(FRC 2023) First Republic Bank (FRC). 2023. "First Republic Call Report for 12/31/2022," February 27, 2023.

(FRED n.d.) FRED. n.d. "Deposits, All Commercial Banks." Accessed August 24, 2024.
https://fred.stlouisfed.org/series/DPSACBW027SBOG

(FSB 2023) Financial Stability Board (FSB). 2023. "2023 Bank Failures: Preliminary Lessons Learnt for Resolution," October 10, 2023.
https://elischolar.library.yale.edu/ypfs-documents2/4364

(Glancy, Ionescu, Klee, Kotidis, Siemer, and Zlate 2024) Glancy, David, Felicia Ionescu, Elizabeth Klee, Antonis Kotidis, Michael Siemer, and Andrei Zlate. 2024. "The 2023 Banking Turmoil and the Bank Term Funding Program." Finance and Economic Discussion Series, June 14, 2024.
https://www.federalreserve.gov/econres/feds/the-2023-banking-turmoil-and-the-bank-term-funding-program.htm

(Gorton 2018) Gorton, Gary. 2018. "Financial Crises," January 30, 2018.
https://papers.ssrn.com/abstract=3169845

(Gorton and Metrick 2012) Gorton, Gary, and Andrew Metrick. 2012. "Securitized Banking and the Run on Repo." *Journal of Financial Economics* 104, no. 3: 425–51.
https://www.sciencedirect.com/science/article/pii/S0304405X1100081X

(Granja 2023) Granja, Joao. 2023. "Bank Fragility and Reclassification of Securities into HTM," April 4, 2023.
https://papers.ssrn.com/abstract=4409834

(Granja, Jiang, Matvos, Piskorski, and Seru 2024) Granja, Joao, Erica Xuewei Jiang, Gregor Matvos, Tomasz Piskorski, and Amit Seru. 2024. "Book Value Risk Management of Banks: Limited Hedging, HTM Accounting, and Rising Interest Rates." Becker Friedman Institute for Economics Working Paper No. 2024-37, April 2, 2024.
https://papers.ssrn.com/abstract=4781916

(Greenwald, Schulhofer-Wohl, and Younger 2023) Greenwald, Emily, Sam Schulhofer-Wohl, and Joshua Younger. 2023. "Deposit Convexity, Monetary Policy and Financial Stability," October 2023.
https://www.dallasfed.org/research/papers/2023/wp2315

(Group of 30 2024) Group of 30. 2024. "Bank Failures and Contagion: Lender of Last Resort, Liquidity, and Risk Management," January 9, 2024.
https://group30.org/publications/detail/5264

(Gruenberg 2023) Gruenberg, Martin J. 2023. "Remarks by Chairman Martin J. Gruenberg on Recent Bank Failures and the Federal Regulatory Response before the Committee on Banking, Housing, and Urban Affairs, United States Senate | FDIC," March 27, 2023. https://www.fdic.gov/news/speeches/2023/spmar2723.html

(Hammond 2024) Hammond, George. 2024. "US Venture Capital Fundraising Hits a 6-Year Low," January 5, 2024. https://www.ft.com/content/cfb186c8-22f4-4a82-b262-f4380a5d82b8

(Hayes 2023) Hayes, David. 2023. "SVB, Signature Racked up Some High Rates of Uninsured Deposits," March 14, 2023. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/svb-signature-racked-up-some-high-rates-of-uninsured-deposits-74747639

(Heeb and Wallace 2023) Heeb, Gina, and Joe Wallace. 2023. "PacWest Stock Surges 82%, Regional Banks Recover After Selloff," May 5, 2023. https://www.wsj.com/articles/pacwest-stock-surges-80-regional-banks-recover-after-selloff-bdd4f118

(Hill 2024) Hill, Travis. 2024. "Reflections on Bank Regulatory and Resolution Issues," July 24, 2024. https://www.fdic.gov/news/speeches/2024/remarks-vice-chairman-travis-hill-american-enterprise-institute-reflections-bank

(Hoffman 2023) Hoffman, Liz. 2023. "SVB Board Bickering Wasted Crucial Time before Collapse," March 17, 2023. https://www.semafor.com/article/03/17/2023/how-svb-lost-crucial-time-to-save-itself-before-its-collapse

(Hughes and Lacey 2023) Hughes, Anthony, and Stephen Lacey. 2023. "Goldman Takes Flak for Role in SVB Collapse," March 17, 2023. https://www.ifre.com:443/story/3804673/goldman-takes-flak-for-role-in-svb-collapse-fyhlghchqy

(Ihrig and Waller 2024) Ihrig, Jane, and Chris Waller. 2024. "The Federal Reserve's Responses to the Post-Covid Period of High Inflation," February 14, 2024. https://www.federalreserve.gov/econres/notes/feds-notes/the-federal-reserves-responses-to-the-post-covid-period-of-high-inflation-20240214.html

(IMF 2023) International Monetary Fund (IMF). 2023. "Global Financial Stability Report, October 2023: Financial and Climate Policies for a High-Interest-Rate Era," October 2023. https://www.imf.org/en/Publications/GFSR/Issues/2023/10/10/global-financial-stability-report-october-2023

(Jang, Sun, and Yang 2024) Jang, Inwon, Junjie Sun, and Xiaolong Yang. 2024. "Unrealized Asset Loss, Liquidity Risk from Uninsured Deposit Outflows and Bank Runs: Evidence from the 2023 Banking Stress," August 30, 2024. https://papers.ssrn.com/abstract=4941089

(Jiang, Matvos, Piskorski, and Seru 2023) Jiang, Erica Xuewei, Gregor Matvos, Tomasz Piskorski, and Amit Seru. 2023. “Monetary Tightening and U.S. Bank Fragility in 2023: Mark-to-Market Losses and Uninsured Depositor Runs?,” March 13, 2023. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4387676

(Jin 2023a) Jin, Berber. 2023a. “Venture Fundraising Hits Nine-Year Low,” February 20, 2023. https://www.wsj.com/articles/venture-fundraising-hits-nine-year-low-c2b4774

(Jin 2023b) Jin, Berber. 2023b. “Venture-Fund Returns Show Worst Slump in More Than a Decade,” May 16, 2023. https://www.wsj.com/articles/venture-fund-returns-suffer-amid-lower-startup-values-15dc0130

(Kelly 2024a) Kelly, Steven. 2024a. “Central Bank Liquidity Assistance: Challenges of Franchise and Asset Values in Banking Crises.” Speech, May 20, 2024. https://www.atlantafed.org/-/media/documents/news/conferences/2024/05/19/financial-markets-conference/presentations/kelly-remarks.pdf

(Kelly 2024b) Kelly, Steven. 2024b. “How the FDIC Sourced Crisis-Time Fed Funding Through the Failed Banks of 2023,” August 20, 2024. https://som.yale.edu/story/2024/how-fdic-sourced-crisis-time-fed-funding-through-failed-banks-2023

(Kinder, McCrum, Gara, and Franklin 2023) Kinder, Tabby, Dan McCrum, Antoine Gara, and Joshua Franklin. 2023. “Silicon Valley Bank Profit Squeeze in Tech Downturn Attracts Short Sellers,” February 22, 2023. https://www.ft.com/content/0387e331-61b4-4848-9e50-04775b4c3fa7

(King 2016) King, Mervyn A. 2016. “The End of Alchemy: Money, Banking, and the Future of the Global Economy,” 2016. https://www.google.com/books/edition/The_End_of_Alchemy/7tPKsgEACAAJ?hl=en

(Koont, Santos, and Zingales 2024) Koont, Naz, Tano Santos, and Luigi Zingales. 2024. “Destabilizing Digital ‘Bank Walks.’” Working Paper 32601, June 2024. https://www.nber.org/papers/w32601

(Lane 2022) Lane, Alan. 2022. “Public Letter from Silvergate Capital Corporation Chief Executive Officer Alan Lane,” December 5, 2022. https://www.sec.gov/Archives/edgar/data/1312109/000131210922000233/ex991-letterfromsilvergate.htm

(Lang and Sharma 2023) Lang, Hannah, and Akriti Sharma. 2023. “Silvergate Suspends Crypto Payments Network; Shares Fall after-Hours,” March 4, 2023. https://www.reuters.com/markets/currencies/silvergate-suspends-crypto-payments-network-shares-fall-after-hours-2023-03-04/

(Luck and Plosser 2024) Luck, Stephan, and Matthew Plosser. 2024. “Deposits and the March 2023 Banking Crisis—A Retrospective.” Liberty Street Economics, March 27, 2024.

https://libertystreeteconomics.newyorkfed.org/2024/03/deposits-and-the-march-2023-banking-crisis-a-retrospective/

(Luck, Plosser, and Younger 2023) Luck, Stephan, Matthew Plosser, and Josh Younger. 2023. “Bank Funding during the Current Monetary Policy Tightening Cycle,” May 11, 2023. https://libertystreeteconomics.newyorkfed.org/2023/05/bank-funding-during-the-current-monetary-policy-tightening-cycle/

(McCrum and Franklin 2022) McCrum, Dan, and Joshua Franklin. 2022. “Signature Bank Bet Big on Crypto — and Must Now Reckon with the Crash,” July 28, 2022. https://www.ft.com/content/34df0a7d-c0ea-41ee-b36e-1a5802c8360b

(Metropolitan Commercial Bank 2023) Metropolitan Commercial Bank. 2023. Metropolitan Commercial Bank Issues Updated Financial Information. SEC. https://www.sec.gov/Archives/edgar/data/1476034/000110465923039239/tm2311072d1_ex99-1.htm

(Miller 2024) Miller, Hannah. 2024. “After Bitcoin Surge, Crypto VC Creeps Toward a Comeback,” April 8, 2024. https://www.bloomberg.com/news/articles/2024-04-08/after-bitcoin-surge-crypto-vc-creeps-toward-a-comeback

(Mitchell 2023) Mitchell, Josh. 2023. “SVB’s New Owner Sues HSBC for Poaching Key Bankers,” May 23, 2023. https://www.wsj.com/articles/svbs-new-owner-sues-hsbc-for-poaching-key-bankers-58455b19

(Moody’s 2023) Moody’s. 2023. “Moody’s Downgrades SVB Financial (Senior Unsecured to Baa1 from A3); Outlook Negative,” March 8, 2023. https://www.moodys.com/research/Moodys-downgrades-SVB-Financial-senior-unsecured-to-Baa1-from-A3-Rating-Action--PR_474590

(NYDFS 2023) New York State Department of Financial Services (NYDFS). 2023. “Internal Review of the Supervision and Closure of Signature Bank,” April 28, 2023. https://www.dfs.ny.gov/reports_and_publications/press_releases/*

(OCC 2021) OCC. 2021. “Chief Counsel’s Interpretation Clarifying: (1) Authority of a Bank to Engage in Certain Cryptocurrency Activities; and (2) Authority of the OCC to Charter a National Trust Bank.” Interpretive Letter 1179, November 18, 2021.

(OCC, Federal Reserve, and FDIC 2023a) OCC, Federal Reserve, and FDIC. 2023a. “Crypto-Assets: Joint Statement on Crypto-Asset Risks to Banking Organizations,” January 3, 2023. https://www.occ.gov/news-issuances/bulletins/2023/bulletin-2023-1.html

(OCC, Federal Reserve, and FDIC 2023b) OCC, Federal Reserve, and FDIC. 2023b. “Crypto-Assets: Joint Statement on Liquidity Risks to Banking Organizations Resulting from Crypto-Asset Market Vulnerabilities,” February 23, 2023. https://www.occ.gov/news-issuances/bulletins/2023/bulletin-2023-8.html

(PacWest Bancorp 2023a) PacWest Bancorp. 2023a. “Call Report for 12/31/2022,” 2023.

(PacWest Bancorp 2023b) PacWest Bancorp. 2023b. “2022 Form 10-K,” February 27, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000162828023005257/pacw-20221231.htm

(PacWest Bancorp 2023c) PacWest Bancorp. 2023c. “Pacific Western Bank Issues End of Week Update,” March 17, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000110465923034107/tm239956d1_ex99-1.htm

(PacWest Bancorp 2023d) PacWest Bancorp. 2023d. “Pacific Western Bank Issues End of Week Update,” March 17, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000110465923034107/tm239956d1_ex99-1.htm

(PacWest Bancorp 2023e) PacWest Bancorp. 2023e. “Pacific Western Bank Provides Further Update and Details on Financial Strength,” March 22, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000110465923035404/tm239469d2_ex99-1.htm

(PacWest Bancorp 2023f) PacWest Bancorp. 2023f. “Pacific Western Bank Provides Further Update and Details on Financial Strength,” March 22, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000110465923035404/tm239469d2_ex99-1.htm

(PacWest Bancorp 2023g) PacWest Bancorp. 2023g. Pacific Western Bank Provides Further Update and Details on Financial Strength. SEC. https://www.sec.gov/Archives/edgar/data/1102112/000110465923035404/tm239469d2_ex99-1.htm

(PacWest Bancorp 2023h) PacWest Bancorp. 2023h. “Pacific Western Bank Issues Update,” May 3, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000110465923055748/tm2314675d1_ex99-1.htm

(PacWest Bancorp 2023i) PacWest Bancorp. 2023i. “2023-Q1 Form 10-Q,” May 11, 2023. https://www.sec.gov/Archives/edgar/data/1102112/000162828023017382/pacw-20230331.htm

(Patel and Rose 2023) Patel, Radhika, and Jonathan Rose. 2023. “A Retrospective on the Crypto Runs of 2022 - Federal Reserve Bank of Chicago,” May 2023. https://www.chicagofed.org/publications/chicago-fed-letter/2023/479

(Pozsar 2011) Pozsar, Zoltan. 2011. “Institutional Cash Pools and the Triffin Dilemma of the U.S. Banking System.” IMF Working Papers, August 1, 2011. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Institutional-Cash-Pools-and-the-Triffin-Dilemma-of-the-U-S-25155

(Presence Bank 2023) Presence Bank. 2023. Communication of Presence Bank. Securities and Exchange Commission.
https://www.sec.gov/Archives/edgar/data/1849670/000094337423000153/ex99-1_8k032423.htm

(Primack 2023) Primack, Dan. 2023. "The Week That Killed Silicon Valley Bank," March 14, 2023.
https://www.axios.com/2023/03/14/week-that-killed-silicon-valley-bank

(Rai, Chapman, McBride, and Anand 2023) Rai, Saritha, Lizette Chapman, Sarah McBride, and Priya Anand. 2023. "SVB's Demise Swirled on Private VC, Founder Networks Before Hitting Twitter," March 29, 2023.
https://www.bloomberg.com/news/articles/2023-03-29/svb-bank-run-fears-swirled-on-vc-founder-networks-before-hitting-twitter

(Reyes 2023a) Reyes, Max. 2023a. "Western Alliance Pares Decline After Updating Deposit Data," April 5, 2023.
https://www.bloomberg.com/news/articles/2023-04-05/western-alliance-says-deposit-balance-fell-11-in-first-quarter

(Reyes 2023b) Reyes, Max. 2023b. "PacWest Reports Decline in Deposits While Western Alliance's Grow," May 11, 2023.
https://www.bloomberg.com/news/articles/2023-05-11/pacwest-reports-decline-in-deposits-western-alliance-s-grow

(Roffler 2023) Roffler, Michael J. 2023. "Testimony before the Committee on Financial Services, US House of Representatives," May 17, 2023.
https://elischolar.library.yale.edu/ypfs-documents2/5207

(Rose 2023) Rose, Jonathan. 2023. "Understanding the Speed and Size of Bank Runs in Historical Comparison," May 26, 2023.
https://research.stlouisfed.org/publications/economic-synopses/2023/05/26/understanding-the-speed-and-size-of-bank-runs-in-historical-comparison

(Rubin and Mai-Duc 2023) Rubin, Gabriel T., and Christine Mai-Duc. 2023. "West Coast States Rode the Tech Boom. Now They Face Higher Unemployment, Falling Wages.," June 5, 2023.
https://www.wsj.com/articles/west-coast-states-rode-the-tech-boom-now-they-face-higher-unemployment-falling-wages-83318105

(SCC 2023a) Silvergate Capital Corporation (SCC). 2023a. "Business Update Call (Transcript)," January 5, 2023.
https://www.sec.gov/Archives/edgar/data/1312109/000131210923000014/ex991siconferencecalltrans.htm

(SCC 2023b) Silvergate Capital Corporation (SCC). 2023b. "Silvergate Suspends Series A Preferred Stock Dividend," January 27, 2023.
https://www.sec.gov/Archives/edgar/data/1312109/000131210923000031/ex991silvergatesuspendsser.htm

(Seay and Portes 2023) Seay, Lauren, and Ronamil Portes. 2023. "How Western Alliance Navigated through the Liquidity Crunch Rubble," September 13, 2023. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/how-western-alliance-navigated-through-the-liquidity-crunch-rubble-77348528

(Seay and Villaluz 2023) Seay, Lauren, and Gaby Villaluz. 2023. "Number of US Banks with Negative Adjusted Tangible Common Equity Nearly Doubles," November 16, 2023. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/number-of-us-banks-with-negative-adjusted-tangible-common-equity-nearly-doubles-78344643

(Shay 2023) Shay, Scott A. 2023. "Statement of Scott A. Shay before the Subcommittee on Financial Institutions and Monetary Policy, Subcommittee on Oversight and Investigations: Committee on Financial Services," May 17, 2023. https://docs.house.gov/meetings/BA/BA20/20230517/115923/HHRG-118-BA20-Wstate-ShayS-20230517.pdf

(Shin 2009) Shin, Hyun Song. 2009. "Reflections on Northern Rock: The Bank Run That Heralded the Global Financial Crisis," March 2009. https://www.aeaweb.org/articles?id=10.1257/jep.23.1.101

(Sigalos 2023) Sigalos, MacKenzie. 2023. "Crypto-Focused Bank Silvergate Is Shutting Operations and Liquidating after Market Meltdown," March 8, 2023. https://www.cnbc.com/2023/03/08/silvergate-shutting-down-operations-and-liquidating-bank.html

(Silvergate 2022) Silvergate Capital Corporation (Silvergate). 2022. "2022-Q3 Form 10-Q," November 7, 2022. https://www.sec.gov/Archives/edgar/data/1312109/000131210922000206/si-20220930.htm

(Silvergate 2023a) Silvergate Capital Corporation (Silvergate). 2023a. "Silvergate Bank Website Archive," March 4, 2023. https://web.archive.org/web/20230304071746/https://silvergate.com/#faq

(Silvergate 2023a) Silvergate Capital Corporation (Silvergate). 2023b. "Silvergate Capital Corporation Announces Intent to Wind Down Operations and Voluntarily Liquidate Silvergate Bank," March 8, 2023. https://www.businesswire.com/news/home/20230308005795/en/Silvergate-Capital-Corporation-Announces-Intent-to-Wind-Down-Operations-and-Voluntarily-Liquidate-Silvergate-Bank

(Singer 2023) Singer, Drew. 2023. "SVB's Failed Stock Offering Shows Banks the Value of Secrecy," March 20, 2023. https://www.bloomberg.com/news/articles/2023-03-20/svb-s-failed-stock-offering-shows-banks-the-value-of-secrecy

(Singh and Aitken 2009) Singh, Manmohan, and James Aitken. 2009. Deleveraging After Lehman—Evidence from Reduced Rehypothecation. International Monetary Fund. https://ypfs.som.yale.edu/node/18842

(SRAC 2023) Systemic Resolution Advisory Committee (SRAC). 2023. "Systemic Resolution Advisory Committee Meeting: Transcript," December 5, 2023. https://www.fdic.gov/system/files/2024-07/2023-12-05-transcript.pdf

(Statista 2023) Statista. 2023. "Size of U.S. IPOs 2000-2022," May 19, 2023. https://www.statista.com/statistics/264607/ipo-volume-in-the-us/

(Statista 2024) Statista. 2024. "Number of IPOs in the U.S. 1999-2023," February 7, 2024. https://www.statista.com/statistics/270290/number-of-ipos-in-the-us-since-1999/

(Surane, Natarajan, and Doherty 2023) Surane, Jennifer, Sridhar Natarajan, and Katherine Doherty. 2023. "A Beach Club Dinner and Jamie Dimon's Touch: How PacWest Was Rescued," July 27, 2023. https://www.bloomberg.com/news/articles/2023-07-27/jamie-dimon-s-touch-and-beach-club-dinner-sealed-pacwest-rescue

(SVB 2023) SVB Financial Group (SVB). 2023. "Form 8-K," March 8, 2023. https://www.sec.gov/Archives/edgar/data/719739/000119312523064680/d430920d8k.htm

(SVB Financial Group 2022a) SVB Financial Group. 2022a. "SVB Financial Group (SIVB) Q2 2022 Earnings Call Transcript," July 21, 2022. https://www.fool.com/earnings/call-transcripts/2022/07/22/svb-financial-group-sivb-q2-2022-earnings-call-tra/

(SVB Financial Group 2022b) SVB Financial Group. 2022b. "SVB Financial Group (SIVB) Q3 2022 Earnings Call Transcript," October 20, 2022. https://www.fool.com/earnings/call-transcripts/2022/10/21/svb-financial-group-sivb-q3-2022-earnings-call-tra/

(SVB Financial Group 2023a) SVB Financial Group. 2023a. "SVB Financial Group (SIVB) Q4 2022 Earnings Call Transcript," January 19, 2023. https://www.fool.com/earnings/call-transcripts/2023/01/20/svb-financial-sivb-q4-2022-earnings-call-transcrip/

(SVB Financial Group 2023b) SVB Financial Group. 2023b. "SVB Financial Group Announces Proposed Offerings of Common Stock and Mandatory Convertible Preferred Stock," March 8, 2023. https://www.prnewswire.com/news-releases/svb-financial-group-announces-proposed-offerings-of-common-stock-and-mandatory-convertible-preferred-stock-301766247.html

(SVBB 2023a) Mayopoulos, Tim (SVBB). 2023a. "Silicon Valley Bridge Bank – Open for Business," March 13, 2023. https://www.svb.com/news/company-news/silicon-valley-bank-open-for-business/

(SVBB 2023b) Mayopoulos, Tim (SVBB). 2023b. "Update from Silicon Valley Bridge Bank CEO," March 14, 2023. https://www.svb.com/news/company-news/update-from-silicon-valley-bridge-bank-ceo/

(Thomas, Baer, Eisen, and Heeb 2023) Thomas, Lauren, Justin Baer, Ben Eisen, and Gina Heeb. 2023. "Banc of California Agrees to Buy PacWest as Regional Lenders Seek Strength Together," July 25, 2023.
https://www.wsj.com/articles/banc-of-california-pacwest-in-advanced-talks-to-combine-d9e48a1f

(Timiraos 2023) Timiraos, Nick. 2023. "Fed Data: Most Emergency Lending Was in the West." Wall Street Journal, March 17, 2023.
https://elischolar.library.yale.edu/ypfs-documents2/4105

(Treasury, Federal Reserve, and FDIC 2023) Treasury, Federal Reserve, and FDIC. 2023. "Joint Statement by the Department of the Treasury, Federal Reserve, and FDIC," March 12, 2023.
https://www.fdic.gov/news/press-releases/2023/pr23017.html

(Treasury, Federal Reserve, FDIC, and OCC 2023) Treasury, Federal Reserve, FDIC, and OCC. 2023. "Joint Statement by the Department of the Treasury, Federal Reserve, FDIC and OCC," March 16, 2023.
https://home.treasury.gov/news/press-releases/jy1349

(UMB Financial Corporation 2023) UMB Financial Corporation. 2023. "UMB Financial Corporation Form 8-K." Form 8-K 001–38481, March 13, 2023.
https://www.sec.gov/Archives/edgar/data/101382/000156459023003498/umbf-8k_20230313.htm

(US Congress 1991) US Congress. 1991. *The Failure of the Bank of New England Corporation and Its Affiliate Banks: Hearing Before the Committee on Banking, Finance, and Urban Affairs*. Committee on Banking, Finance, and Urban Affairs: U.S. Government Printing Office.
https://www.google.com/books/edition/The_Failure_of_the_Bank_of_New_England_C/C_HLWFvXomUC

(Vartabedian, Chernova, and Loten 2023) Vartabedian, Marc, Yuliya Chernova, and Angus Loten. 2023. "Startups Face Murky Outlook as Venture-Capital Slump Deepens," April 14, 2023.
https://www.wsj.com/articles/startups-face-murky-outlook-as-venture-capital-slump-deepens-dfa3f79

(Weil 2023) Weil, Jonathan. 2023. "Unions Park Their Cash at This Bank. Will They Stick Around?," July 15, 2023.
https://www.wsj.com/articles/unions-park-their-cash-at-this-bank-will-they-stick-around-ad669c13

(Western Alliance Bank 2023a) Western Alliance Bank. 2023a. "Call Report for 12/31/2022," 2023.

(Western Alliance Bank 2023b) Western Alliance Bank. 2023b. "2022 Form 10-K," February 23, 2023.
https://www.sec.gov/Archives/edgar/data/1212545/000121254523000093/wal-20221231.htm

(Western Alliance Bank 2023c) Western Alliance Bank. 2023c. "Western Alliance Bank Issues Updated Financial Figures in Wake of Industry Developments," March 10, 2023. https://investors.westernalliancebancorporation.com/news-releases/news/news-details/2023/Western-Alliance-Bank-Issues-Updated-Financial-Figures-in-Wake-of-Industry-Developments/default.aspx

(Western Alliance Bank 2023d) Western Alliance Bank. 2023d. "Western Alliance Bank Issues Updated Form 8-K in Light of Recent Industry Developments," March 13, 2023. https://investors.westernalliancebancorporation.com/news-releases/news/news-details/2023/Western-Alliance-Bank-Issues-Updated-Form-8-K-in-Light-of-Recent-Industry-Developments/default.aspx