

Lesson from SVB Failure

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Abstract: In the first quarter of 2023, Silicon Valley Bank declared bankruptcy. This paper's goal is to examine Silicon Valley Bank's collapse from the perspectives of the asset and liability side of the corporate annual report, interest rate, firm management, bank regulatory mechanism, and market impact. Silicon Valley's bank failures began with the Federal Reserve's rapid rise in interest rates over a short period of time. This paper also discusses the implications for the industry and the world as a whole by this declaration of Silicon Valley Bank's bankruptcy. In addition, by comparing the way Chinese banks and Silicon Valley banks reserve and invest their assets, it can be seen why such an incident is less likely to happen in China than in the United States. Similarly, different approaches to asset allocation can have a direct impact on a bank's profit and loss position.

Keywords: Silicon Valley Bank collapse, long-term bonds, internal and external factors

1. Introduction

The technology sector is primarily served by SVB Bank, which has its headquarters in Santa Clara, California. The second-biggest bank in history, it is also the largest U.S. institution to fail since the start of the 2008 global financial crisis.

The Federal Reserve's impending steep interest rate increase will cause SVB to lose money on its investments since it is unprepared for it. Customers allegedly withdrew \$42 billion in one day due to the speed online news spread that the bank might be in jeopardy last week, leaving a \$1 billion negative balance, according to a regulatory document presented by the company.

Despite banking regulators' announcement that the United States will guarantee all SVB deposits, the collapse of the bank has alarmed customers of other banks and raised questions regarding.

2. Discussion: the passage of the bank's failure

2.1. The Analysis of the Assets

First, we will analyze Silicon Valley Bank from the balance sheet as it approached bankruptcy.

Silicon Valley Bank had assets worth 211.793 billion in total as of 2022 [1]. According to the Silicon Valley Bank's official annual report, the bank invested a total of \$120.54 billion in securities

in 2022. A sizable portion of Silicon Valley Bank's investments are in held-to-maturity (HTM) and available-for-sale (AFS) securities. AFS made up \$26.069 billion, or around 21.7% of the total, while HTM came to \$91 billion, or roughly 76% of the whole. The majority of SVB's asset allocation is comprised of fixed-interest bond assets. As a result, interest rate risk and liquidity risk pose the greatest threats to SVB. Figure 1 shows the distribution of liabilities and assets.

While it is true that neither form of security will affect returns due to fluctuations in their market capitalization, when banks have liquidity problems and need to sell them, this can directly affect their returns or even directly cause substantial losses. The unrealized loss—the discrepancy between the assets recorded at amortized cost and the market value—is one of the factors that HTM securities has the potential to have an impact on the bank. The accompanying symbols show that in 2022, when Silicon Valley Bank must sell HTM assets because of liquidity concerns, this unrealized loss alone will turn into an actual loss. The bank has already suffered a loss of \$15.16 billion as a result of it. This is unquestionably a significant blow to Silicon Valley banks during a liquidity crisis.

After disclosing to the public that it has sold \$2.1 billion in AFS bonds on March 8, 2022, Silicon Valley Bank has since issued further common stock as well as some preferred stock. The market has experienced considerable panic as a result. Retail investors and numerous businesses with deposits in Silicon Valley Bank attempted to withdraw their funds one by one after the stock price of the bank fell to the point of suspension on March 9. This led to a serious bank run.

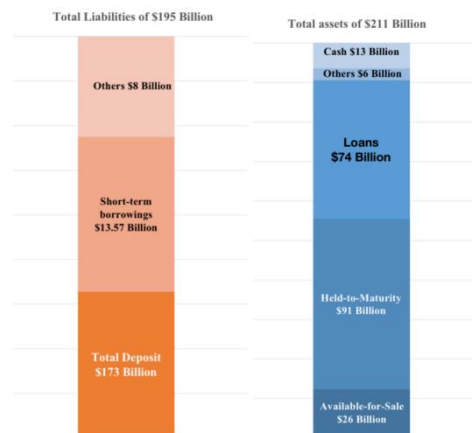


Figure 1: Total liabilities and assets of SVB

2.2. The Analysis of the Liabilities and Equity

In 2022, Silicon Valley Bank will have \$16.295 billion in equity and a total of \$195.498 billion in liabilities. In comparison to 2021 (\$71 million), short-term borrowing increased by roughly 190 times to \$13.565 billion. In comparison to 2021, when long-term debt was \$257 million, it was \$5.37 billion today. The majority of Silicon Valley Bank's general customers are large businesses rather than retail investors, which contributes to the bank's unusual structure as well as the excessive concentration of the bank's deposit and loan customers in these companies. There are therefore fewer positive operating cash flow hedges against deposit drawdowns, and cash flows can be unpredictable.

Another part of this is that there were suddenly a lot more deposits because the government issued a lot of money during the outbreak and invested a sizable percentage of it in scientific businesses. These deposits did not result from the bank actively expanding irrationally. Instead, they were created under very precise conditions. The upper bound of the target range for the US federal funds rate has increased dramatically during the past year, from 0.25 percent to what has now surpassed 5 percent. One of the companies affected by the Fed's aggressive interest rate policies is Silicon Valley Bank.

Due to this, the Fed's increase in interest rates, the unique characteristics of certain bonds, such as AFS and HTM, as well as some poor decisions made by upper management, all contributed to the failure of Silicon Valley Bank in terms of assets and liabilities.

2.3. The Analysis of the Interest Rate Risk

The third point is to consider the interest rate and the duration of the Silicon Valley Bank in 2021 to 2023 which can reflect the risk it bears and the reason why the SVB collapses.

The problem of SVB began with the investment boom after the coronavirus pandemic began. As the preferred bank for California venture capitalists and start-ups, it is full of billions of deposits from young companies and investors' cash. With so much money -- nearly \$130 billion in new deposits in 2020 and 2021 -- SVB can't fully borrow. On the contrary, they invest most of their money in long-term bonds supported by the U.S. government. These bonds have no credit risk, and because SVB has the Noninterest-bearing demand deposits for about 46% and Interest-bearing deposits for about 54%, so they are also profitable [1]. But this balance sheet structure can only work when interest rates remain low. As the Federal Reserve struggles with inflation and rising interest rates, deposits have become more expensive. In the past year alone, the deposit cost of SVB has increased from 0.14% to 2.33%. (The deposit increases from 62 to 862 in one year). At the same time, the yield of its long-term government bonds has not wavered. Profit squeeze is imminent.

The definition of the duration is a tool measure the sensitivity of a bond's or fixed income portfolio's price to changes in interest rates. That means the interest rate and the value of bond has the negative relationship. What is more, this also means that as the value of interest rate increases, the value of the bond decreases. During the boom period in 2020 and 2021, this was great for SVB: its total savings more than tripled in two years. However, when the technology boom collapsed at the end of 2022, its customers—many of whom are the innovative companies and entrepreneurs in technology, life sciences, energy, high-end catering and hospitality want to take out their savings and this indirectly led to the failure of SVB.

This will not be a problem, except for one thing: SVB took a large number of these deposits in 2020 and 2021, and bought long-term treasury bonds and mortgage-backed securities with very low interest rates. This is not a completely reckless decision: there is no risk of default on any assets it buys. But if interest rates soar, it does bring great risks to SVB, because when interest rates rise, bond prices will fall. Because there is a large number of treasury bonds have been bought, but most of these treasury bonds are fixed-term. At the same time, the interest rate of the treasury bond is low, but the interest rate increases during the 2021 and 2022, so there is a problem with the liquidity of funds which means the SVB cannot pay the interest rate to their clients because they do not have enough money.

To sum up, SVB's failure is attributed to the loss of its large bond portfolio caused by high interest rates [2], because it bought billions of dollars of long-term treasury bonds and other securities in 2020 and 2021 at lower interest rates, and the market value of these bonds was crushed when interest rates rose in 2022 and early 2023. This has brought unrealized losses to SVB - these losses exist but have not been deducted from bank capital due to the industry's special rules - so large that they may destroy their entire capital base.

2.4. The Competence of Management

The fourth point is to analyze the decisions of executives of Silicon Valley Bank and their decisions impact on Silicon Valley Bank in pursuit of their own interests of purchasing long-term bonds.

According to this diagram, the total assets of SVB increased between 115B dollars and 211B dollars from 2020 to 2021. Meanwhile, the figure of cash and cash equivalents increased from 17,675

million dollars to 14,619 million dollars. These relevant data indicate that the cash flow of Silicon Valley Bank has increased, and then it also can promote an increase in net assets and net profits. From then on, ROE (Rate of Return on Common Stockholders' Equity) of Silicon Valley Bank has greater potential to increase. In addition, the data of total SVB Financial Group stockholders' equity increased from 8,433 million dollars to 16,609 million dollars. It means the amount of equity and assets of SVB stockholders and executives are increased and their salaries and bonuses became more valuable.

The reasons for the increase in these values, because SVB executives realized the ROE ratio will affect the salary of executives in a large extent. So that, executives of Silicon Valley Bank adopt the strategy of buying long-term bonds to increase returns and ROE since 2017. Due to the quantitative easing policy of the United States, a large number of Silicon Valley Bank get loans at zero cost, because it did not require deposits to lend money. And then Silicon Valley Bank has purchased a large number of US bonds and housing bonds to improve the return and ROE. It also can increase the value of net assets and net profits for SVB in the long term. If the ROE ratio increases, their investment becomes more meaningful, and their wages will also increase due to the positive trend of ROE. So that, executives had to allocate funds to assets with longer maturities and higher returns. Because these assets have increased SVB's profitability and led to a surge in executive compensation in previous years from 2017 to 2021 [2].



Figure 2: The compensation of income of CEO (unit in thousand)

According to previous data in United States Securities and Exchange Commission Official Website, SVB CEO Greg Becker's cash bonus reached a peak of \$3 million in 2021, it more than twice the amount and gain an increase of nearly 60% compared to cash bonus in 2017 (Figure 2). In addition, Greg Becker's total salary reached \$10 million in 2021. Besides, Chief Financial Officer Daniel Beck received a bonus of \$1.4 million in 2021, more than four times the bonus he received when he joined the company before four years ago. It is worth to mention that his total salary reached nearly \$3.8 million. it has an increase of approximately double compared to the same period last year. Compared to the same position, the average salary of executives is mostly \$0.2 million dollars per year [3]. Figure 3 shows the comparison of annual salary income of different positions in McKinsey&Company and SVB.

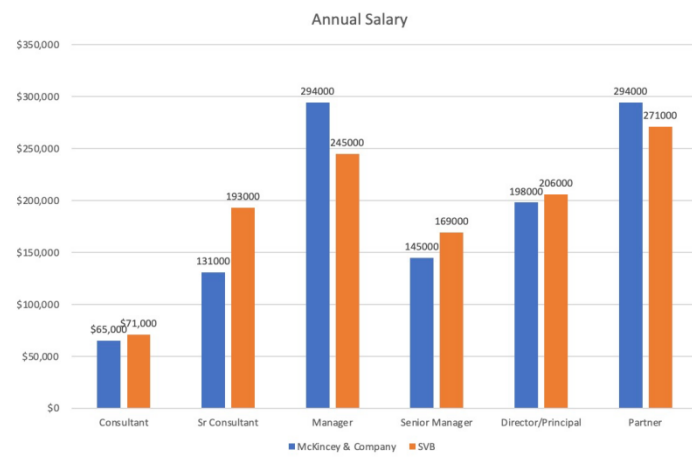


Figure 3: Comparison of annual salary income of different positions in McKinsey&Company and SVB

Thus, the increase of the ROE ratio tends to bring a lot of benefits for executives and it leads to increase their properties and their own interests. Although the risk of long-term bond purchases is high, the return on long-term bonds is high and can bring them more benefits, and they willing to accept the risk of buy a lot of long-term bonds.

However, SVB executives abandoned long-term development in pursuit of short-term benefits. Meanwhile, the failure of Silicon Valley Bank is because the bank executives failed to effectively manage its interest rate and liquidity risk, and then suffered a destructive and unexpected run-on uninsured depositor in less than 24 hours, and finally went bankrupt.

2.5. LFBO Regulation of Silicon Valley Banks

The fifth point is the regulation by the US Securities Regulatory Commission and the risk of entered the investment portfolio of a large foreign banking organization (LFBO). The Vice Chairman of the Federal Reserve reflected in Congress on the causes of the failure of SVB due to improper regulation on March 28, 2023 [4]. Vice Chair for Supervision Micheal S.Barr said the survey results show that the risk management and internal control of the Silicon Valley Bank of the US Securities Regulatory Commission are insufficient, so that during the period of rapid growth of bank scale and deposits, the US Securities Regulatory Commission did not timely remind the Silicon Valley Bank of the possible debt risk, volatility and stress resistance problems, resulting in errors. In 2021, although Silicon Valley Bank entered the LFBO portfolio, adding many unknown risks while increasing deposits. Although LFBO's new regulatory team has more comprehensive and detailed regulatory standards, compared to other regulatory organizations, LFBO's regulation teams is still slightly insufficient. Moreover, other regulatory organizations related to SVB have not intervened effectively. Thus, the negligence of these regulatory organizations can also indirectly lead to the bankruptcy of SVB.

In addition, US bank regulators conducted a series of comprehensive bank tests on SVB two years ago. These tests include bank liquidity stress tests, emergency capital reserves and liquidity risk management. In the next six months, regulators even found that SVB had ineffective board oversight, weak risk management and inadequate internal audit function. Therefore, based on previous reports, it can infer that whether it is external regulatory reasons or internal executives' weak risk awareness, these reasons have contributed to the failure of SVB. From then on, regulators downgraded SVB's management rating shortly after they discovered the problem, which also suggesting that the bank's regulatory problems had been foreboded.

It is worth noting that although the regulators communicated with SVB after that, the effect was not obvious, until March 9, 2023, the vulnerability of SVB's internal risks were all exposed, resulting in irreversible results.

3. The Influence of SVB's Failure to the World

After the bankruptcy, SVB faced significant challenges and had to find solutions to recover. In its financial report issued in February 2023 [5], SVB predicted a decline in its stock price (although they didn't anticipate the severity of the situation). The bank had three main types of clients, classified into five categories: the first category included emerging or early-stage enterprises, mostly small privately held companies; the second category comprised public or privately held companies in their mid or late stages, such as technology, medical, and life science firms; and the third category was regular depositors.

The most affected were the emerging/early-stage privately held companies, which can be divided into two groups. The first group consisted of startups that had distributed their funds across multiple banks, so SVB's bankruptcy had a significant impact but didn't cause them to go bankrupt. For example, Charlie, as the 100% owner of an early-stage or nearly mid-stage enterprise, had about 50% of their funds in SVB. While they couldn't withdraw this money, the funds in other banks ensured their short-term liquidity wouldn't be affected. Additionally, the money they had in SVB was within the FDIC insurance limit. However, for startups that had all their funds in SVB, the bankruptcy was a fatal blow. Even though they knew they would eventually get their money back, the fear of uncertainty made them unsure if their companies could survive without cash flow until the assets were returned. In brief, Figure 4 shows the influence of SVB's failure to different aspects.



Figure 4: The influence of SVB's failure to different aspects

A prime example is "Capsule," an AI video production tool that had just completed a \$4.75 million financing round, and Garry Tan, the president of Y Combinator, both of whom suffered a devastating blow due to SVB's sudden bankruptcy. They, along with other venture capitalists, joined forces to initiate a self-rescue program.

Regular depositors were much more anxious compared to the other two categories, as their entire assets were likely stored in SVB. Some rushed to the bank early in the morning to withdraw their money, while others immediately opened accounts in other banks. Many signed multiple agreements, with some not even reading them thoroughly. Some people saw this as an opportunity to buy stocks at low prices and started buying in large quantities.

The other two categories are companies that had business relations with SVB and investors, which will show it later. As for when they could get their money back, there are various possibilities. SVB's assets might remain frozen forever, preventing them from retrieving their funds, or after being acquired by another bank and appropriately capitalized, a new bank might help them clear their debts.

Finally, on March 13, the US government directly intervened and assisted in returning the stored money to SVB's depositors.

American public. It raises concerns about whether people would lose confidence in banks, leading to a mass withdrawal of their assets and causing banks to collapse. As mentioned in the first point, different types of depositors had various reactions to this event, and they would face different consequences. According to various sources and financial reports from smaller banks, after SVB's bankruptcy on March 10, deposits in small banks decreased significantly, ranging from \$119 billion to \$5.46 trillion, nearly double the previous record. In contrast, the deposits in larger banks (the top 15 banks in the US) increased by \$67 billion, reaching an astonishing \$10.74 trillion. Depositors feared not being able to withdraw their money from banks, so they transferred their funds to larger banks to safeguard their earnings. Additionally, borrowing in smaller banks reached a historical high of \$669.6 billion, indicating that American depositors were full of panic and were trying to find the safest places to store their money, which were mostly larger banks. As for other startups and those affected by SVB's bankruptcy, they reached an agreement with General Catalyst that they would encourage their portfolio companies to restore their banking relationships if SVB was acquired and appropriately capitalized. This shows that they devised various solutions to cope with the bank's bankruptcy and protect their interests. Even though the US government stated that depositors could withdraw all their money from SVB three days after the bankruptcy, people still feared losing their wealth. There were also concerns that the US government was using taxpayers' money to help fill the gaps caused by SVB's bankruptcy. The government claimed they did not use taxpayers' money and instead used FDIC funds to fill the void, but this didn't completely alleviate the fear of losing money for American depositors.

The third topic in the sixth point discusses what happened to SVB's shareholders, employees, investors, and assets after the bankruptcy. In the two weeks before March 10, specifically at the end of February, SVB's CEO, Greg Becker, sold off holdings worth up to \$3.6 million and successfully cashed out. However, he didn't leave SVB but, instead, made multiple statements within 24 hours before SVB's bankruptcy, claiming that SVB wouldn't go bankrupt easily and that its assets were safe. This angered SVB's shareholders, and on March 13, they sued Greg Becker and SVB's Chief Financial Officer, Daniel Beck. The reason for the lawsuit was "concealing the impact of rising interest rates that made SVB vulnerable." As for SVB's shareholders, they faced complete wipeout, with all losses being evenly distributed among each shareholder. They were the sacrificial victims of this event. SVB's employees, according to Glassdoor.com, received a year-end bonus worth approximately \$10,000 to \$100,000 before the bankruptcy. However, there was no further information about them after the bankruptcy. They were terminated but faced no other penalties. Investors were mostly disappointed with SVB, but on March 12, more than a hundred venture capital firms and investors gathered in support, urging to minimize the impact of SVB's collapse on the financial industry. Lastly, regarding SVB's assets, Bank of America claimed they acquired \$110 billion of SVB's bank assets, \$72 billion in loans, and \$93.6 billion in liabilities for \$164.5 billion. SVB's 17 branches were also converted into Bank of America branches [6-8].

4. Differences brought about by the different banking regulation

Indeed, the investment focus of Silicon Valley Bank and some banks in China are also very different. According to SVB's annual report, Silicon Valley Bank invested \$26,069 million in ASF securities in 2022. At the same time, Silicon Valley Bank also invested \$91,321 million in HTM securities. Figure 5 shows the comparison of cash and financial investments in banks in China and the United States in 2022.

However, banks in China focus more on trading financial assets in their financial investments. Meanwhile, these banks will not spend funds on HTM securities and ASF securities. For example,

ICBC [10,11], Agricultural Bank of China [12,13] and Bank of China [14,15], the three banks in China, did not invest in AFS securities and HTM securities from 2019 to 2023. But these three banks have invested a large amount of funds in trading financial assets, such as Bank of China investing 64737300 RMB in trading financial assets in March 2023. Compared with the investment in AFS securities and HTM securities, the investment in transactional financial assets will be less risky and more stable, which can enable banks to develop more stably. However, the investment in Silicon Valley Bank is more risky but higher return than the investment in banks in China.

In addition, the difference between the investment distribution of banks in China and the investment direction of Silicon Valley Bank is largely due to the high requirements of the Chinese government for banks in China to purchase bonds. In November 2012, the China Compliance Department issued a special research report on the basic overview and regulatory requirements of bank bond investment, stating that the term of bond borrowing and lending is determined through negotiation between the borrower and the lender, but the maximum duration of the bond cannot exceed one year. This regulation greatly restricts bond trading. Therefore, the regulation has also led to differences in the distribution of bank investment in China.

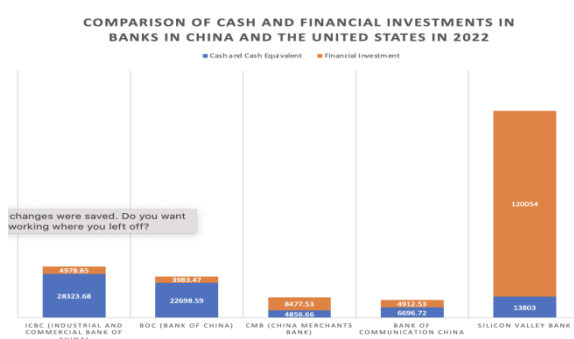


Figure 5: Comparison of cash and financial investments in banks in China and the United States in 2022

5. Conclusion

So overall, this Silicon Valley bank failure was caused by a number of factors. Sharply rising interest rates triggered a decline in the liquidity of bank properties. Corporate executives abandoned long-term investments instead of short-term ones in order to minimize losses. While this may have been a viable option in the past, executives underestimated the butterfly effect of rising interest rates and ignored the unique nature of the bank's clientele. Secondly, at a time when the bank is already in crisis, despite the measures taken, the bank is unable to come up with a large amount of cash in the short term to cope with customer withdrawals. On the other hand, it is found through research that there is almost no event similar to the bankruptcy of Silicon Valley Bank in China. Different bank regulators can also lead to different results.

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