

# ***Risk Analysis of American Banking and Regulatory Systems Based on Silicon Valley Banking Events***

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**Abstract:** On March 8, 2023, Silicon Valley Bank (SVB) announced an after-tax loss of \$1.8 billion and a refinancing of \$2.25 billion. SVB's move sparked panic in the market and an attempt to withdraw \$42B in March 9. SVB declared bankruptcy on March 10. This paper analyzes the SVB's bankruptcy in three different levels. First, the risk that exposed in the SVB's assets and liabilities allocation which directly leads to liquidity crisis and the SVB's failure. Second, the paper analyse the case based on a macro factor, the fed rate hike. Third the paper indicate the risk exposed in executive level, for instance operation risk in executive layer. The paper indicate that the underlying cause of the bankruptcy is that managers fails to balance short-term profits with long-term development. The paper then discuss the current structure and the features of banking system in US and point out the risk of the US's banking system based on those features.

**Keywords:** Silicon Bank, Risk, Bankruptcy, Regulation

## **1. Introduction**

Silicon Valley Bank focuses on serving the financing needs of PE funds and VC institutions as well as start-ups companies in California. Its operations were closely connected to high-tech companies and to the venture capitals.

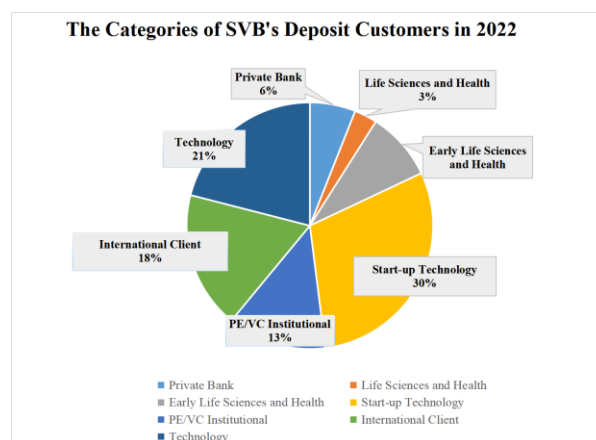


Figure 1: The Division of Institution Clients Deposit in SVB in 2022 [1]

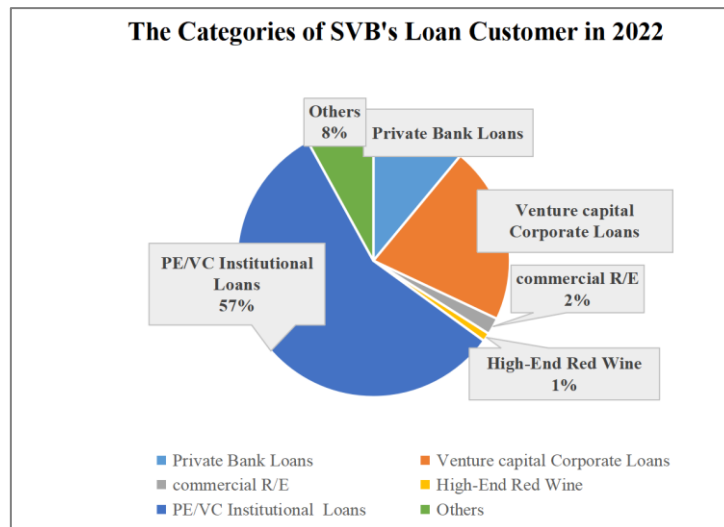


Figure 2: The Division of Institution Clients Borrow from SVB in 2022 [1]

As can be seen from the Figure 1 and Figure 2 above, SVB's institution clients are concentrated in high-end industries such as start-up technology companies and life sciences and health. These industries have the characteristics that the demand for capital is large, and the investment of developing new technology is large. Comparing the structures of SVB deposit clients and loan clients, the institution clients which deposit at SVB and which borrow from SVB are highly overlapping. For example, 30% of SVB's deposit are from the start-up technology companies, which also takes up 21% of SVB's loan. Highly concentration in loan customers and deposits customers indicate that SVB's business will be easily influenced by the external force [1].

## 2. The Factors Leading to Silicon Valley Bank (SVB) Bankruptcy

The risks of commercial banks can be divided into three categories: the asset allocation risks operation risk and management risk.

### 2.1. The analysis of SVB's asset side risk

The high concentration in few asset classes and term structures was risk to SVB. The amount of deposits rises sharply from 2018-2021.

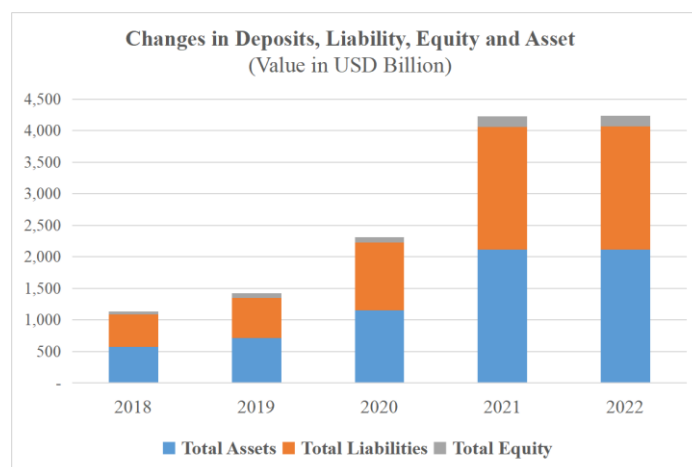


Figure 3: The Composition of SVB's Deposits in the Last 5 Years [1]

As can be seen from the Figure 3 the amount of asset and liability are rising rapidly during 2018-2021. Because the SVB is not able to find high quality investment options to lend, the amount of net loans didn't rise as fast as the increase in deposits amount. In order to make use of the increasing deposits, SVB chose to allocate 70% of the \$110 billion in new deposits to long-term mortgage-backed securities (MBS) and Government bonds [1].

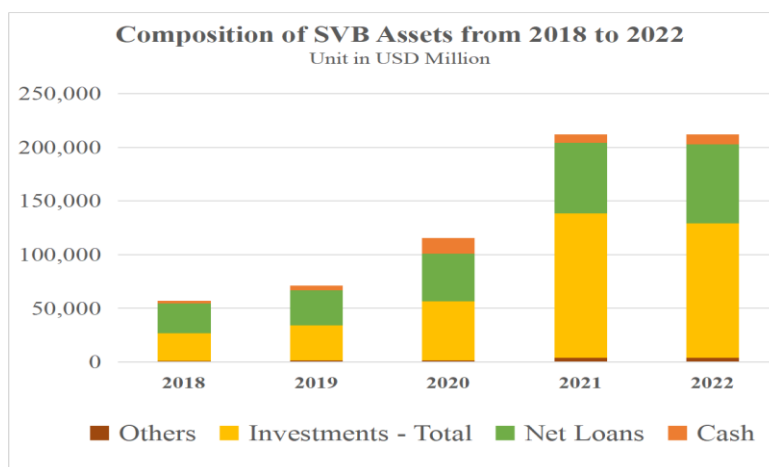


Figure 4: Composition of SVB Assets [1]

As can be seen from the Figure 4, the size of SVB's bond investments increased rapidly from USD 29.1 billion to USD 120.1 billion during 2019-2022. The size of bond investments increased from 39% to 56% of total assets. In pursuit of higher returns, SVB has allocated many long-duration bond positions at low-interest rates. Among them, the proportion of bond assets above ten years was as high as 79% at the end of 2022 [1].

## 2.2. The Fed rate hike led to SVB risks exposure.

In this SVB insolvency, changes in market interest rates shocked SVB's business and risk exposure. Higher market interest rates caused changes in spreads between SVB's deposit and asset side affecting the SVB profitability. And the reduce fair value on SVB's assets sides, harming SVB's operations.

In macroeconomic terms, higher interest rates increase the cost of loans and investments, encouraging people to save more and consume less, thus reducing the demand for goods and services. In 2022, due to the impact of the Fed's interest rate hikes, the proportion of non-interest-bearing deposits was reduced from 67% to 47% of the interest-bearing deposits grew from 33% to 53% [1]. In 2022, for the size of non-interest-bearing deposits at Silicon Valley bank plunged from \$126 billion to \$81 billion, a net outflow of \$45 billion.

due to the impact of interest rate hikes, the interest expense on the liability side increased rapidly, and the interest payment rate of interest-bearing deposits increased by 100bps to 1.13% in 2022 compared to 2021. The yield on the asset side of SVB's held-to-maturity assets was 1.66%, the available-for-sale assets Yield on available-for-sale assets was 1.56%.SVB relies primarily on asset-side and liability-side spreads to earn income, and the FED rate hike in 2022 has caused SVB's income to decline significantly.

Changes in asset values due to changes in interest rates. 2022, the FED announced an interest rate hike, and most of SVB's holdings of financial investments were in MBS assets. MBS assets are characterized by their durations becoming longer and longer as interest rates increase during periods of interest rate increases, and the impact of rising market interest rates has resulted in a floating loss on MBS assets that has gradually increased. At the end of 2022, SVB's assets were in the red. At the

end of 2022, the average duration of Silicon Valley Bank's HTM accounts extended to 6.2 years from 4.1 years in the prior year. Lead to the value of SVB assets decreased long-term debt repayment ability crisis [2].

Due to the special asset structure of SVB holding a large number of bonds at the asset end, the value of the asset side decreases with the market interest rate rises. Fed's continued interest rate hikes have also caused the net inflow of SVB's deposits has turned into a net outflow.

By the end of 2022, \$6.6 billion were scheduled to mature within one year. High-quality investments with good liquidity cannot cover short-term maturity deposits. In the same year, in order to cover the short-term demand, SVB total short-term borrowings rose from 71MM to 13B. the short-term liquidity risk of SVB gradually emerges.

On March 8, 2023, in order to avoid more losses and to increase its own liquidity, the management of Silicon Valley Bank decided to sell assets under the investment account, losing \$1.8 billion in exchange for \$21 billion in liquidity. Meanwhile, Silicon Valley Bank hopes to raise \$2.25 billion through the sale of common stock and convertible preferred shares. After the news, Silicon Valley Bank shares plunged more than 60% on the day after closing at \$106 [1].

Due to the failure of stock financing what's more, people withdraw \$42 billion on March 9, and the book cash of Silicon Valley Bank fell to 960 million, which declared the bankruptcy of Silicon Valley Bank [1].

### 2.3. Executive level exposed operation risk

Failure of risk control measures in Silicon Valley Bank exposed is management's lack of prudence and the excessive pursuit of profits in managing SVB and lack of attention to law.

Firstly, the SVB's risk early warning is not timely enough, and the market estimate is too optimistic. At the end of the year 2021, regulators issued an early warning to Silicon Valley Bank [3]. It stated that SVB had deficiencies in liquidity management, such as liquidity stress testing (ILST), contingency funding programs (CFP), and liquidity risk controls. According to public information, Bank in Silicon Valley, its chief risk officer Laura Izurieta resigned as early as in April 2022, and January 2023 Kim Olson was appointed as the new CRO. In this period, Silicon Valley bank has held 18 risk committee meeting in 2022, which is much higher than usual 5-7 times [1]. It shows that Silicon Valley Banks should have alert for their own crisis. However, SVB has a predict too positive which causes the asset adjustment is not timely enough. SVB analyzed the industry in 2022 that many US unicorns spawned by the surge in investment in the late 21 years will be ready to go public. At the end of the second quarter of 2022, the total value of US unicorns was about \$2.3 trillion, based on the last round of private equity financing valuation. SVB expects the IPO to reopen and expects expected to perform well [4]. As SVB's main deposit customer is IPO under the condition of expected customer deposit increase, SVB is too optimistic about the risk estimate. So, in October 2022 - In January 2023, Silicon Valley Bank's risk threatened the SVB's operation. SVB incurred substantial losses on its asset investments.

Second, management had a conflict of interest with its board of directors. Senior management compensation is related to short-term earnings and stock returns, focusing more on short-term profits. There was a conflict of interest between senior management and shareholders, with senior management overly pursuing profits and overly aggressive asset allocation that ignored operational risks.

Regarding insider trading SVB's senior management, has violated trading rules. The Securities and Exchange Commission (SEC) filed charges against Ontrak executive Chairman Terren Peizer, sending a strong message to internal sellers of selling more than \$20 million worth of shares for insider trading before the company's shares suffered a 44% plunge [5]. CEO Greg Becker sold about \$30 million in stock in the last two years and retained shares with low-priced options. According to

Smart Insider, SVB executives sold \$84 million in stock and even gave employees year-end bonuses before the bankruptcy [6].

### **3. Problem of management strategy exposed in SVB case**

#### **3.1. SVB's bottom-up strategy leading to the crises**

SVB had a bottom-up investment idea, and the excessive pursuit of profit "bottom-up" strategy in capital allocation. In the process, portfolios are built from securities that price seemingly attractive prices and are less concerned about the resulting asset allocation.[7] Such strategy could lead to unexpected bets on one or the other sector of the economy. During the economic upside, this investment approach will bring high returns to the banks themselves, but the uneven asset allocation will also bring higher risks. In the case of Silicon Valley Bank, the Federal Reserve raised interest rates and the failure of Silicon Valley Bank to adjust its asset allocation structure in time led to serious losses in asset investment. By the end of 2022, silicon Valley Group held in HTM \$91 billion at a fair value of only \$76 billion, resulting in an unrealized loss of \$15 billion [1]. And SVB's excessive focus on profits has caused SVB to relax in risk hedging. Therefore, the investment structure of SVB can lead to large value fluctuations and affect the stability of banks in the impact of external factors.

#### **3.2. the risk of American banks**

The structure of US banking is special compared with other countries. Most American banks are smaller by world standards. About half of the individual insured commercial banks (about 2,500) had total assets of less than \$100 million in 2009. However, these smallest financial institutions, despite their large numbers, hold a little more than 1% of the entire industry's assets [8].

SVB is one of the representative banks in the business model of small and medium-sized banks in the United States, with a large number of American banks, regional banks and small banks. Small and medium-sized banks pursue the high returns policy to improve profitability and market competitiveness. In the pursuit of high returns, small and medium-sized banks often face the pressure of capital adequacy ratio and face the choice of balancing risks and pursuing high returns well-written. At the same time, small and medium-sized banks face relatively concentrated depositors to provide more financial products in line with the local market demand or for specific customer groups. The regional coverage is relatively small and vulnerable to the impact of financial market fluctuations, and small and medium-sized banks have a small size and have poor stability when impacted.

### **4. Conclusion**

This paper analyzes the bankruptcy of SVB from three aspects: the asset side and the liability side, the senior management reasons, and the investment structural reasons. The paper also analyzes the "bottom-up" investment method of SVB and extends to the possible operational risks of American small and medium-sized banks.

The tragedy of the SVB bankruptcy is directly caused by the lack of short-term liquidity assets caused by the Federal Reserve rate hike operation. Fundamentally speaking, it is the problem caused by SVB's "bottom-up" mode of operation while pursuing profits and ignoring asset allocation. It is also caused by SVB executives who pay too much attention to short-term profits in asset allocation and ignore the long-term development stability of banks.

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