

The Effects of COVID-19 on Regulatory and Banking Risk Management Frameworks

Mingtao Huang^{1,a,*}, Zirui Wu¹

¹*School of Economics and Statistics, Guangzhou University, Guangzhou, 510006, China
a. 2064200033@e.gzhu.edu.cn*

**corresponding author*

Abstract: As the impact of COVID-19 on people's daily lives is decreasing, its contribution to risk tolerance in financial markets, especially banking risk management, will remain and continue to live for a long period of time. Due to the difficult economic climate, banks in particular have higher default rates, which puts the stability of the banking system at risk. The primary focus of this study is on the risk management of banking systems following the outbreak of COVID-19 and identifying Basel III's implications on the function of banking crisis prevention. Examining both the interior and exterior banking risk supervision in European and the U.S., it can be seen why the bank insolvency incidents have not affected the global financial systems as the 2008-2009 financial crisis did. This paper demonstrates the different risks of commercial banks and summarizes the problems in risk management of commercial banks through the bankruptcy cases of Silicon Valley Bank and Credit Suisse Bank.

Keywords: commercial banks, risk management, COVID-19, Basel III

1. Introduction

The 2020 COVID-19 Crisis, recognized as the most significant downturn in the international economy in recent decades, profoundly impacted worldwide economic operations and resulted in numerous deviations from the preceding trajectory of economic achievement.

The devastating effects brought by COVID-19 were far underestimated at first when adequate prevention and quarantine policy was failed to enforce. Without restrictive joint efforts of international and regional cooperation to strengthen public health systems, as well as disease surveillance we may fail to control and stop the further spread of this deadly virus [1]. Thereby leading millions of Americans infected with coronavirus after several waves of infection, a large number of U.S.' small businesses had to shut down and the unemployment rate rocketed significantly until the world responded with support initiatives, as Figure 1 shows [2]. Under the scenario of 'no policy intervention', the prolonged effect of COVID-19 could plunge banks into an inevitable crisis [3].

While millions of Americans were living on the edge, businesses were shutting down during the pandemic, the U.S. stocks were thriving because of the Fed's quantitative easing. This stimulated monetary policy by issuing a huge amount of money, using the money to purchase bonds, injecting liquidity into banks, stimulating consumption, and allowing people to get financial subsidies and loose loans and credit conditions. It provided a temporary buffer time for those who were unable to meet their payments and thereby saved the banks from massive bad debts. It can be seen that the economy did boost up after the unprecedented stimulating but we have to admit that people's risk

preference will never be like in the past when we don't have to worry about geopolitical conflicts and whether the next catastrophic pandemic will take place. Such uncertainty in future economic advancement poses considerable risks to the bank's financial soundness.



Figure 1: The U.S. unemployment rate [4].

Excessively loose monetary policy comes along with high inflation which forced the Fed to withdraw liquidity and raised interest rates in the most aggressive manner since 1983 (see Figure 2). From the perspective of commercial banks, due to the hindrance of macroeconomic development, it is difficult for banks to carry out their business, and investment products are also facing huge volatility (see Figure 3). The debt-paying ability has been seriously considered, even though the banking institutions are still strong and resilient. This might lead to a tighter lending climate for households and businesses, which would have an adverse effect on economic activity, hiring, and inflation. In an effort to prevent the spread of concerns about financial hazards, the Fed was forced to abandon its plan to reduce its balance sheet in order to temporarily inject liquidity into banking institutions. (see Figure 4).



Figure 2: The U.S. Core CPI [4].



Figure 3: The U.S. business confidence [4].



Figure 4: The U.S. banks-balance-sheet [4].

In terms of the depositor, stimulating policy did pose a surge in consumer credit in 2020 (see Figure 5). But after, the tightening of the economic situation has made enterprises and individuals have a risk-averse preference and are reluctant to enter highly leveraged investment activities (see Figure 6). To put this in the long-term angle of view, the Fed's continued interest rate raise strategy has increased systemic risks to the banking industry in response to the effects of the post-pandemic era on economic development. Between the untouchable mandate of returning inflation back to 2% and the potential risk to banking systems, the Fed will not hesitate to conduct a forceful monetary policy which is likely to cause many uncertainties in the future [5].

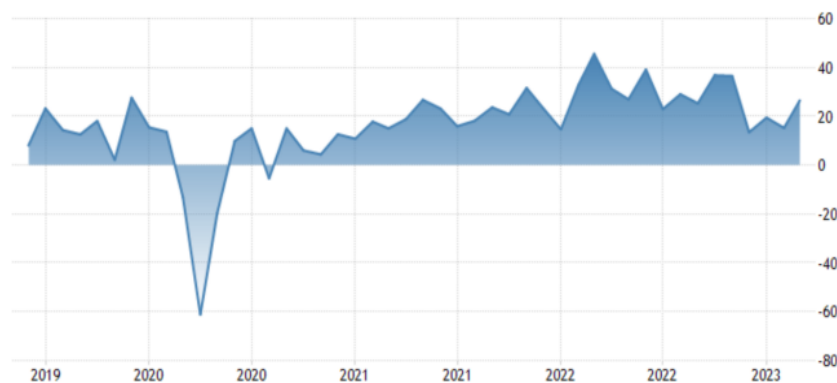


Figure 5: The U.S. consumer credit [4].



Figure 6: The U.S. business confidence index [4].

2. Liquidity Risk

The pandemic has caused disruptions in financial markets and reduced economic activity, leading to lower liquidity in the market. Commercial banks may face challenges in meeting their liquidity requirements, which could impact their ability to operate and lend.

Because during the peak of the global epidemic, the Fed cut interest rates to near zero and implemented a series of plans to provide liquidity for the financial market in order to promote national consumption, support lending to businesses and households and drive economic development, resulting in a high inflation rate [6]. 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 (see Figure 7). One of the most typical cases is the collapse of the Silicon Valley Bank in the United States.



Figure 7: The U.S. interest rates [4].

The Silicon Valley Bank (SVB), which ranked 16th in the US banking industry by asset size at the end of 2022, issued an announcement that It will sell \$21 billion of available for sale (Available For Sale, AFS) for after-tax losses of \$1.8 billion, while announcing a refinancing of \$2.25 billion to cover losses and provide liquidity support. The California Department of Financial Protection and Innovation (DFPI) announced Silicon Valley Bank's liquidation on March 10 and designated the Federal Deposit Insurance Corporation (FDIC) as the receiver. As a 40-year bank that has been named Forbes' "America's Best Bank" for five consecutive years, the Silicon Valley Bank collapsed in only 48 hours due to massive withdrawals and became the second-largest bankruptcy case in American history. And 2 days later the signature bank declare bankruptcy, combined with the SVB, the size of their total assets reached 319.4 billion dollars. In comparison, the largest bankruptcy happened in 2008 which was the Washington Mutual bank with 307 billion dollars. On such short notice, the federal government had to push forward a range of liquidity relief measures which triggered a widespread panic regarding global financial stability (see Figure 8).

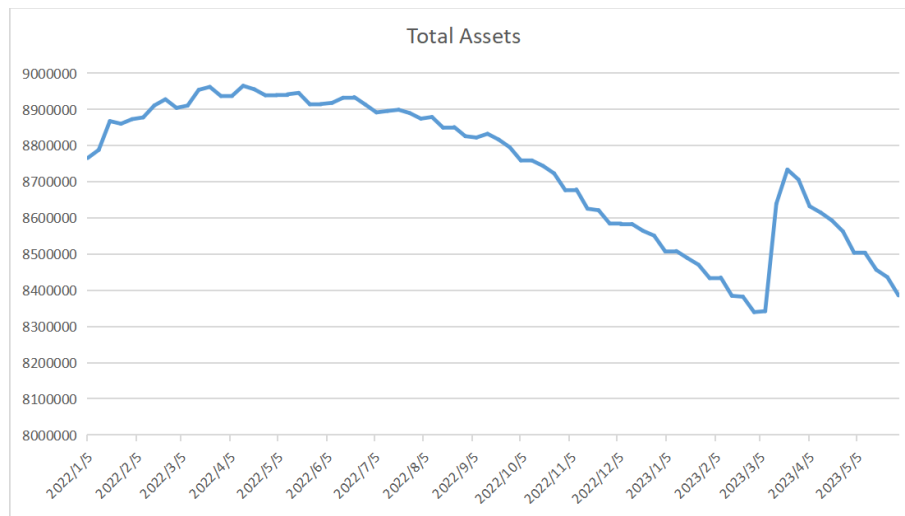


Figure 8: Total assets of the Fed [5].

SVB was established on October 17, 1983, SVB 's business strategy is to serve venture capital, with deposits primarily from venture capital-backed early-stage innovators. As its customers continue to grow, so do Silicon Valley Bank's service boundaries to provide financing for startups, especially in silicon valley, and more than half of them are technology and life science companies. Massive liquidity ran into these kinds of companies therefore, the deposits of SVB tripled from 61.758 billion to 173.109 billion between 2020 and 2022 [7].

Numerous deposits require a stable income so the SVB purchased a lot of long-term fixed-income securities. However, less than 30% of the new funds are used for loans, and more than 60% are invested in government bonds, especially mortgage-backed securities (MBS) issued by institutions, in this manner. This is carried out in order to acquire a spread income higher than the deposit interest, yet at the expense of higher interest rates and market risks. Most of the time, this kind of long-term interest is higher than the short-term one so all it did is to buy the long-term one. The duration of MBS increases with the increase in interest rates, that is, the negative convexity of MBS. When interest rates rise, the duration of government bonds decreases, while the duration of MBS increases, and the duration of the overall asset increases after weighting, that is, the sensitivity of assets to changes in interest rates increases, and the risk increases. As the Fed increased interest rates, the risk of MBS rose and became the main source of SVB 's deficit. Unexpectedly, SVB neglected to take action to mitigate interest rate risk, which led to substantial losses as interest rates climbed [8]. Generally, this investment is held-to-maturity securities that is to say the price of its bonds will converge to face value as long as the bond matures. But the continued withdrawals forced the SVB to sell its MBS which became a real deficit in the balance sheet. On March 8, 2023, SVB claimed to sell 21 billion dollars in AFS, and planned to raise US\$2.25 billion through a capital increase and share increase (including US\$1.25 billion in the public offering of common shares, US\$500 million in directional issuance of common shares and US\$500 million in convertible preferred shares); Increase the scale of term borrowing from US\$15 billion to US\$30 billion. When investors witnessed this they withdrew even faster and began a vicious circle.

Asset and liability management is the core of commercial banks' operation and management and the center of value creation, and the asset-liability model largely determines the core competitiveness and risk management capabilities of commercial banks [9]. Tier 1 capital and capital adequacy ratios for the SVB in 2022 were 15.26%, 15.26%, and 16.05%, respectively, substantially above the mandatory minimum of 7%, 8.5%, and 10.5%. It can be witnessed that the SVB 's balance sheet was

looking sufficient enough for Basel III. It can be concluded that the bankruptcy of SVB is solely based on liquidity risk management.

3. Credit Risk

The overall utilization of credit reduction appears comparable between these two shocks when comparing the usage of credit lines during COVID-19 with the usage during the global financial crisis at the end of 2008. However, the latest pandemic had a far greater degree of decrease in the initial weeks of the outbreak compared to 2008 [10]. With businesses and individuals facing financial hardships due to the pandemic, there is a higher risk of default on loans and other credit products. Commercial banks could see a rise in non-performing loans (NPLs) and delinquencies, which could lead to significant losses. Credit Suisse has become one of the most typical cases to analyze. On 19th March 2023, one of the world's systemically important banks-Credit Suisse was acquired by its opponent UBS at a low price of 3.2 billion dollars. But it can be seen that the risks of Credit Suisse were always there the COVID-19 crisis simply revealed and amplified it.

With a history spanning more than 160 years and beginning as a Swiss investment bank in 1856, Credit Suisse AG has progressively grown into a prominent integrated bank. Credit Suisse has developed from a development bank that primarily provided financing for infrastructure and industrial construction and expansion in Switzerland to an international financial institution with operations in 60 different countries and is one of the top providers of investment banking, asset management, and private banking services worldwide. The second-largest bank in Switzerland and the fifth-largest corporation in the world, Credit Suisse Group has its headquarters in Zurich, Switzerland. It is an investment bank and financial services provider that offers banking products, pension and insurance services, as well as financial services for both individuals and businesses. Its wealth under management had exceeded \$1.5 trillion dollars and was categorized as one of the thirty too-big-to-fail (TBTF) banks by the Basel Committee. Public data shows that in 2022, the total assets of Credit Suisse will be nearly 560 billion Swiss francs, about 575.5 billion US dollars (nearly 830 billion US dollars in 2021), nearly three times that of Silicon Valley banks. Credit Suisse has experienced some financial and credit risks in recent years.

Credit Suisse was fined \$2 billion by the U.S. Department of Justice in 2015 for helping U.S. customers evade tax obligations. In addition, the bank was asked to admit guilt and pay other fines. Credit Suisse AG suffered huge losses in highly leveraged speculative transactions around 2020, such as in transactions with US investment firm Archegos Capital Management, which caused a \$4.7 billion loss on its deal with Archegos Capital Management. The loss had a substantial effect on the bank's operations and standing in the community. That same year, Credit Suisse was also questioned over bond issuance and lending issues linked to Luckin Coffee's financial scandal. The bank was accused of failing to adequately disclose risks and was forced to cancel some bond issuances. In 2021, Credit Suisse was once again questioned for losing money in the deal with Greensill Capital. The unlisted financial services company issued a large number of supply chain finance bonds at Credit Suisse Bank but later fell into bankruptcy [11].

As a systemically important bank, Credit Suisse is required to implement higher-risk regulatory standards. By the fourth quarter of 2022, the company's tier-one Capital adequacy ratio was 14.1%, and its liquidity coverage rate was 150%, far higher than the regulatory requirements. Credit Suisse is at a good level among peers, indicating that the company's liquidity is good. In addition, unlike Lehman Brothers, by 2022, the company's short-term borrowings accounted for only 2.5% of total liabilities, far lower than the 65% at the time of Lehman's bankruptcy, and the company's liquidity risk was relatively low [12]. From the perspective of the company's business structure, in 2022, the proportion of high-risk investment banking business in the company's total assets was only 35%, while the total proportion of low-risk wealth management and traditional commercial banking

business was close to 60%. In terms of business structure, the impact of market volatility risk is less than that of Bank of America, which mainly focuses on investment banking business.

In addition, the announcement by the major shareholder Saudi National Bank that it will "absolutely" no longer inject capital due to its shareholding ratio not exceeding 10% may send a panic signal to the market. According to Credit Suisse's disclosure at the time, the company has obtained loans of up to 50 billion Swiss francs (\$53.5 billion per month) from the Swiss Central Bank, as well as cash repurchases of up to 3 billion Swiss francs (approximately \$3.2 billion) from Credit Suisse International. Although the support of external funds helps to enhance Credit Suisse's ability to cope with short-term risks, compared to the fourth quarter of 2022, during the outbreak of Credit Suisse's risk concentration in the market, there was over \$100 billion in outflow pressure, and market risk sentiment continued to ferment. Credit Suisse's financing pressure was extremely high. In the end, the market's confidence in Credit Suisse and the entire banking system has significantly decreased, and the linkage effect of the collapse of various aspects of Credit Suisse has pushed it more quickly to the brink of bankruptcy.

4. Market Risk

The pandemic has caused central banks to lower interest rates to stimulate the economy. The difference between the interest gained on loans and the interest paid on deposits, or the net interest margins of commercial banks, may be impacted by this. Nowadays, the operational risk management teams of financial institutions routinely examine the emergence of these scenario-level risks and the likelihood of planning for them owing to the influence of COVID-19, which is unprecedented in 40 years. As a consequence, each bank now has a pandemic scenario that aids in determining the likelihood of a pandemic and how it will affect banking activities. It is difficult to talk about crisis and business continuity management during times of calm and to get firms to devote resources to crisis readiness. However, if we wait until a crisis has already begun to prepare, it will be too late to prevent losses in terms of money, reputation, and other factors [13].

The Credit Suisse Thunder and the failure of Silicon Valley Bank appear to have separate causes, but the rationale behind watching these two events is extremely closely tied to the current interest rate environment and the changes in interest rates over the past few years. The primary cause of Silicon Valley Bank's bankruptcy is the exposure to financial risk brought on by the sharp increase in short-term interest rates on US bonds following the Federal Reserve's interest rate hike. Meanwhile, the IIS model has demonstrated that the volatility of banking risk has increased dramatically as a result of the influence of COVID-19 on political and financial events [14].

Market risk refers to the risk caused by fluctuations in the price of an asset caused by market factors. Market risk is generally related to trading stocks, bonds, commodities, foreign exchange, etc. in the financial market, including but not limited to the following: stock market risk, bond market risk, commodity market risk, and foreign exchange market risk. The stability of the banking system is highly dependent on how interest rates affect it. The primary tactic used by commercial banks and other institutions to generate profits is short-term borrowing and long-term investing. The assumption behind it is that bank liquidity will not be a problem. On the one hand, not all depositors need to withdraw or transfer money at the same time, and on the other hand, banks have sufficient collateral to adjust financing in the market, at least with the support of the central bank. However, ever since the Federal Reserve began its aggressive cycle of raising interest rates, rates have been steadily rising, driving away investors and dragging down short-term bond prices and yields. Even so, since short-term interest rates are higher than long-term interest rates and hence raise the cost of borrowing and lending funds, long-term bond prices have not been as impacted by rises in interest rates. When the long and short-term interest rates are reversed, it often indicates the risk of entering a recession, and commercial banks may tighten their credit due to fear of economic weakness leading to loans being

unable to be repaid and turning into bad debts. In order to minimize market risk, commercial banks usually take a variety of methods, such as diversification, hedging risk, building a portfolio, etc. In addition, regulators will take steps to regulate market behavior to reduce the impact of market risks on the economy.

Commercial banks' portfolio high volatility generally refers to Bank of America investing in riskier assets in pursuit of higher yields, which results in greater volatility in portfolio value. More particularly, in markets for commodities like energy, precious metals, and small-cap stocks, where the prices of these commodities are unstable and affect the portfolio, as well as in high-risk, high-yield bonds like junk bonds, small-cap, and technology stocks, whose prices tend to fluctuate wildly and affect their portfolios, real estate or other interest-sensitive assets, where changes in interest rates may cause significant fluctuations in the price and value of the investment. The pandemic has caused significant fluctuations in global stock markets, and the value of banks' portfolios has fluctuated with it. For example, in March 2020, the US stock market plummeted, causing significant losses to many banks' investment portfolios. In their investment portfolios, banks like JP Morgan Chase, Goldman Sachs, and Wells Fargo have lost billions of dollars. Overall, the high volatility of Bank of America's portfolio means that its portfolio asset allocation favors higher-risk and high-yield assets, which makes the value of its portfolio more susceptible to a variety of market factors. This also means that the portfolio is riskier, but also has greater potential for returns.

5. Systemic Risk

In order to strengthen the healthy development of the global banking system and create unified standards to eradicate unfair competition among banks on the worldwide financial market, the Basel Accord aims to establish calculation methods and standards by setting the ratio between banks' capital and assets. Elnahass M et al. point out that due to problems with cash management and debt payments, global banks may experience increasing credit and default risks [15]. Additionally, the size of bank loans may fall and maybe maintain identical throughout or after the pandemic due to the continuous decline in private sector investment and consumption. At the moment, many loan or investment decisions have been placed on suspension, and financing costs may rise as a result of savings depletion or the scarce amount of funds available to consumers at this unstable time.

Since the the Basel Committee on Banking Supervision (BCBS) proposed Basel I in 1988, the regulatory framework has been revised and completed, resulting in more restrictive risk management. After the 2008-2009 financial crisis took place, the latest Base II was widely condemned for not considering the liquidity risk and lacking a macro surveillance perspective. The BCBS promoted a revised version of Basel in 2010 under the names «Global Regulatory Framework for More Robust Banks and Banking Systems» and «International Framework for Measurement, Standards, and Monitoring of Liquidity Risk» (Base III). This was implemented in response to secure and trustworthy banking systems. Since the initial Basel III framework was adopted, there has been a dramatic improvement in the general resilience of banks. Currently, their risk-weighted CET1 capital ratio is around 13%, up from 7% in 2011.¹⁸ Their CET1 capital has increased by more than 2.5 times since 2011 on a global scale. Their Tier 1 leverage ratio increased from 3.5% to over 6% during the same time [16].

According to Basel Committee, the Tier 1 and total capital ratios are increasing steadily, as Figure 9 shows. In the first half of 2021, preliminary Basel III capital ratios kept constant above pre-pandemic levels.

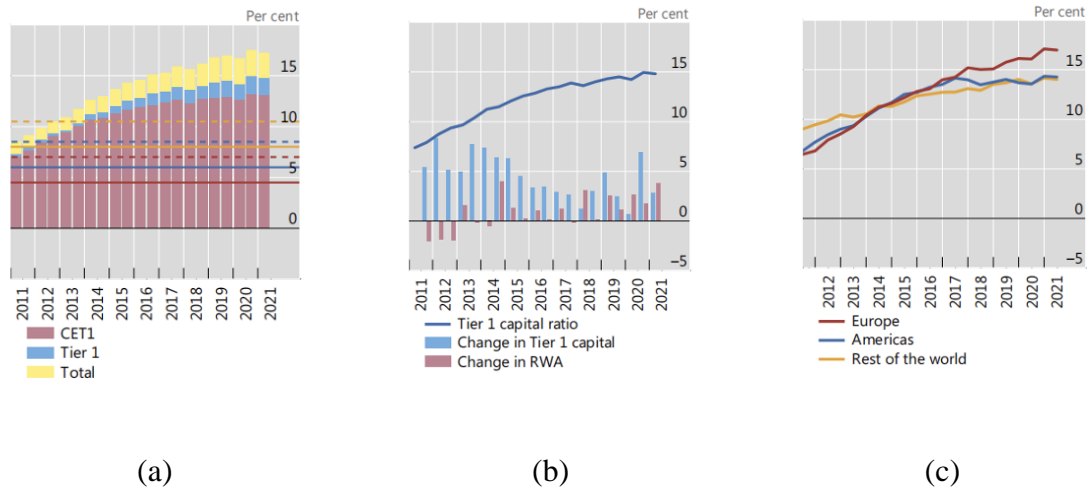


Figure 9: Basel III Capital Ratios [17].

6. Conclusion

The purpose of this study is to delve into how COVID-19 has affected commercial banks. Observe from four dimensions: liquidity risk, credit risk, market risk, and systemic risk. To research how the COVID-19 has affected commercial banks' risk-management practices and the global financial system's liquidity, particularly in the context of Silicon Valley Bank's and Credit Suisse Bank's bankruptcy situations. The purpose is to identify risk management loopholes and provide insights for commercial bank risk management. We can see that the collapse of banks, ultimately revealed, was due to the geopolitical turmoil and unprecedented uncertainty in the capital market brought about by COVID-19, which amplified the inherent risks of commercial banks. Under the spread of panic, commercial banks quickly went bankrupt due to market runs.

To sum up, commercial banks not only need to comply with the requirements of the Basel Accord at all times, but also need to pay attention to the changes in other risk exposure caused by the adjustment of market interest rates, and deal with and hedge risks in a timely manner. Commercial banks need to closely monitor these risks and implement measures to mitigate them to ensure their stability and continued operations during the pandemic.

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