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Risk Assessment of the Banking Industry under COVID-19

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Abstract: The outbreak of the COVID-19 pandemic in 2020 has brought various risks and threats to the entire banking industry, from which we can also know the importance of bank risk management. This paper mainly describes, analyzes, and summarizes the five aspects of liquidity risk, credit risk, market risk, and systemic risk. With regard to liquidity risk, the article describes the impact of the Federal Reserve's continuous interest rate hikes on the banking industry in order to curb the high inflation caused by the COVID-19 pandemic and takes the collapse of Silicon Valley Bank as an example for analysis. Regarding credit risk, this article takes Credit Suisse Bank as an example. Highly leveraged speculative transactions caused huge losses to the company due to the high default rate during the epidemic. For the analysis of market risk, the article synthesizes the deeds of Credit Suisse Bank and Silicon Valley Bank, focuses on the interest rate, and the reasons for the collapse of Credit Suisse and Silicon Valley Bank are different on the surface, but the underlying logic of the two events is traced to the same There is a close relationship between the current interest rate environment and the changes in interest rates in recent years. As for systemic risk, the article mainly writes about the purpose and effect of Basel III and the supervision of the capital adequacy ratio during the epidemic. Overall, commercial banks need to closely monitor these risks and take steps to mitigate them to ensure their stability and continued operations during the pandemic.

Keywords: liquidity risk, credit risk, market risk, systemic risk

1. Introduction

The outbreak of The COVID-19 pandemic in 2020 has brought an unprecedented wave of risks and threats, affecting the entire banking industry. The far-reaching impact of the epidemic has disrupted the global economy, financial markets, and banking operating environment, bringing many challenges and testing the resilience and adaptability of the banking industry [1].

Reduced economic activity, the imposition of lockdown, and general disruptions in supply chains have reduced demand for credit by businesses and individuals. As a result, banks face challenges in finding creditworthy borrowers and deploying capital efficiently. The weak macroeconomic environment has dampened loan growth and weighed on banks' profitability. In addition, the investment environment has been plagued by significant volatility and uncertainty. Financial markets have experienced wild volatility, with stock prices, exchange rates, and commodity prices fluctuating wildly due to the changing pandemic situation. These fluctuations have affected the valuation of banks' portfolios, resulting in potential losses and increased exposure. The volatility of investment

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products makes it difficult for banks to accurately price and manage associated risks, further complicating their operations. In addition to the immediate impact on business operations and investment products, banks must also navigate the changing regulatory environment and adapt to new regulations introduced in response to the pandemic [2]. Regulators have implemented measures to support the financial sector and mitigate the impact of the crisis, but these have also increased compliance requirements and reporting obligations for banks. This regulatory shift requires banks to increase their vigilance and resources to ensure compliance with the changing regulatory framework.

The pandemic has hit depositors hard, as economic conditions have tightened and uncertainty has grown, prompting companies and individuals to adopt a risk-averse appetite. Given the heightened volatility and market turmoil, savers have become more cautious and reluctant to participate in highly leveraged investment activities. Current economic uncertainty and concerns about the future have caused depositors to prioritize protecting capital and funding security. With the recession triggered by the pandemic, many businesses are facing financial challenges and individuals have lost their jobs or lost income. As a result, depositors have become more risk-aware of highly leveraged investments and are increasingly inclined to seek lower-risk options for their funds.

In addition to the above-mentioned factors, in the post-epidemic era, the Federal Reserve’s policy of continuously raising interest rates in response to the impact on economic development has had a far-reaching impact, exposing the banking industry to major systemic risks. The decision to raise rates was aimed at addressing concerns about rising inflation and promoting a more balanced economic environment. However, the unintended consequences of this policy have created enormous challenges and risks for the banking industry. One of the main effects of the Fed's rate hikes has been to increase borrowing costs for banks and their customers. As interest rates rise, so do banks' cost of funds, which could weigh on banks' profitability and financial stability. Commercial banks rely heavily on borrowing from a variety of sources to fund their lending activities, and higher rates erode their net interest margins -- the difference between interest on loans and interest on deposits. This could lead to lower profitability for them and hamper their ability to lend to businesses and individuals.

2. Liquidity Risk

Liquidity risk refers to the risk that financial institutions or individuals cannot fulfill their obligations due to lack of liquidity, that is the inability to convert an asset into cash without significant loss. This happens when there is a sudden and unexpected need for cash, such as during a financial crisis, or when certain assets lack buyers and are difficult to sell at reasonable prices. Liquidity risk can arise in a variety of situations, such as when a bank is unable to meet depositors' withdrawal requests, or when investors are unable to sell their securities without suffering significant losses. Liquidity risk can have serious consequences, including bankruptcy or insolvency, and if it leads to contagion or loss of confidence in the banking system, it can have knock-on effects across the financial system. Therefore, liquidity risk management is an important part of bank risk management.

In order to prevent liquidity risks, the financial system has developed many models and management tools, using liquidity risk prevention models and tools can help financial institutions effectively manage their liquidity positions and ensure their ability to fulfill their obligations in a timely manner. These models and tools provide a structured approach to assessing, monitoring, and mitigating liquidity risk, enabling institutions to make informed decisions and take appropriate actions. However, it is still difficult for us to predict the occurrence of some extreme situations, and these extreme events will cause great losses. The outbreak of the COVID-19 pandemic in 2020 is a small probability event.

The COVID-19 pandemic has caused disruptions in financial markets and reduced economic activity, leading to lower liquidity in the market [3]. Widespread business closures, travel restrictions, and social distancing measures have reduced economic activity, leading to sharp declines in revenues

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and earnings for financial institutions. As a result, commercial banks may face challenges in meeting their liquidity requirements, which could impact their ability to operate and lend. During the peak period of the global pandemic, in order to promote national consumption and stimulate economic development, the United States chose to issue excessive currency, resulting in a high inflation rate. Later, in order to curb the high inflation rate, it chose to continue to raise interest rates, which led to the emergence of liquidity risks in the banking industry. One of the most typical cases is the collapse of Silicon Valley Bank in the United States.

As a bank that mainly finances technology companies, benefiting from the technology boom during the COVID-19 pandemic, Silicon Valley Bank has absorbed billions of deposits in recent years and invested most of the funds in long-term U.S. government bonds [4]. At a time when market interest rates were close to zero, banks were still profitable even with lower interest rates on long-term U.S. government bonds. But as the Federal Reserve continues to raise interest rates to curb inflation, higher borrowing costs have weakened the momentum of technology stocks, and Silicon Valley Bank, which relies on the technology industry, has also been affected [5]. At the same time, the rate of return on bonds has declined in an environment of rising interest rates, causing heavy losses to Silicon Valley Bank, which holds a large amount of long-term U.S. debt. This, led to a significant deterioration in the bank's liquidity position, making it unable to meet its obligations.

To sum up, the failure of Silicon Valley Bank was mainly due to its high-risk investment and the liquidity risk brought by the economic environment at that time. The consequences of the bank's failure were severe and had ripple effects throughout the financial system, leading to a loss of confidence that spread across financial markets. The failure highlights the importance of liquidity risk management and the need for regulators to monitor the financial system to identify potential risks and take appropriate steps to address them.

3. Credit Risk

Credit risk refers to the potential loss that a lender or investor may suffer if the borrower or counterparty fails to fulfill its contractual obligations. This is a risk that the borrower may default on their repayment obligations, resulting in a financial loss for the lender. The consequences of credit risk can be severe. Lenders may suffer financial losses if borrowers default on their repayment obligations. These losses may include the principal amount of the loan or investment, as well as any accrued interest or fees. In severe cases, a default event may lead to bankruptcy or insolvency of the borrower, thereby causing greater losses to the lender, such as the COVID-19 pandemic.

The COVID-19 pandemic has had a profound impact on businesses and individuals, creating widespread financial hardships. As a result, the risk of default on loans and other credit products has increased, posing challenges for commercial banks. Recession, unemployment, and reduced cash flow make it difficult for borrowers to meet their repayment obligations. One of the main consequences of the financial difficulties caused by the COVID-19 pandemic is the potential rise in non-performing loans and delinquencies. Non-performing loans are loans in which the borrower has stopped paying interest or principal in a timely manner, while delinquency is when payments are delayed or missed. Borrowers are more likely to default on their loans, putting commercial banks at risk of significant losses. The rise in non-performing loans and delinquency rates could adversely affect the financial health of commercial banks. When borrowers default, the bank's asset quality may decline and its credit risk exposure may increase. This, in turn, would dent banks' profitability and put pressure on banks' capital reserves.

The banking industry, specifically Credit Suisse, experienced significant losses stemming from highly leveraged speculative transactions around 2020 [6]. One notable case was the transaction involving Archegos Capital Management, an American investment company. The impact of the pandemic on stock market prices played a substantial role in the substantial losses incurred. Like

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many other financial institutions, Credit Suisse has a deal with Archegos Capital Management. The transactions include financing for Archegos' investment activities [7]. However, due to the economic impact of the pandemic, Archegos' investments, particularly in the shares of several companies, have fallen sharply in value. As a result, Credit Suisse faced substantial losses directly related to Archegos' highly leveraged position. The impact of the pandemic on stock market prices has created a volatile and uncertain environment for financial institutions. The outbreak has disrupted the global economy, causing wide-ranging market volatility and heightening investor concerns. This volatility, combined with the concentrated positions held by Archegos, contributed to the large losses suffered by Credit Suisse. The incident involving Archegos Capital Management and subsequent losses at Credit Suisse has sounded a wake-up call for the banking industry about the risks associated with highly leveraged speculative trading. It highlights the importance of strong risk management practices and effective monitoring of exposure concentrations [8]. In response to the incident, Credit Suisse took steps to address losses and strengthen its risk management framework. The bank reassessed its risk appetite, enhanced risk monitoring capabilities, and strengthened internal controls to reduce the possibility and potential impact of similar events in the future.

4. Market Risk

Market risk refers to the financial loss that may be caused by adverse changes in the market price of financial instruments. This is the risk associated with volatility and uncertainty in financial markets, including the risk of fluctuations in stock prices, interest rates, exchange rates, and commodity prices. The COVID-19 pandemic has had a significant impact on market risk, influencing various dimensions of financial markets and introducing new sources of volatility and uncertainty. The COVID-19 pandemic has forced central banks around the world to take steps to support economic recovery. One such measure is to lower interest rates to stimulate borrowing and spending. However, lower interest rates could have an impact on commercial banks, especially on their net interest margins (NIMs), which represent the difference between interest on loans and interest on deposits. When a central bank lowers interest rates, it usually leads to lower borrowing costs for consumers and businesses [9]. Therefore, commercial banks may face pressure to lower loan interest rates. That could squeeze their net interest margins, as the spread between interest on loans and interest on deposits narrows.

The Credit Suisse explosion and the Silicon Valley bank collapse appear to have different causes, but the underlying logic of the two events is closely related to the current interest rate environment and the changes in interest rates in recent years. In the case of Credit Suisse, one aspect of interest rate risk was the bank's exposure to highly leveraged and speculative trading. These transactions involve complex financial instruments such as derivatives that are sensitive to changes in interest rates. When interest rates change, the valuation and performance of these instruments can be materially affected, potentially resulting in significant losses for the institution.

The bankruptcy of Silicon Valley Bank (SVB) indeed has associations with rising interest rates. The core reason behind SVB's bankruptcy was its exposure to financial risks arising from the rapid increase in short-term interest rates on U.S. bonds following the Federal Reserve's decision to raise interest rates. In the case of SVB, the rapid rise in short-term interest rates has had a significant impact on its financial stability. Banks' borrowing costs have risen, affecting their net interest margins -- the difference between interest on loans and interest on deposits. The increase in the interest rate decreased the SVB’s net interest. If the net interest margin narrows or becomes negative, it will seriously affect the bank's profitability and overall financial position. The rise in interest rates has not only affected SVB's interest expense but also its borrowers. SVB primarily serves technology companies and start-ups, which often rely on outside funding and may take advantage of variable-rate loans. When interest rates rise, so do these companies' borrowing costs, which could put them at risk of defaulting on their loans. This situation could lead to an increase in non-performing loans on

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SVB's balance sheet, further exacerbating its financial challenges. The link between rising interest rates and Silicon Valley bank failures underscores the importance of interest rate risk management for financial institutions. Banks need to carefully assess their exposure to interest rate fluctuations and implement appropriate strategies to mitigate potential adverse effects. This may involve the use of interest rate hedging instruments or diversification of loan portfolios to reduce sensitivity to changes in interest rates.

During the stock market crash in March 2020, the value of investment assets held by banks fell sharply. This decline has occurred not only in proprietary trading activity but also in assets held on behalf of clients, such as mutual funds or pension funds. The bank's loss was due to a sharp fall in share prices, negatively impacting the valuation of its equity investments and other market-sensitive assets. The magnitude of the losses suffered by banks during this period was substantial, with billions of dollars wiped off their investment portfolios. JPMorgan Chase, Goldman Sachs, and Wells Fargo, as major players in the banking industry, experienced significant financial setbacks. These losses not only affected their profitability but also eroded their capital base to some extent, potentially impacting their ability to lend and support economic activities. Overall, the COVID-19 pandemic has heightened market risk through increased interest rates and volatility. Monitoring and understanding these correlations are crucial for market participants, policymakers, and regulators to navigate the challenges and make informed investment and risk management decisions.

5. Systemic Risk

Basel III is a set of global regulatory standards introduced by the Basel Committee on Banking Supervision (BCBS) with the aim of enhancing the stability and resilience of the banking system. Its main objective is to address systemic risk, which refers to the risk of widespread financial disruptions and failures that can arise from vulnerabilities in the banking sector.

By strengthening capital, liquidity, and risk management standards, Basel III aims to enhance the resilience of individual banks and the stability of the banking system as a whole. It seeks to reduce the likelihood of bank failures and their impact on the system, minimizing the risk of contagion and the need for taxpayer-funded bailouts. In addition, Basel III promotes greater transparency, risk assessment, and risk mitigation practices in the banking industry. It encourages improved risk management capabilities, strengthens internal controls, fosters a culture of prudent risk-taking, and reduces the likelihood of excessive risk accumulation. While Basel III was not specifically designed to address the challenges posed by the epidemic, its implementation has had certain implications during this period. During the COVID-19 pandemic, regulatory capital adequacy remains an important metric for assessing a bank's resilience to the economic challenges posed by the pandemic. Specific requirements for capital adequacy have not changed significantly as a result of the pandemic, as the underlying Basel III framework and its capital standards continue to apply [10].

Under Basel III, the minimum capital adequacy requirement for banks is usually set at 8% of risk-weighted assets. However, this minimum requirement may be higher in some jurisdictions or for systemically important banks, depending on the decision of the local supervisory authority [11]. During the pandemic, regulators have closely monitored banks' capital adequacy ratios to ensure they are resilient to the adverse effects of a recession. Banks should maintain sufficient capital buffers to absorb potential losses from loan defaults, market volatility, and economic uncertainty. The capital adequacy ratio has helped banks maintain a strong financial position and withstand the adverse impacts of the pandemic. Adequate capital buffers have provided a cushion to absorb potential loan defaults, market volatility, and other financial shocks. This has increased the overall resilience of banks, enabling them to continue lending and supporting the economy. Also, the CAR has prompted banks to prioritize effective risk management measures during the pandemic. Banks prefer to assess and monitor their risk exposures, including credit risk, market risk, and operational risk, to maintain

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adequate capital buffers. This has led to a more prudent approach to lending, with banks carefully assessing the creditworthiness of borrowers and implementing risk mitigation strategies. Improved risk management practices contribute to the stability of banks' portfolios and reduce the likelihood of excessive risk-taking. What's more, the CAR provides supervisors with a key metric to assess the financial health and stability of banks during the crisis. Regulators closely monitor banks' capital adequacy ratios to ensure they meet minimum requirements and have adequate buffers to withstand economic shocks. Such oversight helps maintain the overall stability of the banking system and mitigates the risk of systemic collapse. It also reassures depositors and investors that the banking industry is sound.

While the capital adequacy ratio promotes financial stability, it could also pose challenges for banks to lend during the COVID-19 pandemic. Banks with low capital adequacy ratios or facing deteriorating capital conditions may be more cautious in extending credit. The need to preserve capital could lead to tighter lending standards and less credit availability, especially to riskier borrowers. It must be noted, however, that supervisory authorities have taken steps to provide banks with temporary relief and flexibility to support lending activity during the crisis. In conclusion, during the COVID-19 pandemic, the implementation of Basel III is of great significance. Its capital and liquidity requirements increase the resilience of banks, allowing them to weather recessions. Stress testing helps banks assess and manage risk in challenging environments. In addition, regulatory flexibility measures provided support and relief to banks during the crisis.

6. Conclusion

After the outbreak of the COVID-19 pandemic, both the banking industry and regulatory authorities have recognized the necessity of strengthening risk control measures in all aspects of the banking business. The unprecedented challenges posed by the pandemic have exposed vulnerabilities and highlighted the need for a proactive risk management strategy to ensure the resilience and stability of the banking sector.

First, addressing liquidity risk is critical. The pandemic has highlighted the importance of maintaining adequate liquidity buffers to withstand unexpected shocks and ensure the smooth functioning of financial institutions. Banks need to strengthen liquidity risk management, closely monitor cash flows, diversify funding sources, and conduct robust stress tests to assess their resilience in adverse scenarios. The other area that requires strengthened risk control is credit risk management. The economic downturn and financial uncertainties resulting from the epidemic have increased the likelihood of loan defaults and deteriorating credit quality. Banks need to enhance their credit risk assessment frameworks, incorporating more rigorous analyses of borrower financials, collateral valuations, and industry-specific risk factors. The market volatility triggered by the pandemic has heightened the need for robust market risk management practices. Banks need to assess and manage their exposure to market volatility, including interest rate risk, foreign exchange risk, and asset price volatility. The interconnectedness of financial institutions and the potential for contagion effects highlight the need for a robust systemic risk management framework. Banks and regulators must work closely together to identify and respond to systemically important risks that could destabilize the financial system.

In general, after the outbreak, the banking industry and regulatory agencies must give priority to improving risk control mechanisms in areas such as liquidity risk, credit risk, market risk, and systemic risk. Strengthening risk management practices will strengthen banks' resilience, promote financial stability, and support a sustainable economic recovery in the post-pandemic world

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