From Tech Hub to Banking Failure: Exploring the Implications of CBDCs on the Destiny of Silicon Valley Bank

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Abstract

The potential implications of central bank digital currencies (CBDCs) on Silicon Valley Bank (SVB) are vast, particularly when it comes to oversight of the bank. This paper aims to explore how the introduction of CBDCs could have impacted SVB and its eventual collapse. The introduction of CBDCs has the potential to disrupt traditional banking systems, which could impact the stability of the financial industry. However, CBDCs can also provide real-time monitoring and oversight, which could help to prevent bank failures. This paper examines the potential impact of CBDCs on SVB and how it could have been impacted by the real-time monitoring provided by the Federal Reserve. The findings suggest that the introduction of CBDCs could have helped to prevent the collapse of SVB by allowing for real-time monitoring and oversight. The implications of this research are significant, as it highlights the potential benefits of CBDCs in preventing future banking failures and strengthening financial stability.

Key words: SVB, CBDCs, Federal Reserve, Digital Bank Run

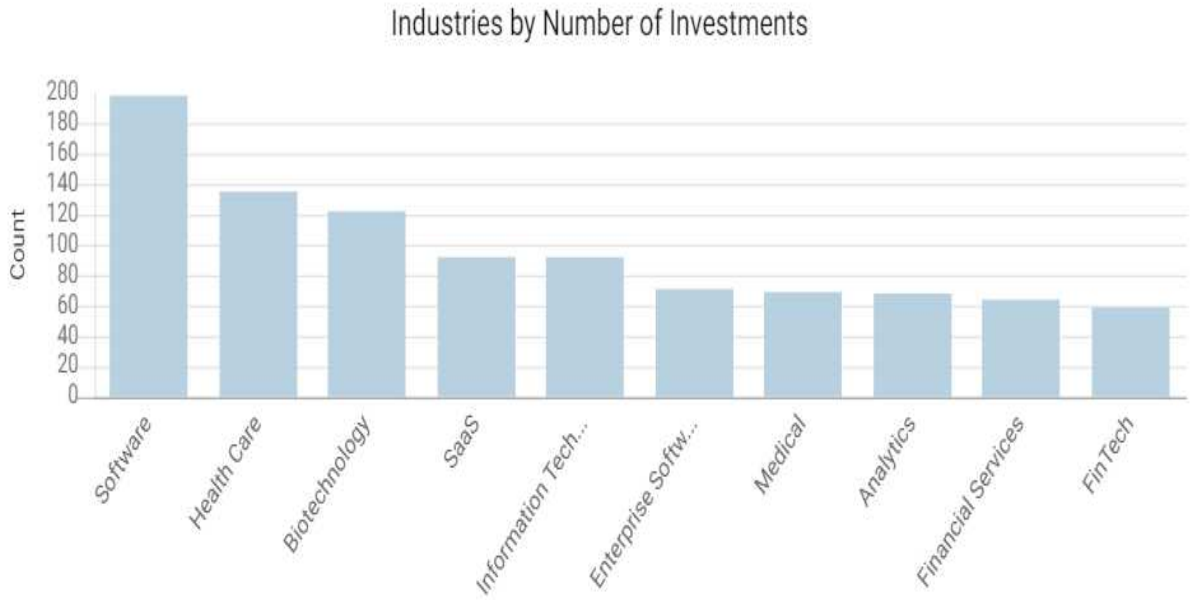
JEL Classification: H12, G28, O32

1. Introduction

Silicon Valley Bank (SVB) is a California-based bank that specializes in providing financial services to technology and innovation-based companies. Founded in 1983, the bank has played a significant role in supporting the growth and development of technology startups in the Silicon Valley region (Majeed 2023). Over the years, SVB has become known for its innovative approach to banking, its focus on customer service, and its expertise in serving the unique needs of the tech industry.

SVB's customer base includes startups, venture capital firms, and private equity firms, as well as established technology companies. The bank offers a range of financial services, including traditional banking services such as deposit accounts and loans, as well as specialized services such as venture debt, project financing, and mergers and acquisitions advisory services. One of SVB's key strengths is its expertise in understanding the needs of the tech industry. Fig 1 shows that SVB has focused on tech industry and tech-based health industry. SVB's bankers are typically former tech entrepreneurs or investors who have a deep understanding of the challenges faced by tech companies. This allows the bank to tailor its services to meet the unique needs of its clients,

such as providing bridge financing for companies that are not yet profitable or offering specialized advice on intellectual property protection. SVB has also been an innovator in the banking industry (The Economic Times 2023). The bank was one of the first to offer online banking services and has since developed a range of digital tools and platforms to help its clients manage their finances more efficiently. SVB has also been a pioneer in the use of data analytics to provide insights into the financial performance of its clients and to identify emerging trends in the tech industry.



Source: crunchbase.com

SVB saw an increase in deposits during the COVID-19 pandemic. SVB has a long history of working with technology startups and other companies in the tech industry, and as these companies grew and generated more revenue, they deposited more funds into their SVB accounts. In response, SVB made record investments in 2022 (see Fig 2). SVB has made 836 investments in total and their most recent investment was on Mar 8, 2023, when Socure raised $95M (Crunchbase 2023).

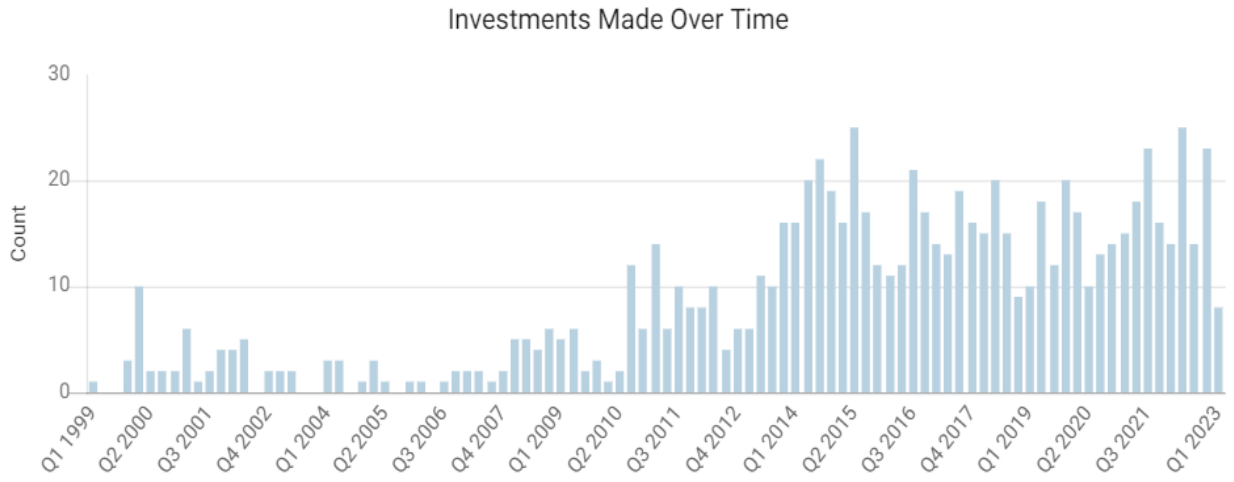


Fig 2. Source: Crunchbase.com

Following the 2008 financial crisis, the Federal Reserve took several steps to lower interest rates in an effort to stimulate economic growth and prevent a deeper recession. These steps included cutting the federal funds rate, which is the interest rate at which banks can lend to each other overnight, to near zero levels (Howard 2018). The Federal Reserve also implemented a program of quantitative easing, in which it purchased large quantities of government bonds and other securities in order to inject more liquidity into the financial system and lower long-term interest rates (Jackson and Curry 2023). These measures helped to support the economy and stimulate growth, but they also had the effect of keeping interest rates at historically low levels for an extended period of time. During the Trump administration, there were several measures introduced that provided regulatory relief to small and community banks in the United States (Pete 2018). The Federal Reserve increased the threshold for banks to be subject to enhanced prudential standards from $50 billion in assets to $250 billion in assets (Daniel 2023). This meant that many small and medium-sized banks were no longer subject to these stricter regulatory requirements. SVB had $40 billion in assets at that time. SVB enjoyed the ease of regulations and near-zero interest rate and saw huge progress in their deposits which $60 billion in total deposits at the end of the first quarter 2020 to over $200 billion two years later and was among the top 20 American commercial banks. Meanwhile, SVB invested $108 billion government bonds at low rates considered safer than other securities and bonds (Murray 2023). Figure 3 exhibits the breakdown of SVB assets before the collapse and the numbers are given by the end of Dec 2022. It can be

seen that the bank has only $15 billion in cash. When collapse hit SVB and a digital bank run happened, depositors attempted to withdraw $42 billion in less than 24 hours.

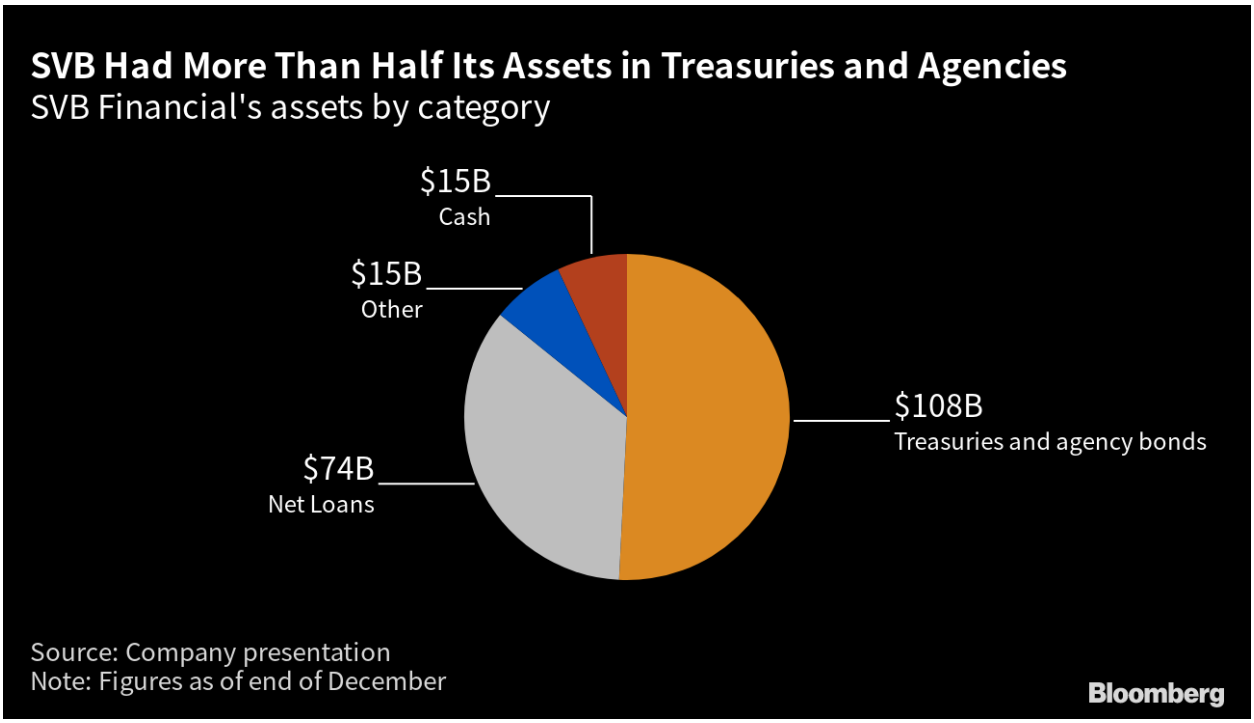


Fig 3. Source: Bloomberg

As the economy began to recover, the Federal Reserve began to gradually raise interest rates in order to prevent inflation from rising too quickly and to return rates to more normal levels. The Federal Reserve typically uses a combination of monetary policy tools, such as adjusting the federal funds rate and implementing quantitative easing, to influence interest rates. High-interest rates also increase the cost of funds for banks (A. Aysan et al. 2010; Ahmet Faruk Aysan, Fendoğlu, and Kilinç 2015). When deposit rates are high, banks must pay more to attract deposits, which can reduce their net interest margin (NIM). This is the difference between the interest earned on loans and investments and the interest paid on deposits and other funding sources. Here, the central bank plays its role to address any coming threat to the financial stability (Ahmet Faruk Aysan, Fendoglu, and Kilinc 2014).

The article discusses the collapse of SVB due to a modern digital bank run and its implications from the perspective of CBDCs. To this end, we attempt identify the main findings of the SVB collapse, which were the high-interest rate, lack of diversification, and exposure to interest rate

risk due to its portfolio holdings in government bonds. This paper also highlights how the situation got worse when SVB sold a bunch of securities at a loss and announced that it would sell $2.25 billion in new shares to shore up its balance sheet, leading to a bank run.

Besides, we further explore how CBDCs could have prevented the SVB collapse and the resulting panic in the market. CBDCs have unique features that could enhance central bank oversight and control over the banking system, providing real-time monitoring capabilities, and detailed transaction data and analytics that can identify potential risks and vulnerabilities. The article aims to note that CBDCs could also increase the confidence of investors, depositors, and borrowers in banks, including small and mid-sized banks, by assuring them that authorities are closely monitoring their banks and will take prompt action during times of uncertainty and irregularities.

The article also highlights how CBDCs could impact the transmission of monetary policy through the economy, potentially changing the way that central banks control the money supply and impacting the effectiveness of traditional monetary policy tools such as adjusting interest rates. Additionally, the introduction of CBDCs could lead to changes in the composition of the financial system, potentially impacting the effectiveness of monetary policy transmission channels.

Finally, we conclude this paper by recommending that central banks worldwide should continue to explore and develop CBDCs as a means of enhancing monetary policy and promoting financial stability especially after the demise of SVB. The findings reveal that the CBDCs are an upcoming reality, and the potential benefits for financial stability are immense. However, we also caution that the introduction of CBDCs could have unintended consequences and impacts in the composition of the financial system should be considered. Overall, the paper highlights the importance of financial stability for the banking system and the potential benefits of CBDCs in preventing bank failures and market panic after the case of SVB failure.

The SVB case has been widely discussed in the literature, but this paper offers a unique perspective by exploring potential solutions to the issue. Rather than solely analyzing the aftermath of the case, this paper takes a forward-thinking approach by highlighting the significance of CBDCs and proposing a hypothetical solution. By emphasizing the importance of CBDCs, the paper argues that their adoption has become even more critical for policymakers and regulators in ensuring financial stability and resilience in the economy, given the collapse of SVB. Therefore, this paper

contributes to the existing literature by providing a solution-oriented approach to the SVB case, urging for proactive measures to be taken to prevent future crises.

This paper is structured as follows. With the objectives of providing a comprehensive analysis of the SVB case and highlighting the potential benefits of CBDCs, this paper delves into the stages of SVB's collapse and the ensuing consequences. The discussion then shifts to the possible advantages of CBDCs in the context of modern digital bank runs. The final section provides policy recommendations based on the analysis, and the paper concludes.

2. SVB's Collapse and After Shocks

Due to high-interest rate and SVB's portfolio's holdings in government bonds exposed the bank to interest rate risk (Figure 2). SVB was forced to its government bonds holdings at a loss in order to meet liquidity needs. During the same period of time, tech companies in the USA were facing issues as their stocks price started declining in 2021. This was partly due to concerns around rising inflation and interest rates, as well as a shift in investor sentiment away from growth-oriented companies towards value-oriented ones. This situation dried the funds of tech companies, and they were in need of funds. Resultantly, they began to demand their deposits back from SVB. The situation got worse when SVB announced that it had sold a bunch of securities at a loss, and that it would also sell $2.25 billion in new shares to shore up its balance sheet. The investors and depositors got panicked and it led to the occurrence of a bank run. On March 9, 2023, SVB stocks crashed when the market opened. On that day, the four largest banks in the United States experienced a collective loss of $52 billion. The following day, which was a Friday (March 10), a number of banking stocks experienced significant declines, with SVB -60%, Signature Bank falling by -23%, First Republic by -15%, and Silvergate Capital by -11% (See Table 01 and Figure 04).

The spread of panic through texts and social media prompts venture-capital firms to pull out their investments from Silicon Valley Bank and encourage their portfolio firms to follow suit (see Table 02). At the close of that day, depositors had endeavored to withdraw $42 billion. SVBs was concentrated highly on tech start-ups and there was a lack of diversification which exhibited as a matter of concern amidst of its collapse (Paul 2023). It was a modern bank run for a digital bank at a digital pace. It was rather unexpected, abrupt, and brutal (details in Table 02).

Table 01: Stock Price Change, March 10, 2023

Name	Stock Price Change, March 10 2023	Unrealized Losses / Tangible Equity
SVB Financial	-60%*	-99%
First Republic Bank	-15%	-29%
Zions Bancorp	-2%	-47%
Comerica	-5%	-47%
U.S. Bancorp	-4%	-55%
Fifth Third Bancorp	-4%	-38%
Bank of America	-1%	-54%
Wells Fargo	1%	-33%
JPMorgan	-1%	-21%

Source: Morningstar Direct. *Represents March 9 data, trading halted on March 10.

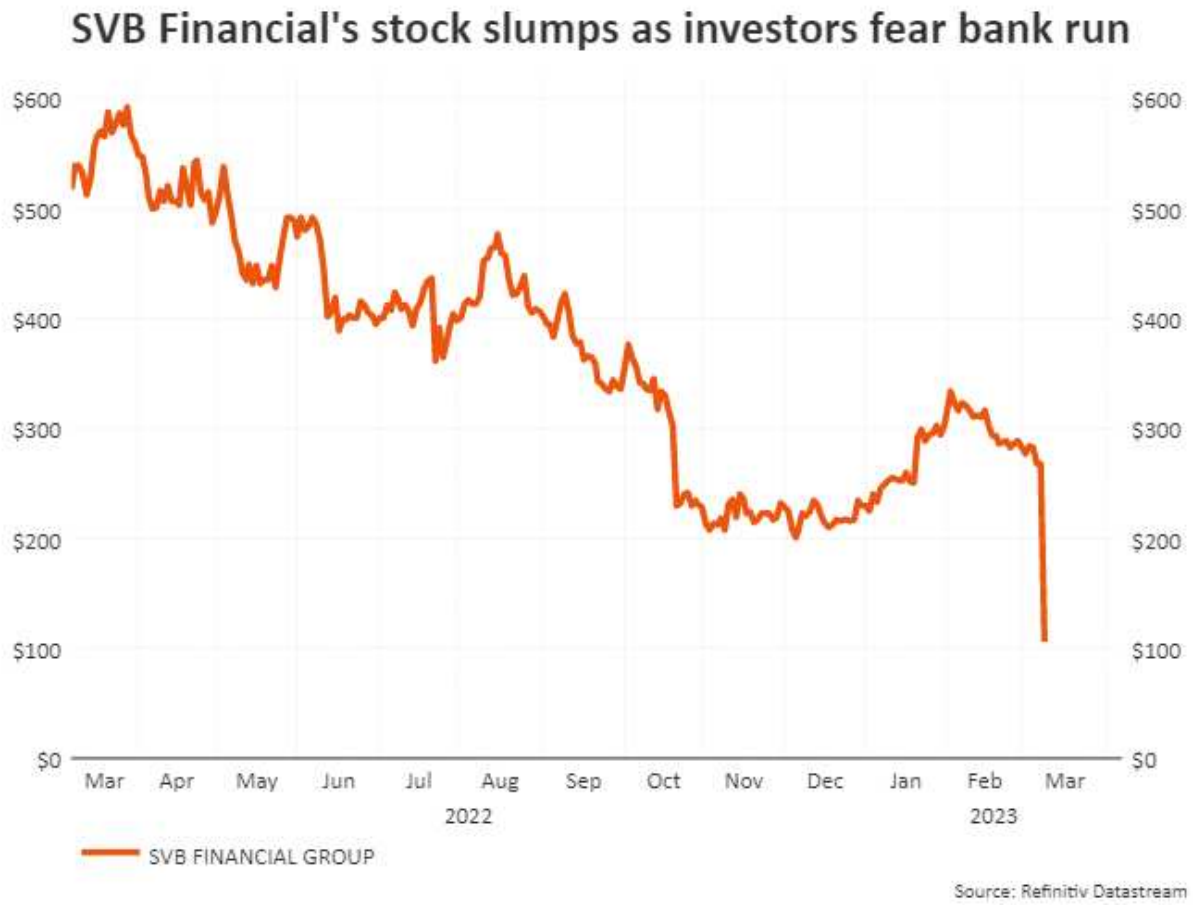


Fig 4. Source: Refinitiv Datastream

On March 9, Thursday, regulatory filing was done in the Department of Financial Protection and Innovation in the San Fransico, State of California about SVB. Next day, on March 10, Commissioner of the department made decision as "Order Taking Possession of Property and Business" in the matter of SVB.[1] Shortly thereafter, Federal regulators come to the scene and announce that they have taken charge of the bank. Fed Reserve and Federal Deposit Insurance Corporation (FDIC) announced the full payment for all depositors without any maximum limit of amount. The announcement was made through a joint statement: "Depositors will have access to all of their money starting Monday, March 13. No losses associated with the resolution of Silicon Valley Bank will be borne by the taxpayer."[2] FDIC which has incurred nearly $23 billion in expenses due to recent bank failures, is contemplating shifting a greater portion of that burden onto the largest banks in the country (Doherty, Levitt, and Johnson 2023). The following Table 02 encapsulates the details of major events happened in SVB collapse.

Table 02: A short timeline of Major Events of a Modern-day Digital Bank Run

Timeline	Event Description
March 8, 2023	When Silicon Valley Bank announced its intention to strengthen its balance sheet and raise $2 billion in capital, it sparked concerns among investors. The bank was compelled to sell off its bond portfolio at a loss of $1.8 billion.
	The credit ratings agency, Moody's, lowered the bank's bond rating and changed its outlook from stable to negative.
March 9, 2023	CEO, of SVB, Mr. Becker, in a conference call, advised venture capital firms to remain composed.
	Panic spread on social media among investors.
	Several venture capital firms, including prominent names like Founders Fund, Union Square Ventures, and Coatue Management, have recommended their portfolio companies through emails to withdraw their funds from SVB to mitigate the risk of being involved in the potential collapse of the bank.
	The news about SVB stocks sales and loss of funds spread on social media especially "Twitter" in the early morning. Jamie Quint, an entrepreneur posted a tweet "Looks like Silicon Valley Bank is in some deep shit." Time : 4:07 am.[3] Venture capital firm "Raging Capital Ventures" also posted a tweet "SIVB would be insolvent if they were forced to realize these losses (and if they sell *any* of the HTM securities, they must mark them *all* down)."

[1] See the detailed letter: https://dfpi.ca.gov/wp-content/uploads/sites/337/2023/03/DFPI-Orders-Silicon-Valley-Bank-03102023.pdf
[2] See the details: https://www.federalreserve.gov/newsevents/pressreleases/monetary20230312b.htm
[3] https://publish.twitter.com/?query=https%3A%2F%2Ftwitter.com%2Fjamiequint%2Fstatus%2F1633605464322887680&widget=Tweet

	2:23 AM.[4] This is how the news was spread over social media, particularly in the circle of venture capitalists, entrepreneurs, tech startups.
	On the same day, the regulatory filing was done in the Department of Financial Protection and Innovation in the San Francisco, State of California about SVB.
	By the time Silicon Valley Bank closes for business that day, depositors have attempted to withdraw $42 billion.
March 10, 2023	Commissioner of the department made decision as "Order Taking Possession of Property and Business" in the matter of SVB
	Federal regulators come to the scene and announce that they have taken charge of the bank. Fed Reserve and Federal Deposit Insurance Corporation (FDIC) announced the full payment for all depositors.
March 12, 2023	Regulators announced again about the full payment of the depositors of SVB and Signature Bank and also declared to bring a new lending program for banks.
March 13, 2023	President Biden addressed on television to calm down the situation and reconcile the trust of public on the country's banking and financial system.
March 14, 2023	The Justice Department and Securities and Exchange Commission started investigation on SVB collapse. Regulators announced about rethinking of a number of rules related to midsized banks.

Sources: (Giang and Dang 2023; Choi 2023; Doherty, Levitt, and Johnson 2023)

The SVB collapse poses critical questions on the supervision of Federal Reserve as the concerns were communicated in a letter by Senator Jhon Kennedy, a member of the Senate Banking Committee, and joined Ranking Member Sen. Tim Scott. The following statements are part of that letter:

> *"From publicly available information, it is now well understood that SVB suffered from rampant mismanagement, ultimately resulting in its catastrophic failure. Even more concerning, however, is the apparent failure of SVB's regulators, including the Federal Reserve, the primary federal regulator responsible for examining and supervising SVB, to ensure that the bank operated in a safe and sound manner,"*

They further continued:

> *"Rather than effectively directing SVB management to take definitive, corrective action, it is apparent that the Federal Reserve supervisors and examiners neglected to intervene in*

[4] https://twitter.com/RagingVentures/status/1633579167529725956?cxt=HHwWiMCzkaHm0astAAAA

a meaningful, appropriate way to rectify the bank's deficiencies, ensure safe and sound operations, and prevent its ultimate failure,"

"The American people deserve transparency and accountability from their government officials, and they are entitled to understand precisely what Federal Reserve officials knew about the apparent risks associated with SVB, when they knew it, and why they failed to act to prevent the bank failure from occurring,"[5]

In fact, these are the concerns raised by many banking experts and economists (Segal, DiPippo, and Sobel 2023). For example, "There are a lot of signs of a supervisory failure," said Kathryn Judge, a financial regulation expert at Columbia Law School (Smialek and Flitter 2023). In response to the current situation, there are also voices coming from Fed Reserve about changing regulations and monetary policies. It has become clearer that authorities have failed to do real-time monitoring and hence oversight the coming crisis for banks due to market conditions and banks' own deficiencies.

According to Wall Street Journal (WSJ), the Federal Reserve is considering revising some of its regulations regarding midsize banks after two lenders collapsed. This may lead to an expansion of the rules that currently only apply to the largest Wall Street firms. The Federal Reserve is evaluating tougher requirements for capital and liquidity, as well as measures to strengthen annual "stress tests" that assess banks' ability to withstand a hypothetical economic downturn. According to a source familiar with U.S. regulators' current thinking, these regulations may target banks with assets ranging from $100 billion to $250 billion, which currently avoid some of the strictest requirements. Around two dozen banks, including Fifth Third Bancorp and Regions Financial Corp, fall within this asset range (Ackerman 2023).

3. SVB's Case from CBDCs perspective

Considering that SVB case is a modern form of the digital bank run, the regulators could have benefited a lot from Central Bank Digital Currencies (CBDCs) in preventing the bank failure and the resulting panic in the market. Hence, while keeping in view the above discussion and details, we now like to discuss the case in the presence of hypothetical settings of CBDCs. Central banks

[5] See more details of the statements at: https://www.kennedy.senate.gov/public/press-releases?ID=BD6E5021-6290-405F-B2E1-CC15E1606DC7

worldwide are currently exploring the implications and available options for issuing CBDCs due to the declining demand for central bank notes and coins in an increasingly digital economy (Elsayed and Nasir 2022; Li 2023). As a result, issuing CBDCs is expected to become necessary for maintaining public money access. Despite only a few countries have launched their own CBDCs, there has been a significant shift from conceptual discussions to targeted research and pilot programs regarding the benefits and risks of CBDCs. CBDCs are being explored in more than 100 countries (World Economic Forum 2023). Even countries that initially expressed no immediate need for CBDCs are developing the capability to issue one (see Fig 5). While the timing of issuance remains uncertain, these trends suggest that CBDCs could soon become widely accepted (Lukonga 2023). Notably, CBDCs could play a big role in regulating the banks and supervising the bank failures.

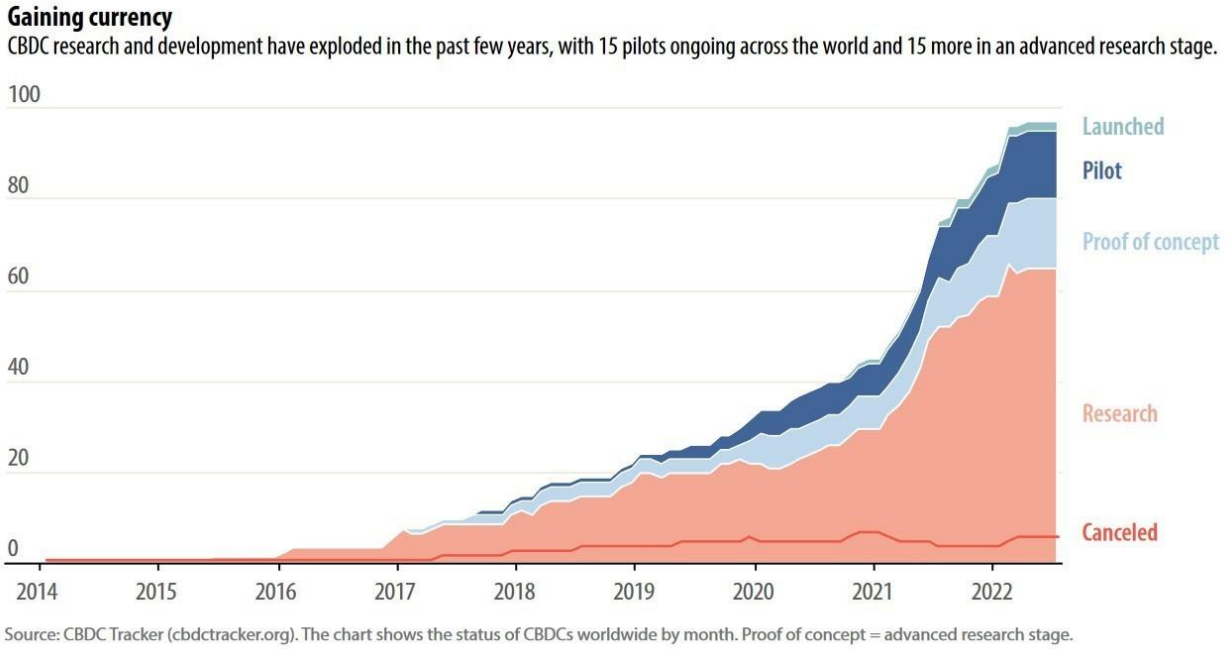


Fig 5. Source: CBDC Tracker

It is worth noting also that the subject of CBDCs was among the most widely discussed topics at the BIS Innovation Summit in 2023. The central banks are leaning towards CBDCs due to their unique features which are also relevant here to describe for the present case SVB's digital bank run. Some of these features could be summarized as follows:

- CBDCs can potentially provide central banks with increased visibility and control over financial transactions and activities, including those of other banks (Lukonga 2023).
- CBDCs can provide central banks with real-time monitoring capabilities, allowing them to track transactions and activities across the banking system in real-time (Keister and Monnet 2022).
- CBDCs can potentially enhance central bank oversight of the banking system by providing detailed transaction data and analytics that can be used to identify potential risks and vulnerabilities (Bank of International Settlement 2023).
- CBDCs can help banks comply with regulatory requirements by providing a digital trail of transactions that can be easily audited and monitored (Economic Affairs Comittee: House of Lords 2022).
- CBDCs can provide central banks with a tool for crisis management, allowing them to respond quickly to financial crises and potential systemic risks (World Economic Forum 2023).
- CBDCs can potentially provide commercial banks with a new tool for liquidity management, allowing them to more easily manage their reserves and optimize their liquidity position (Fegatelli 2022).
- CBDCs are expected to reduce currency issuance and circulation costs by eliminating the need for physical currency production, storage, transportation, and distribution. Instead, CBDCs would be issued and transferred digitally, which would reduce costs associated with managing physical cash.
- In addition, CBDCs could broaden the scope of monetary policy by providing central banks with new tools to implement policy. For example, a CBDC could enable central banks to implement negative interest rates more effectively, since they would have direct control over the amount of money in circulation (Jun and Yeo 2021).

Considering the circumstances of SVB's collapse and the potential capabilities of CBDCs, there are several crucial takeaways to consider. In the presence of CBDCs, central banks and regulatory authorities would be able to intervene at the right moment as the originating collapse could be avoided. CBDCs fills the real time information gap between banks, customers, investors and regulators (Ngo et al. 2023). With the announcement from the Federal Reserve that they will

reimburse depositors of SVB and Signature Bank, there is a risk of misinformation and issues surrounding insurance contracts for certain deposit accounts. In the presence of CBDCs, this could be easily avoided as the regulators would be able to monitor the trails of transaction and data of insurance contracts for deposits accounts and having digital but on time sight on banks.

Furthermore, CBDCs have the potential to increase the confidence of investors, depositors, and borrowers in banks, including small and mid-sized banks, by assuring them that authorities are closely monitoring their banks and will take prompt action during times of uncertainty and irregularities. Certainly, this presumed active supervision of the banks through CBDCs may produce another moral hazard issue where the depositors will have less incentives to discipline their banks by withdrawing their deposits (Ahmet F. Aysan et al. 2017; Ahmet Faruk Aysan, Disli, and Ozturk 2017; Ahmet F. Aysan et al. 2018; Ahmet F. Aysan et al. 2015).

CBDCs present significant opportunities for central banks to enhance monetary policy implementation and promote financial stability. While central banks may have different mandates, financial stability is typically a key concern for all central banks. In fact, the establishment of central banks such as the two in the US was primarily to address financial stability concerns, particularly in relation to bank runs. Therefore, it can be argued that central banks exist to provide financial stability, whether openly or implicitly (Akcelik, Aysan, and Oduncu 2013; Ahmet Faruk Aysan and Kayani 2022).

Given that CBDCs could improve the policy instruments available to central banks to mitigate financial stability risks, central banks are likely to take advantage of this opportunity. This is particularly relevant in light of recent events such as the SVB case, which highlight the importance of financial stability for the banking system. Therefore, it is reasonable to expect that central banks will continue to explore and develop CBDCs as a means of enhancing monetary policy and promoting financial stability (Kim and Kwon 2023).

CBDCs have the potential to fundamentally change the way that money is stored and circulated, which could have implications for the stability of the financial system. When CBDCs are widely adopted and perceived as a safe and reliable alternative to bank deposits, this could lead to a significant reduction in demand for bank deposits. This, in turn, could lead to a shift in the composition of the financial system, with potentially significant implications for the stability of banks and other financial institutions (Mohamed and Ali 2022).

In addition to the benefits for central banks in terms of maintaining financial stability, CBDCs could also provide benefits for consumers and businesses. For example, CBDCs could potentially reduce the risks associated with physical cash, such as theft and counterfeiting. They could also increase financial inclusion by providing a digital payment system that is accessible to everyone. Additionally, CBDCs could potentially increase the efficiency of the payment system (Xia, Gao, and Zhang 2023; Son, Bilgin, and Ryu 2022), as transactions could be processed more quickly and at a lower cost than traditional payment methods (Kumhof and Noone 2021).

CBDCs could have significant implications for the implementation of monetary policy as well. One potential impact of CBDCs is in changing the way that central banks control the money supply. CBDCs would allow central banks to have more direct control over the money supply, as they would be able to issue and manage the digital currency (Xin and Jiang 2023). This could potentially allow central banks to be more precise in their control of the money supply and could lead to more effective implementation of monetary policy. This was exactly needed after the demise of the SVB. The Federal Reserve had to provide more liquidity into the banking sector while coordinating the banks to provide deposits for the SVB.[6]

However, the introduction of CBDCs could also have implications for the transmission of monetary policy through the economy. If CBDCs are widely adopted, the velocity of money could change, which could impact the effectiveness of traditional monetary policy tools such as adjusting interest rates. Additionally, the introduction of CBDCs could lead to changes in the composition of the financial system, potentially impacting the effectiveness of monetary policy transmission channels.

Sooner or later, the CBDCs is an upcoming reality and the cases like SVB's collapse are accelerating factors for them. It is better to focus on the positive economic, financial, and social implications of CBDCs and act proactively for the better future readiness for next generations.

4. Conclusion and Policy Recommendations

The collapse SVB due to a modern digital bank run raises critical questions about the supervision of the Federal Reserve and the need for policy changes. The introduction of CBDCs could potentially prevent bank failures and market panic by providing real-time monitoring capabilities

[6] See the details: https://www.federalreserve.gov/newsevents/pressreleases/monetary20230312a.htm

and allowing regulators to intervene at the right moment. CBDCs could also increase the confidence of investors, depositors, and borrowers in banks, including small and mid-sized banks, by assuring them that authorities are closely monitoring their banks and will take prompt action during times of uncertainty and irregularities. Furthermore, CBDCs have the potential to enhance monetary policy implementation and promote financial stability. Therefore, central banks worldwide should continue to explore and develop CBDCs as a means of enhancing monetary policy and promoting financial stability. However, the introduction of CBDCs could also have implications for the transmission of monetary policy through the economy, and changes in the composition of the financial system, potentially impacting the effectiveness of monetary policy transmission channels, should also be considered.

The case of SVB's collapse highlights the importance of financial stability for the banking system and the potential benefits of CBDCs. CBDCs have unique features that could enhance central bank oversight and control over the banking system, providing real-time monitoring capabilities, and detailed transaction data and analytics that can identify potential risks and vulnerabilities. In addition to benefits for central banks, CBDCs could also have significant implications for consumers and businesses, potentially increasing financial inclusion and efficiency of the payment system. The introduction of CBDCs could also impact the transmission of monetary policy through the economy, but it is clear that the CBDCs are an upcoming reality and the potential benefits for financial stability are immense. Therefore, central banks worldwide are exploring the implications and available options for issuing CBDCs, and it is reasonable to expect that they will continue to develop CBDCs as a means of enhancing monetary policy and promoting financial stability.

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