# Bank Risk Assessment under COVID-19 Crisis

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**Abstract.** The global economy is showing signs of gradual recovery after experiencing stagnation during the COVID-19 epidemic. However, one major concern in the United States is the persistently high inflation rates observed in recent years. To address this issue, the United States has initiated a continuous interest rate increase plan as a measure to slow down the country's economic growth. While this strategy aims to curb inflation, it has created a series of challenges, particularly for the banking industry. The repercussions of these interest rate hikes have extended to various sectors of the economy. Notably, the technology sector has felt the pinch as higher borrowing costs have dampened the momentum of technology stocks, resulting in a decline in valuations for technology companies. Silicon Valley Bank, a financial institution heavily reliant on the technology industry, has also experienced the adverse effects of these interest rate hikes. Perhaps one of the most contentious developments resulting from these actions was Credit Suisse allowing UBS to acquire it at a price significantly below its market capitalization—approximately a quarter of its market value. This move was driven by concerns about preventing systemic risks. In sum, the far-reaching and, in some cases, severe consequences of the Federal Reserve's interest rate hike strategy underscore the critical importance of striking a balance between economic growth and inflation control.

**Keywords:** Bank Risk Management, Interest Rate Hike, Systemic Risk.

## 1. Introduction

The financial crisis in 2008 had a global impact. In order to stabilize economic development, the Federal Reserve lowered interest rates to zero [1]. This is unprecedented. As the economy gradually recovered, the Federal Reserve began a new round of interest rate hikes in December 2015. Until the outbreak of the COVID-19 epidemic in 2019, a series of problems, such as restrictions on labor mobility and a significant increase in unemployment, arose. The Federal Reserve decided to cut interest rates three times by 0.25 percentage points and even dropped to close to zero in the second year. At the same time, the United States experienced higher inflation. In 2020, Powell made the case for letting prices rise above the Fed's 2% inflation target [2]. In the speech, Powell also said that the Fed is prepared to further raise interest rates if appropriate and intends to keep policy at a restrictive level until inflation continues to decline and is close to the goal [2]. So, from 2022, starting in March, the Federal Reserve began to raise interest rates continuously to maintain social stability.

If the Federal Reserve raises interest rates, interest rates in the United States will rise, resulting in greater interest returns in the United States market. Therefore, serious savers will choose to withdraw money. Global capital will be converted into U.S. dollars and flow into the U.S. market. This may result in liquidity risks in the banking industry. However, as interest rates rise, so do the costs of loans in the banking industry, resulting in a decline in demand for bank borrowing. The outlook for public consumption and investment is bleak, and inflation is expected to shrink. The bad news is that this phenomenon will directly impact the banking industry's earnings decrease. Because the global economy is currently in a slump and businesses may not repay bank loans, banks must have sufficient capital reserves to withstand this lending risk. If bank reserves are insufficient, the capital chain will break. In this case, lending risks can easily arise. Aside from that, some investors may be selling out of fear. Because interest rates are expected to climb more in the future, the stock market will decline dramatically, posing market dangers. Turmoil in the banking industry is the most likely to disrupt the national and global financial systems.

In reaction to these risks, some countries have raised interest rates to curb capital outflows from their own countries. Furthermore, some banks have hiked interest rates on short-term loans to

encourage public loans from banks, thereby improving the banking industry's profitability. However, these measures have little impact on the Fed's interest rate hikes. Among them, Silicon Valley Bank is an example. Multiple interest rate hikes have caused a large amount of floating losses on the bonds held by Silicon Valley Bank. The rising interest rates caused by the continued interest rate hikes make savers more willing to withdraw money instead of depositing money into banks or taking out bank loans. So, Silicon Valley Bank has illiquidity, and the bank's own yields have plummeted, making loan repayment difficult. Finally, on March 10, 2023, Silicon Valley Bank declared bankruptcy.

In retrospect, the 2008 financial crisis was also a worldwide financial upheaval. Its origins can be traced back to the housing bubble in the United States. Many banks and financial organizations have made house loans to people with insufficient financial strength since 2000 when housing prices have grown and loan interest rates have been relatively low. This is used to stimulate consumption. However, most borrowers cannot repay, so the risk of default on subprime mortgages is very high. In 2006, the Federal Reserve took measures to raise interest rates again to control inflation. As a result, loan interest rates rise, borrowers face increased repayment pressure, and a considerable number of defaults occur. The interest in and out of banks and financial institutions will then be unable to create a dynamic equilibrium. Furthermore, the 2008 financial crisis spread quickly around the world via financial derivatives and multinational money. Academics at the time claimed that this was the production of systemic risk because it led the entire banking industry to collapse. Compared with risks in other financial systems, there is constant risk management and control to ensure that these risks are within controllable limits. Compared with the subsequent impact of the Federal Reserve's interest rate hike, the scope is also quite wide, including the negative impact on the stock market and the real economy. Therefore, experts cannot help but raise a question: "Is this another outbreak of systemic risk?"

## 2. Liquidity Risk

The Fed's interest rate hike strategy poses significant difficulties to global liquidity and financial stability. As the world's most powerful central bank, the Federal Reserve's monetary policy significantly impacts global financial markets and economic activity. The March 2023 rate hike was the Fed's ninth in a row. It raised its main interest rate to 4.75%-5% from near zero a year ago, the highest level since 2007 [3]. Higher interest rates mean higher costs for buying a home, borrowing money to expand a business, or taking on other debt [3]. On the one hand, people's purchasing power will be considerably diminished in the market. Unemployment is on the rise, and business profits are low. People will opt to limit non-essential expenditures or investments when inflation is constantly high due to the high cost of borrowing money. On the other hand, in times of very high financial pressure on individuals and businesses, the risk of default is likely to arise. At this time, the bank can not get the repayment of principal and interest. Over time, there will be a shortage of funds, so the banking industry, in terms of liquidity, encountered pressure particularly large. Silicon Valley Bank and other banks could be exposed to the same risks. This shortage occurs when institutions find themselves short of the reserve balances they wish to hold, either because the total supply of reserves is insufficient or because of problems in the distribution of reserves within the system [4]. There is a possibility that financial institutions will be unable to meet their immediate payment obligations, perhaps causing "deadlock" in the payment system.

The financial industry has suffered a significant impact since the outbreak of the epidemic. The global economy has suffered, and unemployment has risen sharply. Revenues and profits in various industries, including banking, have been greatly affected. According to the International Monetary Fund (IMF), from late March to early April 2020, countries adopted fiscal, monetary, and financial policies to support economies affected by the pandemic [5]. The specific embodiments are financial issues such as deferred repayment or interest reduction. This alleviates the debt servicing burden of households to a large extent. But because of this, people's borrowing needs may increase in the long run. Then choosing to invest in other high-yield projects, it is easy to appear asset bubbles or stock

market bubbles and other problems. Second, expand the money supply and encourage bond purchases. This measure has increased liquidity in the market to some extent. But the bad side is that it will increase the pressure of inflation, and the interest rate may be unstable. If the supply of just one currency rises, it can cause a shortage of foreign currency reserves in other countries. Third, relax control policies. It can revive many enterprises on the verge of bankruptcy and stabilize the economy in a short period of time. Yet, as time passes, particularly after the Fed raises interest rates, a slew of new hazards emerges. These include a lack of reserves and the financial sector's resiliency. Currently, institutions must increase banking industry supervision.

The following dangers may occur in the future because of the existing development conditions. The first is certainly the risk of a liquidity crunch. The interest rate hike by the Federal Reserve will lead to the contraction of the global money supply, the reduction of liquidity in the financial market, and greater financing difficulty and debt repayment pressure faced by financial institutions and enterprises. Therefore, each country should formulate a reasonable monetary policy according to its own situation, maintain a moderate money supply, and avoid excessive contraction or expansion. The second is the risk of capital outflows. People are more inclined to trade their own currencies for dollars as the dollar appreciates after the Fed boosts interest rates. People are eager to invest their dollars in American bonds to obtain better yields. As a result, foreign currency reserves will be in limited supply. In addition, the cost of imports will also rise, making it more difficult for domestic enterprises. Therefore, it is particularly important to optimize the management of foreign exchange and maintain the stability of the exchange rate. Countries should rationally allocate their foreign exchange reserves. The alternative is to diversify and strengthen foreign exchange reserves so that capital spillovers and exchange rate shocks do not influence them.

## 3. Credit Risk

Raising interest rates in the United States will affect the country's economy. Borrowing costs for businesses and individuals will rise, which will slow down economic growth to a certain extent. This is because the public’s various non-essential consumption needs will be greatly reduced. Direct effects on the banking industry include asset and liability risk exposures. Specifically, this is because banks have purchased large amounts of long-term bonds, which do not yield returns in the short term. However, short-term bonds provide higher returns due to interest rate hike plans. Long-term debts are not repayable and cannot be resold for a profit. This has resulted in the current debt burden and other issues.

The outbreak of the COVID-19 epidemic has brought unprecedented challenges to global credit risks. Risky asset prices plummeted, and borrowing costs soared, especially in high-risk credit markets [5]. This is because banks need to provide more currency to stimulate economic recovery after the epidemic, resulting in very low currency costs. Further impact is the loose monetary policy, which may cause funds to flow to high-risk credit markets. The economic depression caused by the epidemic has drastically reduced the income of a huge number of businesses, and the actual economy has been severely impacted. Therefore, the individual's repayment ability has declined, and there are situations where repayment is deferred or even impossible. In order to cope with the impact of the epidemic, banks have adopted the following methods. For the first time, the capital adequacy ratio (CAR) was increased to ensure there is sufficient capital to absorb losses in the event of a default. In other words, banks need reserves to face temporary emergencies to protect the stability of the financial system. This indicator is also used to measure the capabilities of regulatory agencies. Second, banks and regulatory authorities must work together to ensure corporate transparency. This assists them in establishing confidence with depositors and avoiding the drop in bank earnings caused by depositor distrust.

On March 19, 2023, Switzerland's largest bank, UBS Group AG (UBS for short) and Credit Suisse, the second largest bank, signed a merger agreement [6]. Ultimately, UBS agreed to acquire Credit Suisse for over US$200 million and is expected to complete the acquisition by the end of 2023. Credit

Suisse is on the verge of instability in these difficult times because it continues to promote high-risk ventures. As the Federal Reserve raises interest rates, borrowing costs become higher, making it unable to cover the huge external losses at Credit Suisse. Banks may have predicted the credit crisis on this premise, but they did little to avert it and instead insisted on high-risk credit. In addition, there are also problems of insufficient management and control within Credit Suisse, and they have yet to choose to prevent foreseeable risks. Following the acquisition, UBS and regulators took key steps such as banning new users from high-risk countries. Nonetheless, Switzerland's future economy is unduly dependent on a single bank, raising the prospect of systemic concerns.

## 4. Market Risk

Simultaneously, the reduction in bond returns in the plus-point and interest-rate environment has resulted in significant losses for institutions that hold significant quantities of long-term US debt, such as Silicon Valley Bank. This is because when the currency strengthens, so do US bond yields. However, higher US bond yields are only partially positive. Rapid tightening of monetary policy could lead to volatility in bond and interest rate derivatives markets. When yields rise by 400 basis points, even safe U.S. Treasuries fall in value by 30%, which is the real impact on 10-year Treasury yields so far in 2020 [7]. In other words, this is because when U.S. Treasury bonds have bonds with different yields, bonds with higher yields are, of course, more popular when the par value is the same. Banks hold a significant portion of U.S. Treasuries. Since the reality after the interest rate hike, the banking industry is unstable, and depositors do not trust banks, so many will go to banks to withdraw their deposits. In this case, a run will occur. When a bank run occurs, to provide funds to depositors, the bank needs to sell bonds with low yields, which can only reduce the par value of the bonds. Although the bank was losing money at this time. In the long run, banks will go bankrupt. Silicon Valley Bank is an example.

The report shows that although Silicon Valley Bank’s assets have grown rapidly from US$71 billion to more than US$211 billion from 2019 to 2021, it has not been subject to higher supervision or regulatory standards [8]. On the liquidity front, Silicon Valley Bank was rated strong during the same period. Despite its significant asset growth and unique business model, it was subject to a limited-scope liquidity assessment as part of its small business guidelines. In fact, Silicon Valley Bank was a very fragile company, and neither its board of directors nor senior management fully realized this. As interest rates continue to rise, Silicon Valley banks are forced to resell their bonds at low prices. According to reports, on March 8, 2023, Silicon Valley Bank announced a balance sheet restructuring, which included the intention to sell certain securities and raise funds [8]. When bonds are resold at low prices, savers become less confident and then they choose to go to the bank to withdraw money. As a result, a bank run occurred. Eventually, the bank faced a run-on depositors on March 9. On March 9, deposit outflows exceeded $40 billion, and management expected another $100 billion to flow the next day [8]. The outflow of capital within a short period of time eventually resulted in bankruptcy.

When regulators did discover vulnerabilities, they needed to do more to ensure Silicon Valley Bank addressed them quickly enough. As Silicon Valley Bank continues to evolve and face higher standards in 2021, regulatory provisions provide Silicon Valley Bank with a longer transition period to meet higher standards [8]. However, Silicon Valley Bank’s regulatory approach is too cautious and focuses on continuing to accumulate supporting evidence in a consensus-driven environment. This ultimately led to inadequate internal liquidity stress testing and increasing deposit outflows. From this point of view, now that interest rates are rising, there are different views on the profitability of bank stocks. On the one hand, rising interest rates can increase banks' net interest margins and make profits on higher loan returns. On the other hand, due to the increase in borrowing costs caused by rising interest rates, there may be many defaults, and the pressure on banks will also increase. Overall, stock analysts are still taking a wait-and-see approach to banking stocks due to the current volatility in the banking industry.

## 5. Systemic Risk

Systemic risks are often caused by factors external to the enterprise. And diversity cannot mitigate this risk. Investment banks utilize questionnaires to determine these risks, which address the investor's circumstances as well as his life experiences and combine identifiable criteria to produce a valid risk profile. The second step is to conduct a quantitative or qualitative analysis of each possible risk. Once identified, investment banks can take steps to manage these risks, such as asset diversification, based on their likelihood of occurrence and severity of impact. Financial institutions need to rank risk, use prudent practices in underwriting, and employ tools that can help where appropriate.

Basel III is an international regulatory standard developed in the aftermath of the 2007-2009 global financial crisis. It contributes to the prevention of systemic risks and enhances the resilience and stability of the banking system. The Basel III reforms in the context of the NCCP epidemic have demonstrated that international cooperation and coordination are essential to ensure a sound and resilient banking system that supports economic recovery and growth. Since the adoption of the initial Basel III framework, data have shown a marked improvement in the overall risk resilience of banks. Their risk-weighted CET1 capital ratios are now around 13% compared to 7% in 2011 [9]. This is due to the fact that this agreement enhances the risk sensitivity of the banking sector. When a metric is not in use, adjustments are quickly made within the banks. During the same period, the data yielded an increase in their Tier 1 leverage ratio from 3.5% to over 6% [9]. This shows that strict regulation of the leverage ratio ensures adequate funding during special periods and prevents over-leveraging to a certain extent. It ultimately aims to improve the debt servicing ability of the banking sector. Taking Silicon Valley Bank as an example, one of the reasons for the bankruptcy of this bank at that time was the incomplete asymmetry and mistrust of information between the bank and its customers. Basel III enhances the frequency of information disclosure, which in turn improves the transparency of banks and regulators.

However, a reform does not have only one side. For one thing, they may slow economic growth by reducing banks' profitability. A study by the Organization for Economic Co-operation and Development estimated that Basel III would reduce annual GDP growth by 0.05 to 0.15% [10]. This is due to the increase in interest rates and the decrease in the supply of money, leading to increased liquidity risk in financial markets. As a result, the prices of financial assets will also fall substantially, which impairs banks' ability to lend. A further manifestation of this is that financing for businesses, especially small and medium-sized enterprises, becomes more difficult. Secondly, the measures implemented in the agreement may not be sufficient to prevent future financial crises because they need to address the underlying systemic risks such as interconnectedness and moral hazard. This is because the common belief is that if the interactions or linkages between the banking sector are deep enough, then they will be relatively economically safe. It is even less likely that they will lead to a systemic collapse in the end, but this is not the case. But this is not the case: the 2008 financial crisis is a classic example. When one bank has a problem, the risk may be transmitted over the Internet to other banks in the chain. The purpose may be to avoid risk or to shift regulatory costs. So, this risk has a long way to go on the road to resolution. There is a need for sufficiently thorough strengthening of macro-regulation as well as micro-coordination, and BCBS and other relevant agencies will need to continue to monitor and assess the effectiveness and impact of the implementation of the reforms to ensure that they are well-positioned to face any emerging issues or challenges.

## 6. Conclusion

There are many types of risks faced by the banking industry. Systemic risk is caused by liquidity risk, lending risk, and market risk. It is often a risk that is uncontrollable and cannot be dispersed. It can be avoided from the following aspects. Since 2008, most regulators have tended to opt for uniformity, so regulated institutions are more likely to respond to emerging risks in a similar manner. So, the first point is to tighten financial oversight and prevent market excess leverage. When faced with risks, the banking industry collaborates with regulatory agencies to provide transparent

supervision and to take prompt and effective measures to avert them. The second goal is strengthening the financial system's resilience and recovery capacity. When a bank faces temporary lending risks, it must have adequate reserves to deal with them. This will help improve the overall stability of financial markets. The final point is to build trust among investors and savers in the shares they hold. For example, in the case of Silicon Valley Bank, reliable trust needed to be fully established between the bank and its customers, causing a run on the bank. Banks can use funds more rationally to manage operations or investments if there is trust.

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