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In-depth Analysis of the Factors Leading to the Demise of Silicon Valley Bank and the Subsequent Effects on the Financial Landscape

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Abstract: Silicon Valley Bank of the United States filed for bankruptcy in March 2023, the largest bank bankruptcy in US history and the quickest bank bankruptcy process ever. This bank's run-on liquidity risk exposure led to the bank's declaration of bankruptcy. This paper takes the cause of the failure of Silicon Valley Bank as the research theme, adopting the method of case analysis, and analyzing the business model, operation data, monetary and regulatory policies of the United States in the corresponding period. This paper finds that the risk factors of the failure of Silicon Valley Bank mainly include the risk of a single business structure, the risk of interest rate and liquidity management, the risk of monetary policy of the Federal Reserve and the risk of financial supervision system. Among them, business model defects and poor asset and liability management are the endogenous risks of Silicon Valley Bank failure, and the US monetary policy and regulatory policy errors are the inducing risks of Silicon Valley Bank failure. Commercial banks and financial regulators should take the case of Silicon Valley Bank failure as a reference to improve the ability of banks to prevent and resolve operational risks.

Keywords: Silicon Valley Bank, Liquidity risk, IRR (Interest rate risk), Monetary policy, Regulatory policy

1. Introduction

Due to a run and insolvency in March 2023, Silicon Valley Bank—a significant US lending institution for scientific and technology businesses—was closed by the California Department of Financial Protection and Innovation and assumed by the Federal Deposit Insurance Corporation (FDIC). The bankruptcy of Silicon Valley Bank has triggered a liquidity panic in the European and American banks, and the academic community has widely discussed the risks to financial stability that may be caused by the aggressive interest rate hike policy in the United States. The case study on the bankruptcy risk of Silicon Valley Bank, the exploration of the internal management factors and external policy factors of liquidity risk, and the exploration of effective risk supervision and risk prevention and control mechanisms have strong theoretical and practical value for commercial banks, regulatory authorities and academia. Based on consulting the operation data of Silicon Valley Bank and referring to the relevant research literature, this paper further studies the internal management risk and externally induced risk of Silicon Valley Bank bankruptcy. In terms of writing ideas, it is

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divided into three parts. The first section outlines Silicon Valley Bank's fundamental circumstances as well as the timeline of the risk outbreak. The second section examines Silicon Valley Bank's insolvency from four angles: business concentration risk, interest rate and liquidity management risk, monetary policy risk, and regulatory policy risk The third section summarizes the reference significance of the Silicon Valley Bank case from four perspectives: macro-policy formulation, financial risk supervision, bank operation and management, and business model innovation. The study of this risk case has good enlightening significance for commercial banks to strengthen asset liability management and business model innovation, and financial regulatory authorities to enhance the effectiveness of monetary policy and regulatory policy.

2. Summary of Silicon Valley Bank Collapse

2.1. Background

Founded in California in 1983, Silicon Valley Bank had consolidated assets of about $209 billion by the end of 2022, making it the 16th largest commercial bank and the second largest state bank in the United States.[1].

Silicon Valley Bank caters primarily to high net worth individuals, including venture capital (VC), private equity (PE), technology corporations, and high-tech enterprise personnel. Silicon Valley Bank offered the startup industry in the US, Europe, Israel, China, and other nations and areas complete banking services, and its business was mainly in the United States. To effectively address the issue of balancing returns and risks, Silicon Valley Bank implemented institutional innovation in risk control and business model to adapt to the growth pattern of science and technology businesses. Its functioning mostly exhibits the following traits:

Focus on the specialized management of subdivisions. Silicon Valley Bank served early-stage technology companies, private equity and venture capital funds in the software and hardware, life sciences and healthcare sectors.

Interest + option income model. Silicon Valley Bank provided commercial loans with high interest rates to small and medium-sized enterprises in science and technology while providing PE/VC capital call credit with a shorter term, lower risk, and lower return. Silicon Valley Bank also provided start-up credit to start-ups and ask for 3%-5% of the warrants, which can be exercised when the company goes public or is acquired, in order to benefit from the outflow of equity.

Take patented technology as security. When technology companies face operational challenges, Silicon Valley Bank can work with venture capital firms to sell the copyrighted technology that the companies have pledged to big, high-tech companies in order to raise money and cover the bank loan losses.

2.2. Timeline

As shown in Figure 1, Silicon Valley Bank experienced a performance explosion from March 8 to 10, 2023. Depositors went through their lowest point during that time, and the bank eventually filed for bankruptcy, making it the largest bank bankruptcy in US history and the fastest-growing bank bankruptcy in the crisis' history.

Figure 1: Timeline of Silicon Valley Bank collapse

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3. Reason analysis for the Silicon Valley Bank Collapse

3.1. The risk of high concentration in the business model

The "Silicon Valley model" has supported the rapid growth of Silicon Valley Bank's performance for decades by obtaining the growth dividends of technology enterprises and start-ups. But as a commercial bank, it also contained inherent risks that cannot be avoided. The customer structure and business structure were too simple, and it was difficult to avoid the cyclical risks of the industry on the asset business side. The customer base of science and technology start-up enterprises usually are greatly affected by macroeconomic policies, which is easy to cause the cyclical risks of the industry. On the liability side, it mainly absorbed deposits from corporate customers, demand deposits and trading funds accounting for a relatively high proportion. The coverage rate of deposit insurance system was low, which easily led to the risk of bank runs. In the liquidity crisis of Silicon Valley Bank, the sharp shrinkage of bank deposits caused by the tight capital chain of scientific and technological enterprise customers who were affected by the epidemic and the concentrated bank run after the explosion both reflected the risk drawbacks of the high concentration of Silicon Valley Bank customers in the industry[1].

3.2. Liquidity risk caused by mismanagement

The liquidity management of Silicon Valley Bank was poor, and the maturity mismatch of the balance sheet "borrowing short to buy long" was an important reason for the outbreak of its liquidity crisis[2][3].

3.2.1. The proportion of demand deposits is too high, and the liabilities are short-term

The Federal Reserve began its quantitative easing program in March 2020, injecting massive amounts of cash into the market. The US PE/VC market also grew quickly, which resulted in a significant influx of low-interest deposits into Silicon Valley Bank. In March 2022, the total deposits of Silicon Valley Bank reached $198. 134 billion, an increase of $136.222 billion, or 220%, over March 2020. The ratio of deposits to liabilities gradually rose, reaching 95% and 97.18% in 2020 and 2021, respectively. In addition, demand deposits (non-interest-bearing deposits and partially interest-bearing deposits) accounted for a relatively high proportion of Silicon Valley Bank deposits, and the 2022 annual report showed that demand deposits accounted for as high as 66%, and time deposits accounted for only 4%. The percentage of start-up funding has drastically decreased since 2022 due to the disruptive changes in the interest rate environment, while spending has not decreased. The total annual deposit of Silicon Valley Bank decreased by $16.094 billion in 2022, accounting for about 10% of the total deposit, as shown in Figure 2.

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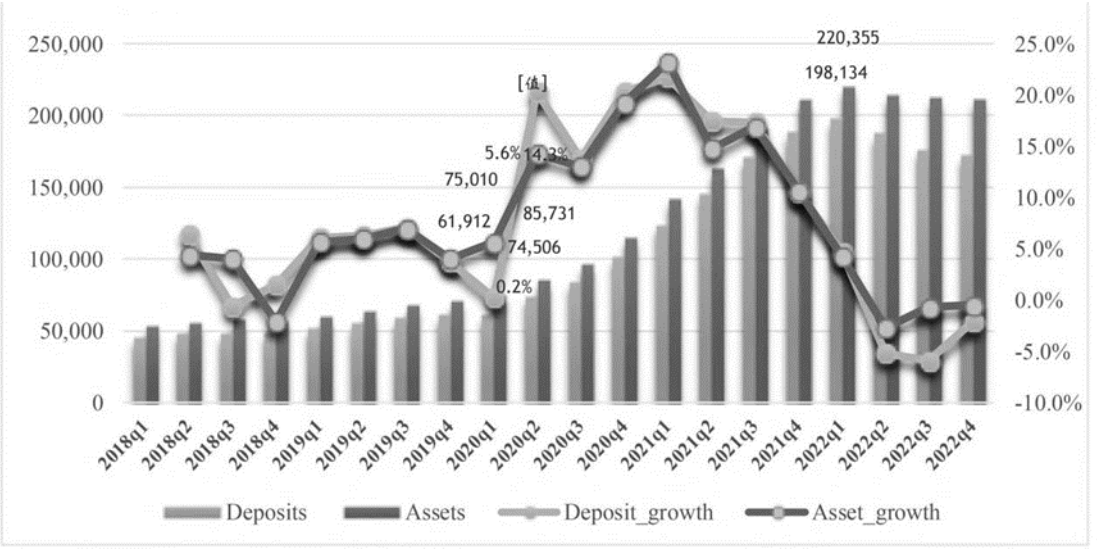

Figure 2: Changes in deposit liabilities and asset size of Silicon Valley Bank from 2018 to 2022 [4].

3.2.2. The proportion of securities investment was too high, and the assets were prolonged

After the rapid expansion of the scale of liabilities, in order to improve the return on assets, Silicon Valley Bank invested a large amount of funds in US Treasuries and MBS. As a result, the proportion of securities investment increased significantly. As shown in figuer 3,from 2018 to 2021, the share of securities investment in Silicon Valley Bank increased from 41% to 59%. The proportion of cash and cash equivalents decreased at the same time. By the end of 2022, the asset side of Silicon Valley Bank held loans of $73.6 billion, accounting for 35% of total assets; Assets available for sale (AFS) of $21.6 billion, or 12%; Held to maturing bonds (HTM) of $91.3 billion, accounting for 43%; Cash and cash equivalents represent only 7% of total assets. In 2022, US Treasury bonds and MBS account for 62% and 75% of Silicon Valley Bank AFS and HTM, respectively. The excessive proportion of securities investment in the asset side of Silicon Valley Bank and the prolonged duration allocation had laid hidden dangers for the outbreak of interest rate risks and liquidity risks in the environment of subsequent interest rate hikes[5].

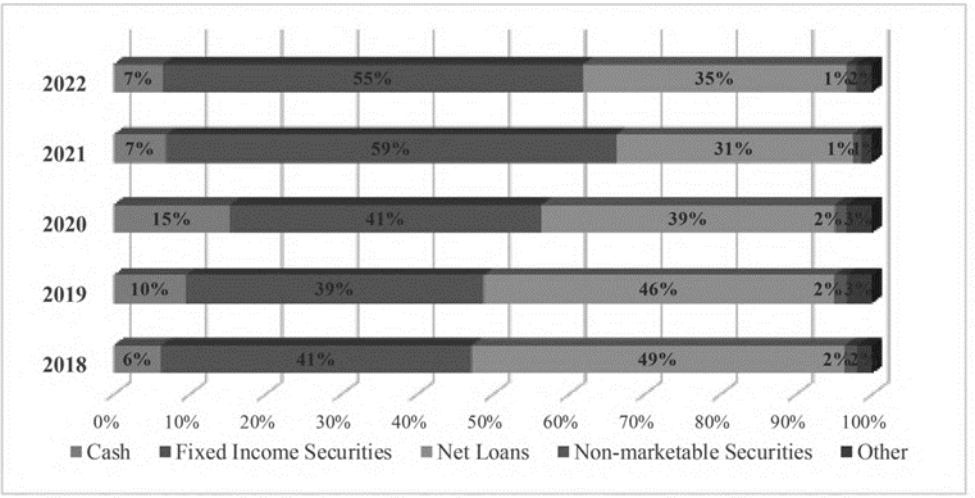

Figure 3: Changes in asset composition of Silicon Valley Bank from 2018 to 2022[4].

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4. Fed monetary policy triggered risk

The Federal Reserve launched an extraordinary quantitative easing program in March 2020 in response to the epidemic-caused economic slump. This policy saw the benchmark interest rate drop from 1.25% to 0.25% and a significant infusion of low-cost money into the market. At the same time, U.S. inflation rose from 1.5% in March 2020 to 7.9% in February 2022, an increase of 243.48%. On March 16, 2022, the Federal Reserve turned to monetary policy in an emergency and started tightening it due to the pressure of persistently rising inflation. Within a year, the Federal Reserve raised interest rates by 450 basis points, becoming the fastest rate hike process in 40 years[6]. Aggressive interest rate hikes led to severe declines in the value of assets held by financial institutions[7]. By the end of 2022, the 10-year US bond interest rate was as high as 3.88%, an increase of 235bp from the end of 2021, and the US Treasury bond suffered the biggest decline in ten years. Meanwhile, rising risk-free rates were not conducive to longer-dated assets, so MBS prices also fell sharply. Under the roller-coaster monetary policy of the Federal Reserve, Silicon Valley Bank had a large number of floating losses on their assets, and risks gradually accumulated. Financial data showed that by the end of 2022, Silicon Valley Bank's available-for-sale financial assets and held-to-maturity investments had floating losses of $2.5 billion and $15.2 billion, respectively, with a total floating loss of $17.7 billion. The scale loss and cost rising pressure on the liability side would eventually detonate floating losses on the asset side into actual losses, and further trigger the risk of bank runs.

5. Regulatory gaps delayed the timing of risk mitigation

The collapse of Silicon Valley Bank exposed the defects of compliance supervision, capital supervision and liquidity supervision of the US banking industry[8].

5.1. Grey areas in operational risk supervision

According to the relevant provisions of the United States Generally Accepted Accounting Principles (USGAAP) on financial assets, held-to-maturity financial assets are measured at amortized cost, market value fluctuations of assets are not recorded, available-for-sale financial assets are measured at fair value, and changes in fair value are included in other comprehensive income and do not affect current profit or loss [1]. Since 2021, the fixed-income securities structure of Silicon Valley Bank has changed greatly, for example, the proportion of held-to-maturity financial assets increased significantly, from 35% in the previous year to 78%. Silicon Valley Bank recorded a large number of its purchases of mortgage-backed securities as Held-to-Maturity (HTM) and U.S. Treasury securities as Available-for-Sale (AFS). The move prevented Silicon Valley Bank from reporting substantial losses on their assets under the Fed's rate-hike policy until they sold the fixed-income securities. Silicon Valley Bank, being a small and medium-sized bank, is permitted by US capital regulatory requirements to exclude a portion of the AOCI (Accumulated Other Comprehensive Income) project from capital. As a result, the floating loss during the holding period will not have an impact on the disclosed capital adequacy ratio. The possible financial fraud motive behind this accounting operation of Silicon Valley Bank had not been found in the compliance supervision[4].

5.2. Blind spots in liquidity regulation

Liquidity regulation indicators (LCR and NSFR) could have complemented capital regulation, but in October 2020, the United States relaxed its supervision of non-" large, international "banks[9]. The US financial regulatory authorities stipulated different liquidity regulatory standards for financial institutions of different grades. Silicon Valley Bank ranked as the fourth tier bank, which

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independently carried out liquidity stress tests and made emergency funding plans, and was not supervised by the Federal Reserve on liquidity coverage ratio (LCR) and net stable funding ratio (NSFR). Silicon Valley Bank also did not disclose LCR and NSFR data. According to the Federal Reserve review report, in December 2022, Silicon Valley Bank exceeded the threshold of $50 billion in short-term wholesale funding and must meet the 70% LCR regulatory standards and NSFR regulatory standards for the first time in October 2023. As a result, until its bankruptcy, Silicon Valley Bank was not subject to the Federal Reserve's liquidity coverage ratio (LCR) and net stable funding ratio (NSFR) regulations. According to the calculation of relevant scholars, calculated by a more stringent measurement method before deregulation, the LCR of Silicon Valley Bank had been below 100% since March 2022, so there was a short-term liquidity gap. In December 2022, Silicon Valley Bank's LCR was approximately 91% and it should acquire approximately $8 billion in additional high-quality liquid assets; In February 2023, its LCR fell to 82.6%, requiring approximately $14 billion of additional high-quality liquid assets[10].

6. Conclusion

Through the review of the main financial indicators and regulatory indicators of Silicon Valley Bank, it is found that the risk of Silicon Valley Bank is caused by its own simple assets and liabilities, mismatching liquidity, ignored long-term interest rate risk, poor internal control, etc. In addition, it has to do with the disregard for financial stability and the loosening of financial regulations against the backdrop of the Federal Reserve's ongoing increase in interest rates. The Silicon Valley Bank collapse case has the following implications for commercial banks and financial regulatory authorities:

From the perspective of macro policy making, monetary policy makers should fully realize the impact of financial instability on the credit delivery of the banking sector, as well as the harm to the development of the real economy. Monetary policy formulation should not only achieve aggregate goals such as economic growth, price stability, and full employment, but also be forward-looking and robust, and effectively safeguard the security and stability of the economic and financial system.

From the standpoint of financial regulation, Silicon Valley Bank's bankruptcy serves as a reminder to regulators to carry out their supervisory responsibilities more skillfully, to strictly enforce Basel III's pertinent provisions, to steer clear of standardized ratio-based supervision models, and to create institution- and business-specific supervision models for banks with various business models, all of which are necessary to guarantee that banks have enough liquidity reserves to withstand market shocks.

From the perspective of bank operation, given the major adjustment of macro environment and monetary policy, commercial banks should stick to their main business, restrain short-term profit-seeking motives, prevent a concentrated build-up of risk exposure for particular business types, maintain a balance between risk and business expansion, and bolster the resilience of business development.

From the perspective of financial business model innovation, the demise of Silicon Valley Bank is unrelated to the technology sector and the science and technology finance business model is still valuable. After a long time of practice, the "Silicon Valley model" which provides investment and loan linkage financial services for start-ups, as well as providing financing support for venture capital institutions, has proved to be a sustainable business model.

References

[1] *Fan Xiaokun. Discussion on asset allocation Risk of small and medium-sized Banks from the collapse of Silicon Valley Bank [J]. Shanxi Finance and Taxation, 2023, (11): 27-29.*

[2] *Vo, Lai Van and Le, Huong T. T., From Hero to Zero - The Case of Silicon Valley Bank (Seotember 05, 2023). Journal of Economics and Business, Forthcoming.*

DOI: 10.54254/2754-1169/85/20240894

[3] *Hamurcu Ç. Bank failure risk: A study on Silicon Valley Bank, Signature Bank, and Silvergate Capital Corporations[J]. Financial Internet Quarterly, 2023, 19(2): 36-45.*

[4] *Xian Rui. Alarm bell already sounded? -- Analysis of the bankruptcy recovery of Silicon Valley Bank [J]. International Business Finance and Accounting, 2023, (20): 38-43+53.*

[5] *Mattarocci G. Bankruptcy of Silicon Valley Bank: Causes and Perspectives[J]. 2023. http://trendsresearch.org/research.php?id=55&title=Bankruptcy_of_Silicon_Valley_Bank:_Causes_and_Perspectives*

[6] *Michael Barr, Wang Yu. On monetary policy and financial stability policy under the new situation and their mutual influence [J]. Financial Development Research, 2023, (12): 32-37.*

[7] *Idziak Ewelina Consequences of Government Bonds Preferential Treatment in Bank's Balance Statements, Exemplified By the Collapse of Silicon Valley Bank Journal | [J] Studies in Logic, Grammar and Rhetoric. Volume 68 , Issue 1 . 2023. PP 309-328*

[8] *Al-Sowaidi A S S S, Faour A M W. Causes and Consequences of the Silicon Valley Bank Collapse: Examining the Interplay Between Management Missteps and the Federal Reserve's Floundering Decisions[J]. Journal of World Economic Research, 2023, 12(1): 38-46.*

[9] *Hauf, Patrick and Posth, Jan-Alexander, Silicon Valley Bank - (Why) Did Regulation And Risk Management Fail To Uncover Substantial Risks? (April 5, 2023).*

[10] *Zheng Jinghui, Lu Jiawei. Reexamining the Silicon Valley Bank Event from the perspective of assets and liabilities and regulatory indicators [J]. Fujian Finance, 2023, (12): 60-66.*