The Impact of National Monetary Policy on the Bankruptcy of Silicon Valley Bank

Yunxiao Fan*, Yang Liu

Zhongnan University of Economics and Law, School of Finance,
Wuhan, China

*Corresponding author:E-mail:gloria2022@sina.com

Abstract. The Silicon Valley Bank in the United States has declared bankruptcy, making it the second bank in U.S. history to go bankrupt. An investigation into the causes of its bankruptcy revealed the impact of national monetary policy on the stability of financial institutions. Using IS-LM analysis, PESTEL analysis, and the SWOT model, this study digitally examined the role of U.S. national monetary policy in the bankruptcy of Silicon Valley Bank. It analyzed the negative impacts of the Federal Reserve's interest rate hikes and other discontinuities in national monetary policy on Silicon Valley Bank and the domestic financial market. The results provide theoretical insights into how improving national monetary policy can influence the stability of financial institutions, offering guidance for the healthy development of financial markets. This has positive implications for enriching the subsequent policy formulation and implementation in the socialist market economy with Chinese characteristics.

Keywords: Silicon Valley Bank, Monetary Policy, Financial Institutions.

1   Introduction

On March 10, 2023, local time, according to a statement released by the Federal Deposit Insurance Corporation (FDIC), the California Department of Financial Protection and Innovation (DFPI) announced the closure of Silicon Valley Bank and appointed the FDIC as the receiver[1]. This marks the second-largest bank failure in U.S. financial history, second only to Washington Mutual.

Silicon Valley Bank (SVB), established in 1983 in the United States, is a subsidiary of the Silicon Valley Bank Financial Group. With assets amounting to $5 billion, SVB operates through 27 offices in the U.S., three international branches, and an extensive business network in Asia, Europe, India, and Israel. It provides loans to venture capital and startup companies. Unlike traditional banks, SVB is a local bank in Silicon Valley that caters to high-tech companies in technology and biotechnology sectors. It specializes in offering loans to tech companies, and provides a range of services to venture capital firms investing in technology and biotechnology, revenue-based financing, and private equity companies. Domestically, it offers private banking services to high-net-worth individuals[2-3].

The primary reason for SVB's bankruptcy is the Federal Reserve's interest rate hike policy following the impact of the COVID-19 pandemic[4]. The bankruptcy of SVB will have a significant impact on the global economic landscape and will continually challenge the stability of international financial systems due to its considerable research value[5-6]. SVB's bankruptcy serves as a warning to the world: "Risks from global uncertainties are more frequent, spread more rapidly, and have a broader impact."[7].

For market economies, macroeconomic control is an essential method of market regulation[8]. Different countries have different market systems, leading to varied monetary policies, which directly affect the stability of financial institutions[9-10].

Domestic research focuses on exploring the impact of national monetary policies on the operation of financial institutions, such as banks [11]. It shows that increasing the continuity of monetary policy significantly reduces systemic risks in the banking system while enhancing liquidity regulation requirements.

Internationally, research emphasizes the impact of monetary policy uncertainty. Policy uncertainty affects long-term nominal yields, real yields, and bond yields through monetary transmission to the market, reducing confidence and expectations in the financial market and destabilizing market stability[12]. Exchange rates of various countries tend to move in the same direction as domestic economic policy uncertainty, while the direction and response level of economic uncertainty vary between countries[13-14].

The bankruptcy of Silicon Valley Bank has garnered global attention in the financial industry. This article focuses on the impact of the Federal Reserve's monetary policy on SVB during the investigation of its bankruptcy causes, digitally exploring the multiple effects of the Fed's monetary policy on SVB's operations. By examining this specific case, it further explores the role of national monetary policy in maintaining financial stability. For financial institutions themselves, this serves as a warning and reference for healthy development. It emphasizes the need for financial institutions to constantly monitor changes and developments in national monetary policies, adopt corresponding measures for different monetary policies, and continuously adjust their management strategies to remain resilient in the face of shocks[15-16]. This research enriches the theoretical understanding of the impact of national monetary policies on socio-economic conditions and provides practical insights for future monetary policy formulation in China and globally.

2   Theoretical Model

2.1   IS-LM Model
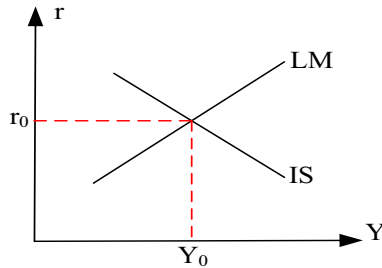

Fig. 1. IS-LM model

The IS-LM model is an important tool for macroeconomic analysis, representing the theoretical structure that describes the interconnections between the goods market and the money market, as illustrated in Figure 1. This model can intuitively demonstrate the impact of monetary policy on the entire market within a macroeconomic context[16]. The model requires the simultaneous fulfillment of the following two conditions:

(1) I(r)=S(Y), that is, IS (Investment - Saving)

(2) PM=L1(Y)+L2(r), that is, LM (Liquidity preference - Money Supply)

Where I stands for investment, S stands for saving, M is the nominal money supply, P is the price level, PM is the real money supply, Y is the total output, and r is the interest rate. The IS model describes the equilibrium in the goods market, while the LM curve describes the equilibrium in the money market. The intersection point E of the two curves indicates the simultaneous equilibrium of both the goods market and the money market.

This article utilizes this model to specifically analyze the impact of national monetary policy on financial institutions.

2.2   PESTEL Analysis Method

PESTEL is an effective tool for analyzing the macro environment. It can not only analyze external environments but also identify all forces impacting the organization. Each letter in PESTEL stands for a factor, specifically the six major factors: Political, Economic, Sociocultural, Technological, Environmental, and Legal. When analyzing the context in which a business group operates, these six factors are typically used to assess the conditions the group faces.

As a business group, Silicon Valley Bank is influenced by the political and economic factors of national monetary policies and a series of laws and regulations. Its bankruptcy is closely related to the macroeconomic environment in which it operates.

2.3   SWOT Analysis Method

SWOT analysis is a situational analysis based on the competitive environment and conditions both internally and externally. It enumerates the various key strengths, weaknesses, opportunities, and threats closely related to the subject of study and arranges them in a matrix format for systematic analysis.

The "SW" component focuses on the internal strengths and weaknesses of financial institutions represented by Silicon Valley Bank. Through SW analysis, it helps to understand the position and role of financial institutions within the broader economic society and production relations, highlighting their prominent advantages and vulnerabilities in the face of risks. This aids in the internal analysis of the phenomenon of Silicon Valley Bank's bankruptcy.

The "OT" component analyzes the opportunities and threats brought about by national monetary policies and a series of measures. It examines how the state provides opportunities or poses threats to financial institutions through monetary policy. This macro-level analysis of the economic background reveals significant yet hidden impacts, thereby advising financial institutions on how to reform and govern themselves.

3   Data Analysis

3.1   Federal Reserve Data Analysis

As the first banking crisis in the post-pandemic era, the bankruptcy of Silicon Valley Bank, a major commercial bank in the United States, has garnered significant attention both domestically and internationally. The impact of a series of aggressive monetary policies implemented by the United States on its bankruptcy cannot be overlooked.

Table 1 presents the data on the Federal Reserve's cyclical interest rate hikes[17]. In terms of the magnitude of the rate hikes, both the fifth and seventh rounds showed significant cumulative increases, with the seventh round being the largest at 525 basis points. Regarding the total increase in rates, except for the fourth cycle, which increased by 1.75 percentage points, the first five rate hikes all exceeded 3 percentage points. From a temporal perspective, the fourth round of rate hikes was the shortest, lasting less than a year, while the sixth round was the longest, spanning a full three years.

Since 1983, the Federal Reserve has implemented seven rounds of cumulative rate hikes. Each rate hike is closely related to its historical context, with varying CPI and PCE price indices in different periods, but all aimed at stabilizing the economy and curbing inflation. Each round of rate hikes has led to a significant inflow of dollars, triggering financial or economic crises in highly leveraged countries or institutions and increasing the likelihood of risk outbreaks in the banking and capital markets.

Table 1. Federal Reserve's interest rate hike

Interest rate hike cycle	From	To	Starting interest rate(%)	Ending interest rate(%)	Number of rate hikes during the period	Global economic and financial debt crisis event after the interest rate hike
Round 1	March 1983	August 1984	8.50	11.50	12	Latin American debt crisis
Round 2	March 1988	May 1989	6.50	9.81	26	Japanese economic crisis(1990)
Round 3	February 1994	February 1995	3.00	6.00	7	Mexican financial crisis(from 1994 to 1995) Asian financial crisis(1997) Russian debt crisis(1998)
Round 4	June 1999	May 2000	4.75	6.50	6	U.S. dot-com bubble burst(2000) Argentine financial crisis(2001)
Round 5	June 2004	June 2006	1.00	5.25	17	U.S. subprime mortgage crisis(2006) European debt crisis(2009)
Round 6	December 2015	December 2018	0.25	2.50	9	Turkish economic crisis(2018)
Round 7	March 2022	July 2023	0.25	5.5	8	Severe inflation following the COVID-19 pandemic(2021)

From the analysis of the above data on the Federal Reserve's historical rate hikes, it can be concluded that in environments of high inflation, the Federal Reserve tends to implement larger and more aggressive rate hikes, resulting in greater increases in interest rates. In contrast, in low-inflation environments, the Federal Reserve's rate hike policies are more moderate, with smaller increases and lower intensity, and the policy duration is longer. The Federal Reserve's aggressive monetary policy, characterized by excessive money issuance during periods of rate cuts followed by aggressive rate hikes to tighten the money supply, has caused severe market reactions. This has impacted deposits, asset fluctuations, and asset allocations in financial institutions like Silicon Valley Bank, triggering financial risks and serving as the catalyst for the entire situation[18].
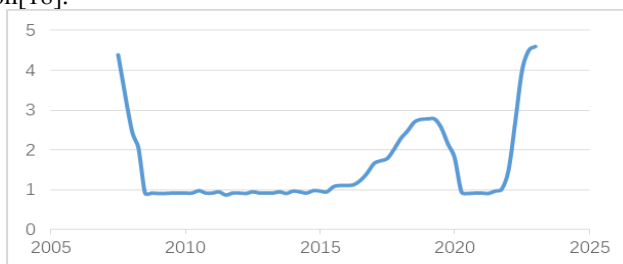
Fig. 2. Federal funds rate in the United States(%)

Figure 2 shows the historical federal funds rate in the United States. Since the 2008 economic crisis, the Federal Reserve's policy rate has remained near zero for an extended period, keeping the federal funds rate at a low level and market liquidity extremely loose. Specifically, the Federal Reserve has conducted two significant rounds of "monetary easing" over the past decade or so: the first during the 2008 global financial crisis and the second following the outbreak of the COVID-19 pandemic. From March 2020 to March 2022, the federal funds rate was lowered to 0-0.25%. In the early stages of the pandemic, the Federal Reserve stimulated economic development by lowering the federal funds rate and initiating unlimited quantitative easing, leading to an overflow of liquidity.

Using the IS-LM model to connect the Federal Reserve's interest rate hike policy with the U.S. product market, we can analyze the impact of monetary policy on financial institutions. At the beginning of 2021, the U.S. GDP turned positive, but the previous interest rate hike policy led to an increase in the inflation index PCE and the price index CPI. The rise in CPI indicates that the general price level increased, reducing household purchasing power and actual wages, causing the IS curve to shift to the right and changing the equilibrium point in the product and money markets. The IS-LM model illustrates that under the adjustment of U.S. monetary policy, the financial product market must make corresponding changes to ensure that the product and money markets simultaneously reach equilibrium.

## 3.2   Data Analysisof Silicon Valley Bank

Analyzing the Impact of Different Factors on the Bankruptcy of Silicon Valley Bank Using the PESTEL Method. First, consider the "Political Factors" and "Economic Factors." Despite the Federal Reserve's interest rate hikes within its monetary policy environment, Silicon Valley Bank (SVB) continued to invest heavily in government bonds. This high-risk investment strategy did not align with the financial market conditions under the Federal Reserve's policies.

Next, the "Socio-Cultural Factors" and "Technological Factors." SVB failed to properly anticipate the Federal Reserve's rate hikes and the ongoing cycle of increases. The bank's technological misjudgments in dealing with the volatile financial market and global economic conditions prevented it from promptly formulating sensitive and effective strategies.

Lastly, the "Environmental Factors." SVB operated in a constantly changing financial market. Tech companies, in maintaining their daily operations, continuously withdrew their zero-interest deposits. These changes in the external environment did not trigger a crisis awareness among the management. Through PESTEL analysis, it is evident that the Federal Reserve's monetary policy of raising interest rates was the catalyst for SVB's bankruptcy.

Figure 3 displays the annual deposit amounts of Silicon Valley Bank. The extremely low-interest-rate environment in the United States since the COVID-19 pandemic spurred a financing boom. As a local bank in Silicon Valley specializing in high-tech sectors such as technology and biotechnology, SVB's deposits expanded rapidly when liquidity was abundant, leading to a significant expansion in liabilities. By the second

quarter of 2022, its assets had increased from $69 billion in 2019 to $190 billion, a rise of approximately 200%.
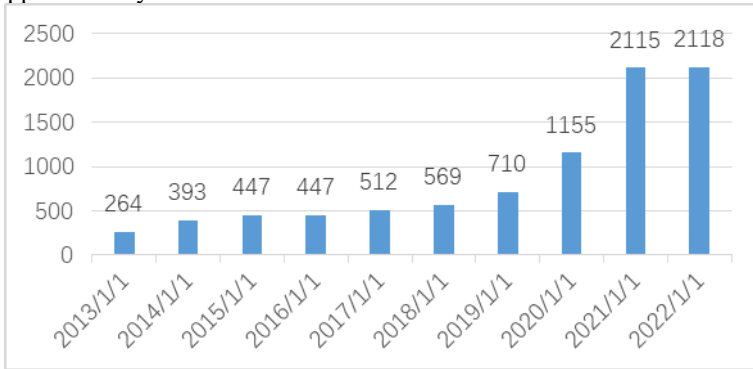
Fig. 3. Assets of Silicon Valley Bank (100 millions of USD)

The expansion of SVB's liabilities meant it took on greater risk. If the economic environment in the United States changed, causing interest rate fluctuations, this would significantly impact SVB's liquidity, setting the stage for its bankruptcy under the influence of the U.S. interest rate hikes.

Figure 4 shows the annual deposit amounts at Silicon Valley Bank. It can be seen that since 2020, deposits have increased significantly, rising by 64% compared to 2019. This increase is mainly due to the loose monetary measures adopted by central banks in 2020, which lowered interest rates, allowing more liquid funds to enter the market to stimulate economic growth. In an environment of global central banks flooding the market with liquidity, bank loan demand was weak, and banks had no-where to allocate their funds. From the fourth quarter of 2019 to the fourth quarter of 2022, deposits in the U.S. banking sector increased by over $5 trillion, with only 14% being used for loans.
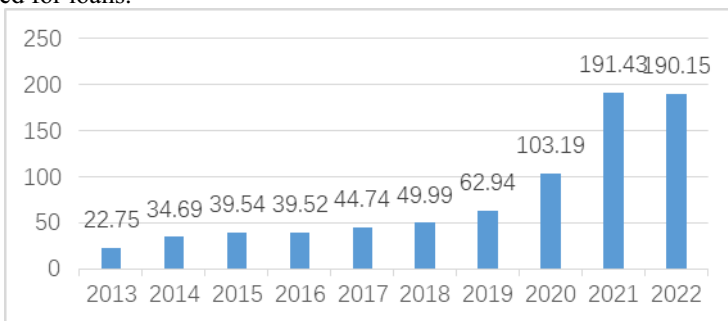
**Fig. 4.** Deposit amounts at Silicon Valley Bank (billions of USD)

Figure 5 illustrates the yield rates for U.S. Treasury bonds of various maturities. Treasury yields, also known as Treasury bond yields to maturity, represent the returns obtained by holding bonds until maturity. Generally, long-term Treasury yields are higher than short-term yields, but longer bonds carry greater risks. Following the

Federal Reserve's early interest rate cuts and the stimulus from ultra-loose monetary policies, yields on U.S. Treasury bonds of all maturities fell, turning the Treasury market into a "reservoir" of liquidity. The two-year Treasury yield was below 0.2%, while the 30-year yield was about 1.5%. In pursuit of higher yields, Silicon Valley Bank invested the low-cost funds it had absorbed into long-term U.S. Treasury bonds, significantly increasing potential interest rate risk.
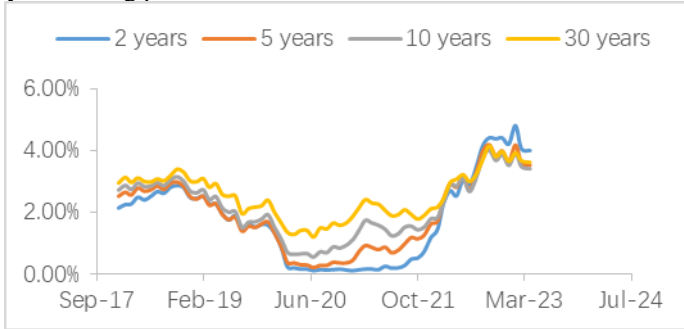
Fig. 5. Yields of U.S. Treasury securities of various maturities

Figure 6 shows the asset allocation strategy of Silicon Valley Bank from the fourth quarter of 2019 to the second quarter of 2022. Against the backdrop of the Federal Reserve continuously adjusting monetary policy, the bank chose to allocate a large portion of its assets to mortgage-backed securities (MBS). MBS are characterized by negative convexity, meaning their risk increases as interest rates rise. In other words, the more the Federal Reserve raises rates, the greater the risk. From the fourth quarter of 2019 to the second quarter of 2022, Silicon Valley Bank's assets increased by $141 billion; 55% of this growth was allocated to MBS, 7% to U.S. Treasury bonds, while only 6% was kept in cash and cash equivalents.
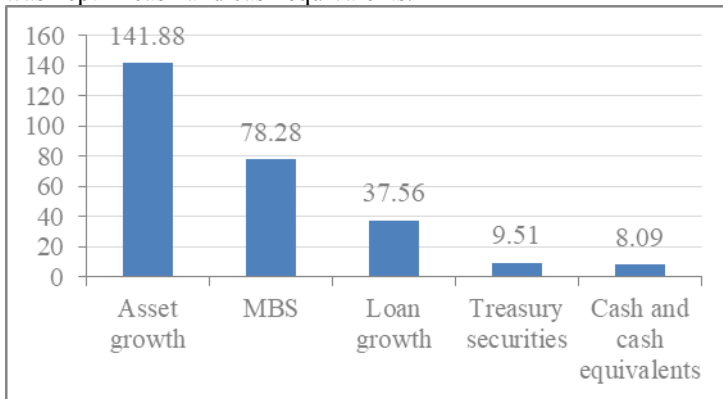


Fig. 6. Asset allocation of Silicon Valley Bank(billions of USD)

In accounting terms, Silicon Valley Bank classified U.S. Treasury bonds as available-for-sale (AFS) financial assets and most MBS as held-to-maturity (HTM) bonds. From March 2022 to July 2023, the Federal Reserve raised interest rates nine times,

totaling 475 basis points, with the federal funds rate rising to 4.75%-5%, marking the largest sustained rate hike in nearly 40 years. These significant rate hikes caused substantial losses on the asset side.

Figure 7 shows Silicon Valley Bank's unrealized net gains on available-for-sale (AFS) securities over the years. From the figure, it is evident that in 2022, AFS securities experienced significant losses. The increase in interest rates led to a sharp decline in the prices of U.S. Treasury assets that were heavily purchased during the period of abundant liquidity, resulting in unrealized losses in the AFS U.S. Treasury assets held by the bank. According to FDIC data, as of the fourth quarter of 2022, the U.S. banking system's unrealized losses amounted to approximately $620 billion, with about $279.5 billion in marketable Treasury and securities.
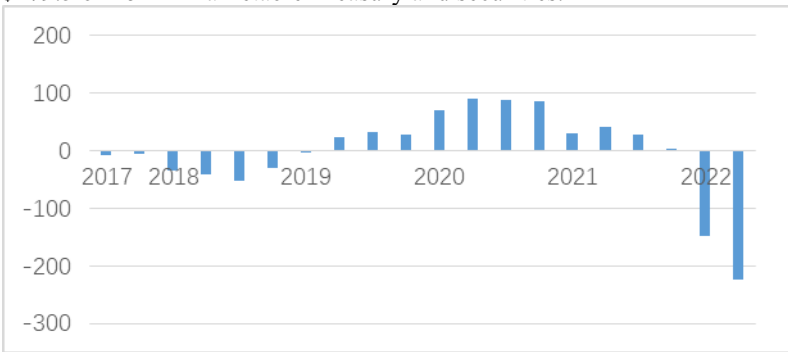
**Fig. 7.** Unrealized net gains on available-for-sale (AFS) securities(100 millions of USD)

To mitigate these unrealized losses, Silicon Valley Bank reallocated its AFS assets, transferring $8.8 billion worth of AFS assets to held-to-maturity (HTM) assets. The HTM assets, primarily mortgage-backed securities (MBS), exhibited negative convexity, meaning the overall portfolio's duration increased with rising interest rates.
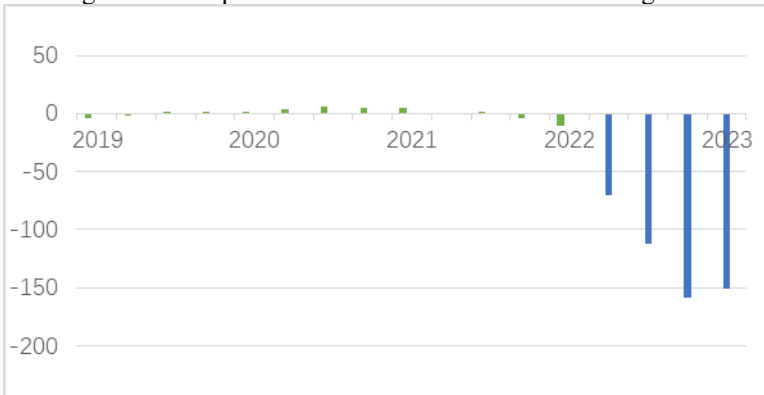
Fig. 8. Returns on HTM securities investments (100 millions of USD)

Figure 8 illustrates the cumulative returns on Silicon Valley Bank's HTM securities investments over the years. By the end of 2022, the duration of the bank's HTM assets

(mainly MBS) had extended to 6.2 years, with unrealized losses on the books exceeding $15 billion.
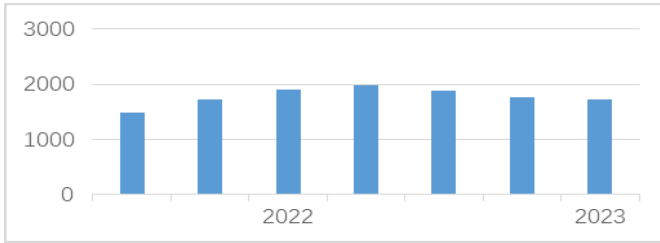
Fig. 9. Deposit amounts of Silicon Valley Bank (100 millions of USD)

Figure 9 shows the historical deposit amounts of Silicon Valley Bank, with deposits falling from $198 billion in March 2022 to $173 billion by December 2022, transitioning from net inflows to net outflows. Notably, non-interest-bearing demand deposits plummeted from a peak of $128 billion in Q1 2022 to $80 billion in Q4 2022, while interest-bearing deposits increased from $70 billion to $92 billion, significantly increasing the interest expense burden on the liability side. By the end of 2022, the bank's deposit cost had risen to 1.17%, up from just 0.04% at the end of 2021, indicating a sharp increase in liability-side pressure during the rate hike cycle.

Figure 10 shows U.S. venture capital amounts, with a substantial increase in 2021, averaging around $90 billion per quarter. As the Federal Reserve continued to raise interest rates, high-tech startups found it increasingly difficult to secure funding, forcing them to withdraw deposits to maintain operations, resulting in severe deposit outflows for Silicon Valley Bank. The loss of deposits brought the "unrealized losses" to light, causing investor panic and a bank run. With cash assets depleted, Silicon Valley Bank had no choice but to sell AFS assets to obtain liquidity. On March 8, 2023, the bank announced it would sell $21 billion worth of AFS assets, recognizing an $1.8 billion loss, to realign its balance sheet to address deposit outflows and increase flexibility. The bank's highly concentrated client base (tech companies) was extremely sensitive to liquidity crises and interest rate changes, making deposits highly unstable. The distressed selling of AFS assets to raise liquidity triggered a bank run, accelerating the "death spiral."
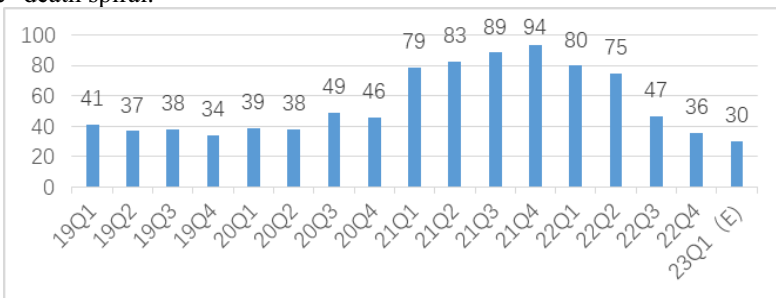
Fig. 10. VC investment of Silicon Valley Bank(billions of USD)

According to the SWOT analysis, Silicon Valley Bank, as a large U.S. financial institution, has major strengths such as large business scale, ample capital, and strong market competitiveness. However, it also has weaknesses, including an unstable asset-liability structure and management's misjudgments, with a significant portion of deposits used to purchase bonds. The OT analysis highlights that in the macroeconomic environment, monetary policy must seek a new balance amid complex economic conditions. The U.S., as the second-largest economy in the world, has international influence ("strength"), but also faces threats from the rise of other countries in a globalized economy and the negative impacts of its monetary policy changes, which have led to some economic weakening ("threat"). The SWOT analysis indicates that changes in Federal Reserve monetary policy were the catalyst for Silicon Valley Bank's collapse. The study suggests that financial institutions should closely monitor national monetary policy changes and developments, and adjust their management practices accordingly to be more resilient to shocks and minimize losses. This serves as a warning and lesson for the healthy development of the national economy.

4   Conclusions

This article investigates the impact of the Federal Reserve's interest rate hikes on the bankruptcy of Silicon Valley Bank through the IS-LM model, PESTEL analysis, and SWOT analysis. The results indicate that the Fed's interest rate hike policy triggered changes in the U.S. financial market, serving as the catalyst for Silicon Valley Bank's bankruptcy. Specifically:

(1) By analyzing the characteristics of the Fed's interest rate hike policy under inflationary conditions using the IS-LM model, considering the start and end times, frequency of the hikes, the initial and final interest rates, and the financial market environment at the time, it is evident that the intensity of interest rate hikes increased with the level of inflation.

(2) Examining Silicon Valley Bank's total assets, asset distribution, and utilization direction, it was found that under the backdrop of the Fed's constantly changing monetary policies, Silicon Valley Bank adopted a relatively aggressive asset allocation strategy. The proportion of securities investments in its assets was very high, the liability side expanded rapidly, and the interest rate risk and liquidity risk significantly increased, making Silicon Valley Bank extremely sensitive to changes in monetary policy. The positive impacts of rising interest rates could not offset the losses from plummeting bond prices. Moreover, Silicon Valley Bank used deposit funds to cope with the crisis, further accelerating its bankruptcy.

(3) Using SWOT analysis, at the micro level, the strengths of financial institutions like Silicon Valley Bank are summarized as large scale and ample funds, while the weaknesses are problems in asset structure and lack of experience among the management. At the macro level, using OT analysis, it can be deduced that the country should further combine its "strengths" and "threats" to continuously use monetary policy to stabilize the financial market and promote economic development.

Therefore, positive and socially adaptable monetary policies, along with financial institutions' reasonable asset allocation and ability to respond to changes in the economic environment, are crucial for the healthy development of the financial industry. Additionally, the author believes that in the current environment where artificial intelligence is widespread, the financial industry should leverage AI technology and models to analyze and predict market data, avoiding cognitive biases brought about by personal subjective consciousness.

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