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Analysis of the Silicon Valley Bank Bankruptcy

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Abstract. Since 2022, due to the continuous interest rate hike by the Federal Reserve, the Silicon Valley Bank in the United States has taken the lead in the crisis, triggering the financial market shock[1]. By reviewing the bankruptcy process of Silicon Valley Bank, this paper reveals the reasons behind the bankruptcy of Silicon Valley Bank, analyzes the impact brought by its bankruptcy, and the inspiration to China's banks, so as to bring great reference significance to the maintenance of the stability of China's financial system and the healthy development of China.

Keywords: Fed raises interest rate; Silicon Valley bank; financial stability.

1. Bankruptcy process

In 2020 and 2021, the Federal Reserve began to launch an unlimited quantitative easing policy of interest rate cuts and promised to maintain the zero interest rate level for a long time. Many technology companies got a lot of money at low interest rates in these two years, and their cash reserves skyrocketed, and the size of their deposits directly soared from 76 billion to 190 billion. Since the depositors of Silicon Valley Bank are mainly Silicon Valley startups and technology companies, Silicon Valley Bank has also gradually absorbed no-interest demand deposits from science and technology companies from this time.

But Silicon Valley Bank, as a traditional commercial bank, the main profit model is still to eat the interest rate difference, such as the bank to 1% deposit interest rate to absorb deposits, and then 5% loan interest rate to transfer to the enterprise, from which you can get 4% of the profit. At this time, the Silicon Valley Bank received 190 billion interest rates as low as 0.13% of the deposit, in order to obtain the time value of money, of course, must find ways to loan out in order to obtain profits. But in the past few years by the impact of the epidemic, Silicon Valley's demand for loans for startups fell a lot. So Silicon Valley banks chose to buy “U.S. Treasury bonds” and “MBS” (mortgage securitization). These two types are low-risk bonds, but more than 80% of the bonds are 10-year, 20-year. This behavior is commonly known in the industry as "short borrowing and long lending", basically belongs to the norm of the bank, the use of term mismatch to earn money, which seems to be no problem[2].

However, the back of the encounter with the Federal Reserve interest rate hikes, from March 2022, only in just one year period has increased interest rates eight times, interest rates from the beginning of the 0.25% to the current 4.75%, a cumulative increase of 450 basis points. Coupled with the fact that inflation has been caused by printing money and releasing water all the time, interest rates have been raised and released again, and it is not even known for how long this interest rate hike will last. As we all know, the higher the interest rate, the lower the bond price, bond prices and interest rates are negatively correlated. So this makes the U.S. Treasury bonds and MBS depreciated significantly, resulting in the Silicon Valley Bank's assets at once produced more than 1.8 billion U.S. dollars of floating losses. To add insult to injury, it just happened to coincide with the end of the mobile Internet cycle, the global technology industry overnight winter. Silicon Valley tech companies are all contracting and layoffs, the company does not make money, can not raise funds, can only consume deposits every day. These startups have taken out their own bottom-of-the-barrel money from Silicon Valley banks because of financial constraints. There is no way out, the bank would rather lose money, but also cut and dump the outstanding bonds, as a way to ease the liquidity crisis, which is tantamount

to the bank disguised as admitting that it has a big liquidity problem. As soon as the public heard that Silicon Valley Bank was running low on cash reserves, a market panic arose and they rushed to get their deposits out of the bank, thus triggering a run. And less than 48 hours after the run, regulators stepped in and Silicon Valley Bank declared bankruptcy. This is the whole process of the bankruptcy of Silicon Valley Bank [3].

2. the Reasons for Bankruptcy

2.1. The Liability Side Needs to Pay a Certain Amount of Interest and Meet the Daily Cash Withdrawal Needs

Figure 1 reflects the changes in Silicon Valley Bank Financial Group's deposit liabilities and asset size over the period from the first quarter of 2018 through the fourth quarter of 2022. As can be seen from the figure, prior to 2020, Silicon Valley Bank's deposit liabilities and asset size maintained a relatively smooth and slow trend of change.

Since the implementation of the Federal Reserve's quantitative easing policy in March 2020, the amount of Silicon Valley Bank's deposits and liabilities has rapidly surged from $61.912 billion in the first quarter of 2020 to $74.506 billion in the second quarter of 2020, an increase of up to 20.3%, much higher than the 0.2% deposit growth rate in the previous quarter. Correspondingly, Silicon Valley Bank's asset size also expanded rapidly from $75.01 billion in the first quarter of 2020 to $85.731 billion in the second quarter of 2020, an increase of approximately 14.3%, which is nearly nine percentage points higher than the previous period's increase (5.6%). The expansion scenario of Silicon Valley Bank's deposit liability and asset size continued through the first quarter of 2022. As of March 31, 2022, Silicon Valley Bank's deposits totaled $198.134 billion, an increase of nearly 1.94 times compared to two years ago, and its assets amounted to $220.355 billion, an increase of approximately 220 percent compared to two years ago.

But the good times didn't last long, and looking at year-end 2022 data, Silicon Valley Bank's total deposits for the year fell by $16 billion, or roughly 10 percent of total deposits, averaging at least $1.2 billion in expenses per month. Silicon Valley Bank increased the size of its term borrowings to $30 billion from $15 billion at the end of 2022, refinancing $2.25 billion to cover losses and provide liquidity support. The news of the asset sale has raised alarm bells by various Silicon Valley venture capital firms, i.e., Silicon Valley Bank's largest customer base. More seriously, Silicon Valley Bank took in a large number of low-interest deposits during the period of monetary easing and allocated long term held-to-maturity bond assets on its asset side, with a serious maturity mismatch that exposed it to significant interest rate risk [4]. Looking at the structure of Silicon Valley Bank's held-to-maturity and available-for-sale assets, it is not difficult to find that Silicon Valley Bank's interest rate risk potential has actually begun to emerge as early as 2021.

Table 1 and Figure 1 show the distribution of the asset composition amount and percentage of Silicon Valley Bank's financial group during 2018-2022, respectively. As can be seen from the charts, in the first year (2020) of the Federal Reserve's quantitative easing policy, Silicon Valley Bank invested a large amount of money in U.S. Treasuries and mortgage-backed securities (MBS), and its fixed-income securities allocation increased by about 71% compared to the previous year ($27,857 million), to $47,504 million. Meanwhile, its cash and cash equivalents increased by about 161% to $17.675 billion. In terms of its overall asset share structure, Silicon Valley Bank's capital allocation in 2020 mainly resulted in a significant rise in cash holdings (about 15% of total assets), and its share of securities (41%) remained essentially unchanged from the previous year (39%). Over the next two years, however, Silicon Valley Bank's fixed-income securities investments tripled, growing steeply from $27,857 million at the end of 2019 to $117,390 million at the end of 2022, corresponding to an increase in the share of assets from 39% in 2019 to 55% in 2022. By contrast, the percentage of its cash holdings declined to 7% from the original 10%. More than half of the asset structure consists of long-term fixed-income securities, a feature that determines the future of Silicon Valley Bank's

bumpy destiny - it will be very vulnerable to the volatility of market interest rates, once the market interest rates rise sharply, the value of its assets will be sharply shrunken and depreciated. In the context of the Fed's interest rate hikes, if the Silicon Valley Bank wants to stabilize liabilities, it can only be high interest rate deposits, but this will squeeze the income and profit space. If not high interest rate deposits, the company will need to be forced to sell assets to repay debts, also facing losses.

Silicon Valley Bank is actually facing these two problems at the same time: first, from the deposit rate, interest-bearing deposits in 2022 compared to 2021, the interest rate rose to 1.13%; second, from the perspective of the size of the deposits, the deposit balance at the end of 2022 compared to the end of 2021 fell by 8.5% to 173.1 billion U.S. dollars, of which non-interest-bearing deposits were reduced by 36% to 80.8 billion U.S. dollars [5]. This lays a huge risk for the insolvency of Silicon Valley Bank.

Table 1. Assets composition amount of Silicon Valley Bank Financial Group (millions of US dollars)

Year	2018	2019	2020	2021	2022
Cash	3572	6782	17675	14619	13803
Fixed Income Securities	23277	27857	47504	125416	117390
Net Loans	28057	32860	44734	65854	73614
Non-Marketable Securities	941	1214	1802	2543	2664
Other	1081	2292	3796	2876	4322
Assets	56928	71005	115511	211308	211793

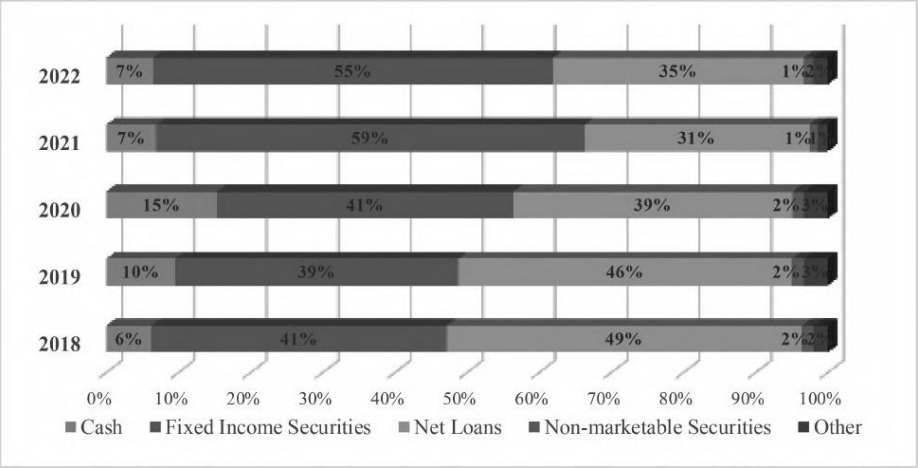

Fig. 1 Composition of Assets of Silicon Valley Bank Financial Group

2.2. Changes in Depositor Behavior

Technology startups are generally faced with financing difficulties at the initial stage, high risk and other factors difficult to survive and develop, while the Silicon Valley Bank is based on the implementation of high interest rate spreads. On the one hand, the impact of the Fed’s interest rate hike policy, depositors require a corresponding increase in the rate of return; on the other hand, Silicon Valley Bank's asset side of the configuration of a large number of bonds that have not yet matured, unable to meet the rate of return demanded by depositors, resulting in a liquidity crisis.

This further led to the confidence of Silicon Valley Bank's customers to suffer, and panic among depositors. The rapid spread of such rumors, especially in today's Internet-enabled environment, also accelerated the run on the bank, and it was only a matter of time before Silicon Valley Bank eventually went bankrupt [6]. Silicon Valley Bank would not have declared bankruptcy so quickly had it not been for the run brought on by the market panic and the information asymmetry that left depositors without complete information about the bank's financial condition, coupled with their inability to

accurately assess Silicon Valley Bank's risks, which caused depositors to overreact to rumors or misinformation and to make a blind and hasty decision to withdraw all of their funds from the bank [7]. From the data, Silicon Valley Bank's Tier 1 Capital Adequacy Ratio of 13.9% is 5.4% higher than the minimum regulatory requirements, and the Total Capital Adequacy Ratio of 14.7% is 4.2% higher than the minimum regulatory requirements, which show that Silicon Valley Bank's financial position is still within the safe range.

2.3. Lack of Internal and External Audit Independence

In terms of external audit, Silicon Valley Bank has been continuously receiving audit services from KPMG since 1994. This long-term audit relationship has had a serious adverse impact on the independence of the external auditor. On the one hand, the business model of "signing an audit engagement letter first and negotiating the audit fee later" between Bank of Silicon Valley and its accounting firm provides the possibility of purchasing its audit opinion. On the other hand, the growth of Bank of Silicon Valley's audit fees has significantly lagged behind the growth of its asset size and business complexity. Combined with the data related to the 2020-2021 audit report of Silicon Valley Bank, its asset size increased from $115.511 billion to $211.308 billion in two years, an increase of 83%, but the corresponding audit fee increased from $1.0556 million to $1.2 million, an increase of about 14%. In addition, on the eve of Silicon Valley Bank's bankruptcy annual audit report, KPMG still issued a standard unqualified audit opinion for it. All of the above indications show that the acquaintance relationship between Silicon Valley Bank and the accounting firm clearly weakened the independence and prudence of the external auditor.

In terms of internal auditing, the disclosure document pointed out that Silicon Valley Bank's audit committee chairman's salary is about $20,000, and the audit committee member's salary is about $25,000, and at the same time, the member of the audit committee can also serve as a member of other committees of the bank. The design of this concurrent appointment system significantly reduces the independence of the internal auditors in their audit work, and the reliance of the internal auditors on the compensation of the other committee members' positions makes the bank's internal controls and internal audit work vulnerable. In addition, all audit committee members held equity incentives from Silicon Valley Bank, which further reduced the independence of its internal audit work.

Chronic Absence of Key Management Personnel. According to a proxy statement issued by Silicon Valley Bank in 2023, in April 2022, its Chief Risk Officer, Laura Izurieta, tendered her departure and the position remained vacant for a long period of 10 months thereafter. It was not until January 2023 that the bank found a suitable successor. For a new commercial bank with risk management and control at the core of its operations, the prolonged absence of key risk controllers signaled a major problem with its internal risk controls. This further led to the bank's failure to identify risks and take risk hedging measures such as asset restructuring and interest rate swaps in a timely manner while a number of financial risks rose sharply.

3. Impact of Bankruptcy

3.1. Technology Companies Face Deposit Losses and Survival Difficulties [8]

Science and technology enterprises bear the brunt, mainly because most of the deposits in the Silicon Valley Bank of science and technology enterprises for start-up technology companies, their own profitability is in doubt. When they face losses on deposits they have financed, whether their earnings can cover their daily operations. Financing was easier in times of abundant liquidity, and startup tech companies may have been able to find other funding. But in the current period of tight liquidity, it remains to be seen whether startups will be able to continue to raise funds successfully, and there may be tech company bankruptcies in the future. Since the bankruptcy of Silicon Valley Bank, the three major U.S. stock indexes have all declined to varying degrees. Among them, the Nasdaq index fell 4%, the Dow Jones index fell 3%, the Standard & Poor's fell 3.7%. It can be seen that the Nasdaq index, which is dominated by technology stocks, has declined more, mainly for two reasons. The

Silicon Valley Bank bankruptcy event triggered market concerns about banking liquidity, leading to risky asset prices fell across the board. The U.S. technology stocks benefited from the U.S. monetary policy of low interest rates in the past decade, its valuation is higher, the future with the Federal Reserve's higher and longer interest rate hike target superimposed on the financial risks, its valuation will be difficult to sustain.

3.2. U.S. Banking in Crisis: Confidence Collapses and Contagion Spreads Amid Liquidity Strains

As the Silicon Valley Bank's business model has its particularity, the relative concentration of its customers, accelerating the run-on deposits, but does not mean that the Silicon Valley Bank will be a special case. In addition to it, the first republican bank and other business methods and customer composition is more similar to the bank or will also face a similar dilemma.

3.3. Overseas Technology Companies are Fermenting Silicon Valley Bank Bankruptcy Storm

Silicon Valley Bank has branches in Canada, Denmark, Germany, India, Israel and Sweden and other countries. Silicon Valley Bank's bankruptcy not only affects the U.S. local technology companies, but also makes the survival of overseas technology companies encounter difficulties. In the UK, the heads of about 180 technology companies have written to Jeremy Hunt, the UK Chancellor of the Exchequer, asking the government to intervene. If these companies do not have more funds to invest in technology research and development and eventually declare bankruptcy, the global capacity for technology innovation may suffer as a result.

4. Insights and Suggestions

4.1. Improve the Legal System to Provide Institutional Protection for Bank Insolvency

By improving the legal system and providing institutional protection for bank insolvency, the government can help maintain financial stability and prevent the need for taxpayer-funded bailouts. This can help boost public confidence in the banking system and prevent bank runs. Continuing to improve and fine-tune the documentation of rules and regulations related to crisis management in banking insolvency, the Government should establish a deposit insurance system to protect depositors in the event of a bank failure. A resolution framework could also be put in place to ensure that depositors are maximally protected as they should be and to minimize the impact of bank failures on the wider economy.

4.2. Financial Risks Should be Properly Addressed with Strong and Effective Financial Regulation

After the crisis, the extraordinary emergency rescue measures of the Federal Reserve and the U.S. Federal Deposit Insurance Corporation played a positive role in stabilizing market confidence, bringing us the following insights: First, strengthen the rule of law in the disposal of financial risks. Accelerate the introduction of the Financial Stability Law, improve the risk disposal mechanism, clarify the legal responsibilities of all parties to maintain financial stability, bring all types of financial activities under supervision in accordance with the law, and enhance the level of financial supervision and law enforcement. Second, strengthening the supervision of small and medium-sized banks. The number of small and medium-sized banks in China accounts for about 90% of the total number of banks and less than 30% of their assets, and their profitability and ability to compensate for risks are generally weak. The clearer the regulator's attitude and the quicker its response in the handling of risk events of small and medium-sized banks, the smaller the cost and the better the result. To improve the rapid response mechanism for financial risks, to avoid delaying the disposal of the time caused by the spread of risk.

4.3. Banking Financial Institutions Should Adhere to the Risk-based, Strengthen the Sound Operation

Silicon Valley Bank will be the safety of banking operations, liquidity, profitability of the three major principles of the cart before the horse, excessive attention to profitability, ignoring the safety and liquidity, is the lack of risk management of the typical case, which reveals China's banks.

First, strengthen the liquidity risk management [9]. It is necessary to utilize stress tests and other tools, always pay attention to macroeconomic fluctuations, changes in counterparty credit and other factors, and accurately assess the bank's sensitivity to liquidity stagnation in the short term as well as its ability to resolve asset-liability maturity mismatches in the medium to long term.

Second, strengthen asset-liability management. To dynamically optimize the asset structure, it is necessary to control the risk of asset allocation concentration, such as avoiding an excessive proportion of financial investments; it is also necessary to do a good job of credit concentration management, avoiding excessive concentration of credit in a single industry or customer. We will strengthen the management of the appropriateness of liabilities and assets, the diversity of liability structures and the appropriateness of liability costs, so as to strengthen the foundation of sound operation.

Third, we attach great importance to reputation risk management. In the era of mobile Internet, financial risk contagion is rapid and the complexity of procedures is increasing, and the symbiosis and correlation between reputational risk and other risks have increased significantly. It is necessary to fully consider the catalytic and amplifying effect of reputation risk on other risks, release accurate and timely information, strengthen explanation and communication, avoid public misunderstanding and misjudgment, and prevent reputation risk from evolving into a fuse and gas pedal of crisis.

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