

# An Analysis of Bank Risk Management under the Volatility of Interest Rates

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**Abstract.** The main focus of this essay is the critical importance of bank risk management during turbulent times. This study explores the diverse sources of risk that banks face, including inflation, interest rate fluctuations, quantitative easing policies, and the soundness of banks' internal policies. Additionally, it examines whether risk management strategies are effective, and considers factors such as bank liquidity, credibility, market risks, and the influence of Federal Reserve policies. These risks collectively pose significant threats, including the potential for bank insolvency or collapse. Given such volatility, robust risk management practices are imperative for banks to safeguard their stability. This essay underscores the multifaceted nature of risks, emphasizing the need for a holistic approach to their analysis. It concludes that effective management of liquidity, credit, and market risks is paramount. Moreover, depositor confidence is identified as a cornerstone of banking stability, highlighting the vital importance of maintaining a strong reputation. Ultimately, the findings reinforce that comprehensive and proactive risk management is essential for banks to navigate uncertain economic conditions and ensure long-term resilience.

**Keywords:** Bank Risk Management; Economic Turbulence; Liquidity Risk; Credit Risks.

## 1. Introduction

Lehman Brothers filed for bankruptcy, global markets immediately plummeted. To stimulate economic, Federal Reserve System (FED) cut interest rates from 5.25% to nearly zero. As the same time, the FED began implementing a new type of monetary policy known as quantitative easing (QE) [1]. Although this policy could revitalize the economy through low-cost financing, bringing extremely high risk. After three rounds of QE, FED realized the risk of QE, planning to TAPER.

However, at this time, COVID-19 pandemic was sweeping across the world. FED had to carry out a fourth round of QE. The consequences can be imaged clearly. This policy had triggered high inflation. During the COVID-19, economy demand was sluggish. Many countries printed money to boost the economy, bringing the risk of inflation. Nevertheless, the money did not flow into the real economy, and did not stimulate economic growth. To further stimulate real economic growth, the America government carried out Fiscal Stimulus Package. Low unemployment rate and high demand all realize, but high inflation has boosted. To stimulate real economy, as the same time, FED had taken another measure: cutting interest rates. More residents took out their assets from banks for investment. With high demand, inflation was triggered.

All the policies contributed to high inflation. If the FED did not act, the situation will become even worse. FED raised interest rates by more than 500 basis points within one year. This measure not only affects the America, but also other countries has closely connection with US Dollar. Global economy turmoiled. The American witnessed the collapse of its banks, including First Republic bank, Silicon Valley Bank (SVB) and Signature Bank. In Switzerland also witnessed the collapse of its top bank, Credit Suisse. Under this situation, bank industry was under great pressure. In this case, the importance of risk management is reflected.

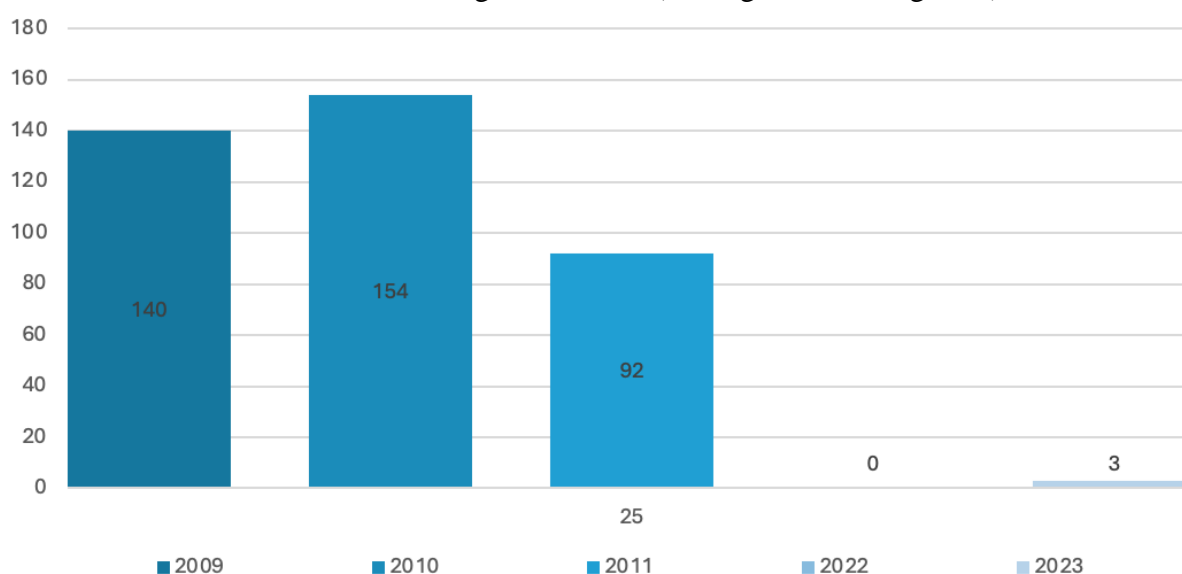
**Table 1.** FOMC meeting schedule and interest rate decisions

FOMC Meeting Date	Rate Change (Bps)	Federal Funds Rate
Dec 14, 2022	+50	4.25% to 4.50%
Nov 2, 2022	+75	3.75% to 4.00%
Sept 21, 2022	+75	3.00% to 3.25%
July 27, 2022	+75	2.25% to 2.50%
May 5, 2022	+50	0.75% to 1.00%
March 17, 2022	+25	0.25% to 0.50%

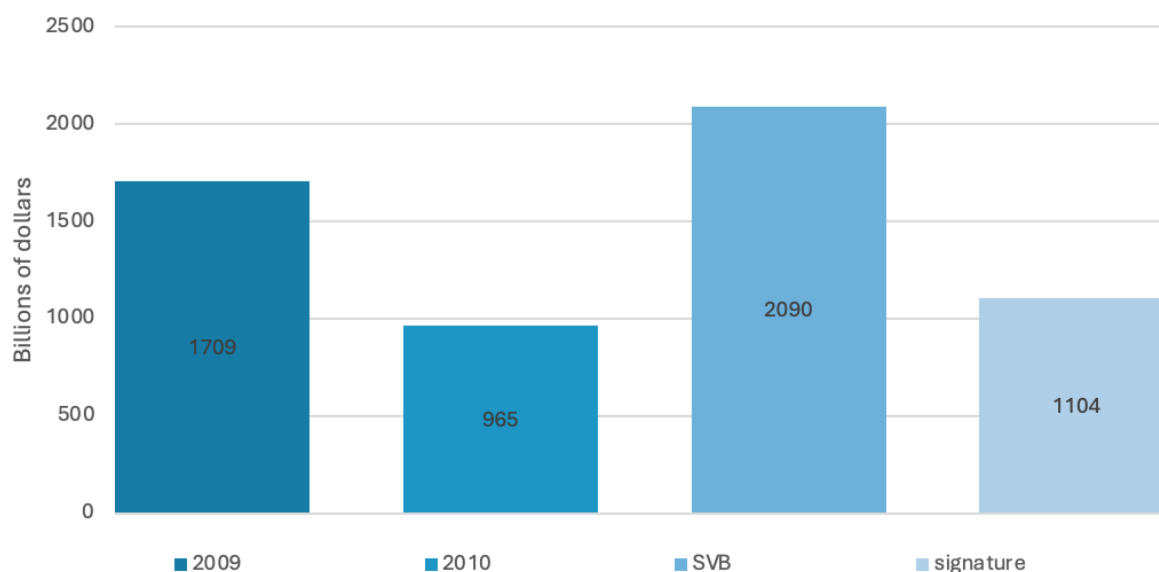
After the epidemic, the FED raised interest rates sharply to curb inflation, which also led to a sharp drop in bonds (see Table 1). Because most of the banks' assets are invested in bonds and the source of income of banks is interest differential, they face great pressure after the epidemic.

## 2. Interest Rate Hiking Period

In this case, what kind of risk management and how to deal with risks are particularly crucial. Bank risks mainly come from three aspects, namely liquidity risk, credit risk and market risk. Interest rate hikes will lead to an increase in interest rates, which will have a negative impact on bank earnings. Most bank depositors have lost most of their faith in banks, because most customers think that the bank's assets are depreciating and worried about the bank's repayment ability in the later stage, a large-scale panic began, resulting in a bank run. At this time, credit risk occurred. Because most of the money in the bank is invested or lent out, resulting in the inability to turn over cash, that is facing liquidity risk. When the liquidity risk is high to a certain extent, the bank files for bankruptcy. Under the influence of these three factors, many banks go bankrupt in the United States every year. But why is it that only Silicon Valley Bank and Credit Suisse, which are expected to go bankrupt in 2023, have attracted significant attention in the market and the media? In 2009, 140 banks went bankrupt, with total assets of \$170.9 billion, less than Silicon Valley Bank. In 2010, 157 banks went bankrupt, with total assets of \$96.5 billion, less than Signature Bank (see Figure 1 and Figure 2).



**Fig. 1** Total bank failures number in the US



**Fig. 2** Total asset in bank failures in the US

For example, Silicon Valley Bank collapsed on March 10, 2023. The SVB collapse has been characterized as the second-largest banking failure in United States history after the Washington Mutual Bank collapse in 2008 [2]. There are four main reasons: First, there is no reasonable risk control. Second, the Federal Reserve raised interest rates. The third, high client concentrated. Fourth, the herd behavior. Silicon Valley Bank wrote in its 2022 financial report that our bank nearly half 2022U.S. venture-backed technology and life science companies [3]. Due to the excessive concentration of customers in Silicon Valley Bank, many investors will withdraw once the market panics. This is the main reason why the bank collapsed. Under the influence of the epidemic, the Federal Reserve has carried out a series of interest rate cuts. In addition to stimulate the real economy, 5 trillion US dollars was distributed to citizens. This has also led to a surge in liquidity, and funds have flowed into high-risk and high-yield companies. At this time, Silicon Valley Bank bought long-term fixed-income bonds, which also marked the beginning of the collapse of Silicon Valley Bank. The longer the term, the greater the risk will be. As expected, Silicon Valley Bank lost \$15 billion in a year of 2023 [4].

Another sensation in the banking industry is Credit Suisse, which collapsed ten days after the collapse of Silicon Valley Bank. Credit Suisse was founded in 1856. In 1934, Switzerland passed a very important bill called the Federal Act on Bank and Saving Banks. The core of this bill is confidentiality, which means that there are many illegal properties in the bank's deposits [5]. In 2014, Credit Suisse was fined \$2.6 billion by the United States. The melting of Credit Suisse, a huge glacier for ten years, began. Later, to prevent Credit Suisse from helping the American people evade taxes, the company was forced to sign FATXA, which also meant breaking the Federal Act on Banks and Savings Banks. The board and the regulator are facing mounting pressure to address this issue," a key investor shared with the Financial Times. The situation is incredibly serious; in Zurich, it feels like a ticking time bomb, and the sense of panic is palpable. While both parties have suffered, the impact has been particularly severe for Credit Suisse [6]. The main reason for the collapse of Credit Suisse is the neglect of risk management for the pursuit of interests. Under the influence of scandals, the market gradually lost confidence in it. The number of banks that collapse in the United States every year is not quite large. How to take practical actions to prevent more banks from collapsing? Basel III is an internationally agreed set of measures developed by the Basel Committee on Banking Supervision in response to the financial crisis of 2007-09. The measures aim to strengthen the regulation, supervision and risk management of banks. Like all Basel Committee standards, Basel III standards are minimum requirements which apply to internationally active banks. Members are committed to implementing and applying standards in their jurisdictions within the time frame

established by the Committee [7]. However, all the financial markets regulations are not systematically led to banking crisis, only impacting the behavior being in a position [8].

Silicon Valley Bank had problems with liquidity management and failed hedge interest rate risks, which ultimately led to insufficient funds and its collapse. Credit Suisse has tarnished its reputation with scandals including sending private investigators to hound its employees. Comparing the root causes of the collapse of Silicon Valley Bank and Credit Suisse, we will find that market confidence in the bank is crucial. As markets are becoming increasingly linked, a shock originating in one market can rapidly spread to others, potentially yielding a domino effect and resulting in market disruptions and financial fragility (Yousaf and Goodell, 2023a) [2].

The risks faced by banks are not only caused by a wrong decision, but also by the lack of reasonable risk management. Basel and the FED have made risk management recommendations to banks, but some banks do not comply for a little profit, and the result is collapse. This shows the importance of correct bank risk management for a bank to develop sustainably.

The goal of risk management is to minimize liquidity risk, credit risk and market risk. A study analyzes the effectiveness of bank risk management in ASEAN countries. The results show that the risk management effectiveness of banks in ASEAN countries is low. Furthermore, by focusing on the insolvency risk, credit risk, and operational risk management of banks in ASEAN countries, the dynamic panel models using the two-step GMM method provide evidence that risk governance structure and its effectiveness positively correlate with risk management effectiveness in banks [8]. It has been proven that effective and reasonable risk management is of great help to the operation of a bank and maintain its stability.

### 3. Interest Rate Cuts

The Fed's long-term mandate can be summarized in two points: stable prices and maximum employment. The main tool to achieve these two goals is interest rate. Higher interest rates reduce inflation and increase unemployment. The ideal situation is that inflation and unemployment are negatively correlated, so the Federal Reserve only needs to raise or lower interest rates to solve the problem. The problem is that if these two factors are positively correlated, it will be difficult for the Fed to make a decision at this time. The Fed's goal is to keep inflation at 2% [9]. Based on the US inflation rate, the goal is within reach (see Figure 3).

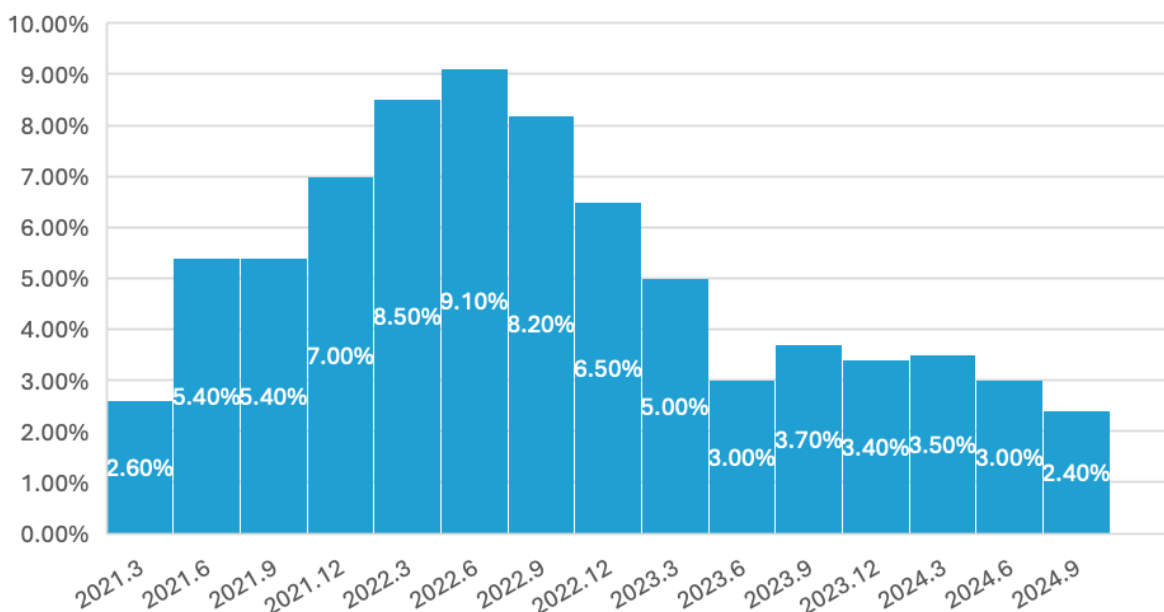


Fig. 3 Inflation Rate in the US

In September last year, some people predicted that the FED would cut interest rates in March this year. However, in March this year, the employment rate did not rise significantly, and the inflation

rate did not fall as much as expected. So, the rate cut was not implemented. However, U.S. Bureau of Labor Statistics updates unemployment data. The number of jobs added last year was revised from 2.9 million to 2.1 million. Although this news is negative for the market, it provides a good opportunity for the FED to cut interest rates. Fed Chair Jerome Powell stated at the Jackson Hole meeting: "The direction of travel is clear. The time has come for policy to adjust." On September 18, the Federal Reserve announced a 50-basis point interest rate cut.

In the past 100 years, the FED has cut interest rates a total of 22 times. However, we only focus on the interest rate cuts after 1980. The reason is that before 1980, the global financial market was very different from the current situation, and the interest rate adjusted by the FED was not the federal funds rate. Looking at several large interest rate cuts, the common feature of the FED's interest rate cuts is that they were intended to respond to crises. At the same time, these interest rate cuts have one thing in common: excess liquidity. When the US dollar cuts interest rates, other central banks will generally follow suit because the US dollar is the world's dominant currency. This will lead to many cheap US dollars being injected globally, causing the US dollar to flow to every corner of the world, looking for investments with higher returns. This means that every interest rate cut will lead to a potential bull market or a potential huge bubble. The Gulf War and the Japanese economic bubble occurred in 1990. These two things are the reasons for the interest rate cut and the results of the interest rate cut respectively.

During the period when the FED continued to raise interest rates to achieve a 2% inflation rate, U.S. debts fell and share prices were also relatively low. However, after the interest rate is lowered, it is very good for the banking industry. The FED lowered interest rates and printed money to buy bonds, which allowed commercial financial institutions to raise funds at a lower cost. However, commercial financial institutions were reluctant to transfer capital into the real economy but were more willing to invest. A large amount of funds flowed into the stock market, and stock prices continued to rise. Although the stock price will not increase significantly, everyone's expectations for the stock price will increase significantly.

After the interest rate cut in 1990, bank stock prices soared for two consecutive years. But now, even if the interest rate is also cut significantly, our expectations for bank stock prices are also high, but bank stock prices will not fall as much as before. There are three main reasons. First, compared with the economic environment at that time, the current economic environment is more complicated. Second, compared with many industrial structures at that time, the current industrial structure is more complete. Third, the factors that investors make decisions in the past and now are also different. Therefore, considering multiple factors, stock prices will not continue to soar. There will not be such a good positive situation for banks as the interest rate cut in 1990.

Is it because the Fed cut interest rates that the crisis occurred? Obviously not. The crisis occurred because of the crisis itself. The Fed cut interest rates to minimize the damage caused by the crisis. The reason why the Fed cut interest rates was not as expected was that the Fed cut interest rates too late or too slowly. The pace and extent of the FED's interest rate cuts are determined by the actual situation. Although the market has made expectations for it, the plan cannot keep up with the changes. Lowering interest rates will increase inflation. Taking this into consideration, the Fed will cut interest rates by 25 basis points on November 8, 2024. Because of many uncertain factors, Powell reaffirmed the Fed's commitment to reaching its 2% goal, acknowledging that the path may be uneven [10].

In the process of bank operation, it is very important to manage liquidity risk, credit risk and market rate. Bank risk management is of great significance to banks. If the governance level of the banking system is too low, it will reduce investment attractiveness and cause liquidity risk. Improving the governance level of banking companies will increase investors' confidence in the country's banking system [11]. At the same time, banks must protect their reputations. After all, one of the main indicators that customers measure is trust. Banks under pressure ahead of rate cut. Most banks have also implemented the risk management.

#### 4. Conclusion

This paper studies from many aspects which market fluctuations will cause risks to banks. It emphasizes the importance of bank risk management. Banks with good reputation and strict compliance with the international regulatory framework for banks can reduce risks to a certain extent. First, this essay by mentioning that the four rounds of quantitative easing have led to inflation, this situation has put great pressure on banks. Secondly, it introduces the importance of making reasonable risk management for liquidity risk, credit risk and market risk. It lists the collapse of two major banks in the world and finds out the reasons for their collapse, which can be used as a reference for banks to formulate their own risk management. Next, the major interest rate cut events in history are outlined, and the commonality that interest rate cuts will lead to excess liquidity and the fact that interest rate cuts are beneficial to banks are analyzed. Finally, considering the above factors, it is enough to see the importance of bank risk management to bank operations. For banks, market changes are difficult to predict. The only thing they can do is to comply with the international regulatory framework for banks and make reasonable risk management based on their own bank's situation. This essay hopes that more banks can learn lessons from the failures of other banks and grow steadily in a turbulent situation.

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