

Assessment of Banking Risk Management under COVID-19

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Abstract. The COVID-19 outbreak in 2020 has had a significant impact on the global economic situation, with the banking sector being exposed to various degrees of risk in various aspects. These include liquidity risk, credit risk, market-based risk and operational risk. And in the post-epidemic era of policy adjustments, bank failures or bankruptcy caused by the Fed's interest rate hikes have also become cases that need to be focused on when managing risk in the banking industry today. This paper will discuss the risk management of commercial banks in the context of the epidemic by referring to cases such as the bankruptcy of Silicon Valley Bank and the failure of Credit Suisse Bank, as well as the effectiveness of the Basel Accord, the mainstream banking regulatory system, and eventually give suggestions on the future direction of management and regulation in consideration of the current problems and conditions faced by banks.

Keywords: Banking industry; liquidity risk; credit risk; market risk; operational risk.

1. Introduction

With the outbreak of the COVID-19 epidemic in 2020, economic development in many regions of the world has entered a cold winter, generating various types of risks and threats to the entire banking sector. To begin with, in terms of the global macroeconomic situation, the epidemic changed the world's economic structure in four main ways, according to reports released by the World OECD during the epidemic: changes in the labor market, changes in consumer demand, changes in trade costs, and updates in fiscal measures. And despite the aggressive efforts to cushion the impact of the epidemic by restructuring the economy, it has had an irreversible impact on global economic development. In 2020, total global real GDP fell by 2.3%; total trade fell by 6%. In particular, China, which was the first to experience the outbreak, is expected to see its economic growth fall to 5.6% in 2020 [1]. This is another decline in total global GDP since the US subprime crisis in 2008 and is much higher than the decline brought about by the economic crisis. The most direct negative impact of the new epidemic on the banking sector is the significant decline in bank profits. According to statistics from 1,000 commercial banks worldwide, in 2020, the worst year of the new epidemic, the return on assets (ROA) and the rate of change (ROC) in assets of commercial banks worldwide fell by an average of 3.02% and 0.34%, respectively, and the profit before tax fell by 19.2% [2].

From a regional perspective, the banking industry in Asia, where the outbreak control measures are better, receives relatively less impact from the outbreak. Despite the fact that in 2020, the average pre-tax profit of commercial banks in Asia Pacific still rose slightly, by 1.63% year-on-year. Return on average assets and change in assets had declines of 0.96 and 0.10 percentage points, respectively, which were relatively smaller in the global context. China, as the first country to have a COVID-19 outbreak, is likewise the country with the best and most timely precautions. Therefore, the banking sector in China has instead performed relatively well in terms of earnings in the full year 2020. In the global ranking of commercial banks' pre-tax profits, six of the top ten are from China, and all are up on their pre-tax profits for the same period. However, in regions where epidemic preparedness is not active and effective, such as North America and Europe, although they occupy the main position in the world banking industry and have well-developed banking risk management systems, the profitability has been affected to some extent by the epidemic due to the negligence of national policies.

According to the statistics of 2020, there are several banking giants in the U.S. whose pre-tax profits have declined significantly. Among them, JPMorgan Chase's pre-tax profit fell 20.5% year-

on-year; Citibank's pre-tax profit fell 41.3% year-on-year [3]. In addition, in the post-epidemic era of adjustment, the high inflation rate and high default risk brought about by the epidemic has led to the bankruptcy and collapse of some banks, and these cases will be discussed in detail below.

From the perspective of different subjects, on the banking side, banks' business was difficult to carry out and investment products faced great volatility due to the hindered macroeconomic development; on the depositors' side, the tightening economic situation made either companies or individuals to generate a risk-averse preference and were reluctant to enter into highly leveraged investment activities. In terms of financial product markets, the decline in stock markets and commodity price volatility have affected the banking sector. The fall in the stock market made banks' balance sheets unstable, which also made banks' credit risk higher. At the same time, the fluctuation of financial commodity prices also affected banks' investments and earnings, which made banks' performance affected to some extent. In addition, on the level of national policies, in response to the impact of the new crown epidemic, governments have adopted a series of fiscal and monetary policies. For example, governments have introduced policies such as loans and subsidies to help enterprises tide over the difficulties, which likewise increased the credit risk of banks. At the same time, central banks have also adopted a series of monetary policies, such as interest rate cuts and quantitative easing, which have also had an impact on the balance sheet and profits of the banking industry. One of the biggest impacts on the global economic situation is the continuous interest rate increase policy adopted by the Federal Reserve to cope with the impact on economic development in the post-epidemic era, which poses a huge systemic risk to the banking industry.

Based on the above issues, this paper will discuss the risk management of the banking industry in the context of the new crown epidemic in terms of the various risks faced by banks.

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.

As the U.S. chose to over-issue money in order to promote national consumption and boost the economy during the peak of the global epidemic, the inflation rate remained high. Later, in order to curb the high inflation rate, it chose to continuously raise interest rates, which led to the emergence of liquidity risk in the banking sector. One of the most typical cases is the collapse of Silicon Valley Bank in the United States. Silicon Valley Bank was the largest financial institution to fail since the subprime crisis in 2008 and the first FDIC-insured institution to fail since the current cycle of rapid and significant interest rate hikes by the Federal Reserve. Since its inception, Silicon Valley Bank has been committed to venture capital investment in technology startups, and more than 50% of the nation's technology companies have done business with Silicon Valley Bank in their initial financing activities [4]. In the high interest rate environment brought about by interest rate hikes, the financing environment for technology startups began to deteriorate, and in order to maintain normal R&D and business operations, they had to deplete their bank deposits, increasing the demand for cash withdrawals from their Silicon Valley Bank accounts. To cover the massive cash demand, Silicon Valley Bank had to sell financial assets from peer banks in exchange for temporary liquidity by selling them at low prices. In the process, the sale of bonds at low prices resulted in a loss of \$1.8 billion to Silicon Valley Bank alone. However, the move did not calm depositors' nerves, but only intensified their suspicion of Silicon Valley Bank. Founders Fund, Union Square Ventures and other well-known venture capital firms in the United States were deeply disturbed by this, and further instructed their portfolio units to withdraw money from Silicon Valley Bank, fueling a wave of withdrawals. On March 9, 2023, Silicon Valley Bank plunged more than 60%, triggering a sell-off in U.S. bank stocks. This series of losses directly led to the collapse of the bank [5].

The shrinking valuations of financial products or portfolios and the continued pressure of deposit outflows created problems for liquidity risk management for all major commercial banks around the

world. To fill the gap in cash requirements in the first place, banks had to sell assets at low prices; and the continued sale of assets at low rates of return would cause dissatisfaction and concern among investors. A commercial bank with a large number of deposits and a high sensitivity to interest rates, as well as short-term nature, is exposed to greater liquidity risk.

3. Credit Risk

Due to the spread of the new crown epidemic and the continued high volatility faced by financial products, the markets for stocks, futures and other products are facing more uncertainty and the leverage effect of investment or speculative transactions has become significantly greater, which has led to many companies and counterparties being unable to repay their loans on time and banks being exposed to the risk of credit default. In the case of Credit Suisse, for example, the bank's large losses were mainly caused by its dealings with Archegos Capital Management, a U.S. investment firm founded by Bill Hwang, a former money manager at Tiger Management, a family office. The family office. The firm invests in the stock market using a highly leveraged strategy, which involves borrowing large amounts of money to invest [6].

Credit Suisse reportedly provided Archegos with up to \$20 billion in leveraged financing, meaning that Archegos borrowed large amounts of money as it purchased large amounts of stock. However, due to the volatility of the stock price, Archegos was unable to meet its financial requirements with Credit Suisse and eventually defaulted. Credit Suisse was thus forced to reduce its position in the stock market and sold a large number of its stock holdings [7]. These operations resulted in billions of dollars in losses. In this case, Credit Suisse's positions were too concentrated and highly leveraged, making it unable to withstand the market risk and ultimately leading to large losses. In addition, Credit Suisse's risk management and internal control systems were flawed, making it difficult to identify and control risks. This incident directly led to the collapse of Credit Suisse, which was acquired by UBS for a consideration of 3 billion Swiss francs (about \$3.23 billion).

It should be noted that this is not the first time that Credit Suisse has suffered losses due to risk management issues. In the past few years, the bank has also suffered losses due to transactions with other companies, which raised questions about its risk management capabilities. This will be further explored in the subsequent reputation risk.

4. Market Risk

4.1. Interest Rate Risk

The bankruptcy of the Silicon Valley bank failures and the respective exposures faced by banks in the post-epidemic era, in addition to the banks' own asset-liability management deficiencies, are actually tied to the financial risk exposure resulting from the rapid rise in the short-end interest rates of U.S. debt following the Fed's interest rate hike.

Since 2021, the U.S. government has adopted quantitative easing policies for the national economy to compensate for the economic slowdown brought about by its mishandling of epidemic control, leading to its record high inflation. On March 22, 2023, the Federal Reserve's Federal Open Market Committee (FOMC) announced another 25 basis point increase in the target range for the federal funds rate, which was the ninth rate increase. This action, aimed at curbing inflation, has cut the nation's willingness to invest and spend, but it has also plunged banks into crisis.

The Fed's rate hike has undermined the financial stability of the global banking sector. Under the Fed's continued interest rate hikes, investors around the world tend to sell assets in other currencies and increase their holdings of U.S. dollar assets, and international capital quickly flows to the United States in a short period of time. There is a global shortage of dollar liquidity, and currencies such as the euro, the British pound and the Chinese yuan have depreciated, with the Japanese yen, which has always been regarded as a safe-haven currency, also experiencing a sharp depreciation. At the same time, interest rate hikes also raised the "risk-free rate" in disguise, reducing investors' appetite for

capital risk and causing global assets to depreciate. Among them, Google had to meet the financing needs of its startup-based customer base while facing asset impairment. The combination of multiple factors led to its eventual bankruptcy.

4.2. Reputation Risk

Commercial banks have a responsibility to support their customers during difficult times. If banks are seen as not providing enough support or being opportunistic during the pandemic, it could damage their reputation and lead to a loss of customers. Carrying on from the case of Credit Suisse above, its bankruptcy was not only due to losses from credit defaults, but also because Credit Suisse had been involved in frequent bribery and corruption cases in recent years in order to seek rewards, leading to damage to the bank's reputation, which in turn led to risks such as customer loss, loss of market trust, and financial losses. In October 2021, U.S. regulatory authorities alleged that, through the actions of its bankers, Credit Suisse fraudulently misled investors and violated U.S. bribery laws [8]. Credit Suisse settled the matter by paying \$175 million in criminal fines to the U.S. Department of Justice, \$99 million to the SEC, and \$200 million to U.K. authorities. In February 2022, data on 18,000 Credit Suisse subscribers was compromised, holding a combined total of more than \$100 billion. Hackers exposed the bank as providing money laundering assistance to criminal clients, including oligarchs, drug dealers and human traffickers. Among other things, it was revealed that a gang of cocaine traffickers in Bulgaria had been laundering money through Credit Suisse for years, with regulation claiming that the criminal activity in question dated back to 2004-2008, a period during which Credit Suisse had taken few anti-money laundering measures [9]. A series of actions such as these, which damaged the company's reputation, combined with the volatility of highly leveraged assets due to the epidemic, caused the bank to incur sustained losses.

5. Operational Risk

The epidemic has also led to various operational problems for many banks in the course of their operations. First, the epidemic prevents the normal conduct of physical economic activities and can lead to the risk of business interruption. Most commonly, bank branches, ATMs, and other business channels may be temporarily closed or have reduced hours of operation due to the presence of the case and regional controls, resulting in customers being unable to conduct normal banking operations. Second, commercial banks around the world have not yet officially stepped into the stage of conducting business entirely through the Internet, and a large portion of financial product transactions still require offline face-to-face drafting errors, which creates the risk of understaffing: affected by the outbreak, bank employees may be infected or quarantined, resulting in a shortage of bank staff to ensure normal business operations. In March 2020, the German Dresden Bank closed several branches due to employees infected with the virus, resulting in disruptions to customer service and the inability to conduct all types of asset transactions and storage operations [10]. In addition, the online business model forced upon them poses cybersecurity risks: the bank's cybersecurity is challenged by the large number of employees working from home. Hackers taking advantage of the outbreak could attack the bank's network, leading to the theft of customer funds or compromise of bank information, or even fraud and ethical corruption in certain under-regulated areas.

6. Shortcomings of Basel III Exposed in the Epidemic

The Basel Accord has been the most dominant and important regulatory standard for bank capital and risk in the global banking industry. Since its enactment, the Basel Committee has established three pillars to create a more forward-looking approach to risk management: minimum risk-based capital requirements, capital adequacy regulation and market-based regulation of the internal assessment process. And despite the iterations and refinements of the Basel Accord, it has a high

degree of universality and effectiveness in international capital management. However, during the New Crown epidemic, the protocol revealed a number of problems.

First, the Basel Accord relied too much on historical data and models [11]. During the epidemic, banks faced completely different risks and uncertainties than before, which historical data and models could not predict and respond to. For example, the epidemic led to a large number of business failures and individual job losses, and banks' exposure to non-performing loans increased significantly, but this was not considered by previous models. Secondly, the Basel Accord does not provide sufficient regulation of liquidity risk. During the epidemic, banks face great liquidity risks, such as massive withdrawals by firms and individuals and tight market liquidity. However, Basel3 stipulates that the liquidity coverage ratio (LCR) should be greater than 100% in the short term to cope with short-term liquidity shocks, but examples such as Silicon Valley Bank prove that the agreement is too broad and under-regulated in the context of the new crown epidemic, resulting in a lack of effective responses by banks when facing liquidity risks.

In addition, the regulatory approach of the Basel Accord relies too heavily on self-regulation. Banks have a certain degree of autonomy in complying with the agreement and are required to self-regulate and report. However, in an epidemic, banks are exposed to excessive risk and pressure, which may lead to lax self-regulation and further exacerbate risks. Finally, the Basel Accord's requirements for bank capital adequacy may be too stringent, which may result in banks having difficulty obtaining sufficient capital during an epidemic. For example, during an epidemic, banks face risks such as higher default rates, higher NPL ratios and lower profits, and need more capital to protect against risks. However, the Basel agreement requires banks to meet certain capital adequacy ratios, which may make it difficult for banks to obtain sufficient capital. In Basel3, the Tier 1 capital adequacy ratio floor for commercial banks has been adjusted from 4% to 6%, which undoubtedly further makes it more difficult for banks to manage during the epidemic. It shows that the epidemic has had a huge impact on the banking sector. 2020 saw an increase of \$1.5 trillion in non-performing loans in the global banking sector, reaching the highest level in history [12]. At the same time, banks' liquidity risk has increased significantly, with many banks requiring liquidity support from central banks to maintain operations. These figures reflect the regulatory shortcomings and inadequacies of the Basel agreement in the midst of the epidemic.

7. Conclusion

To date, although the impact of the epidemic has come to an end globally, his influence on the world economic situation is still ongoing. The Federal Reserve has no intention to officially stop raising interest rates, and the commercial banking industry is ready to face further interest rate hikes in anticipation of deposit outflows that have become a major concern for the entire U.S. banking industry and even the World Bank. In addition to interest rate risk and liquidity risk, which will have a direct impact, the other types of risks mentioned above are also enough to get banks into trouble. Responding appropriately to stress is a critical task for commercial banks. First, banks should enhance liquidity detection and stress testing by monitoring and forecasting cash flows on a daily basis, focusing on large depositors, deposit balances not covered by deposit insurance and credit lines. Increase stress testing scenarios and frequency through various scenario assumptions, such as deteriorating credit conditions, stagflation and possible central bank actions. Managers should enhance their assessment of concentration risk, and the correlation between interest rate risk, liquidity risk and capital. At the same time, managers should revisit the impact of non-core or volatile deposit leakage on liquidity, as well as key assumptions about deposits not covered by deposit insurance and broker-dealer agency deposits. Second, assess interest rate risk response strategies by using analytical tools such as duration, economic value of equity, and income sensitivity to revisit the basis for decisions on risk tolerance and hedging strategies. Banks appropriately upgrade their interest rate and liquidity risk models to incorporate tests of changes in asset and liability positions under different

scenarios, including consideration of changes in the fair value of bank account portfolios, rapid loss of less stable deposits, etc.

In addition, identify "depositors at risk", i.e., customers most likely to shift their available deposit balances to other areas of value retention, by analyzing price elasticities, correlations and other non-detectable triggers. At the same time, bank managers should focus instead on retaining depositors with high balances who are not covered by deposit insurance and reassuring them that the bank is in good financial standing; and on motivating these depositors with competitive pricing, such as offering additional money management, cards and other money market products to optimize customer relationships. Ultimately, banks need to improve their comprehensive risk management systems, clarify their risk governance structure, and strengthen risk monitoring and reporting. Optimize internal capital adequacy assessment procedures and conduct comprehensive and prudent identification and assessment of various types of Pillar 2 risks, including liquidity risk and interest rate risk in the banking book. At the same time, develop capital planning and capital management plans based on business plans and risk profiles, strengthen analysis and forecasting of capital adequacy, and strengthen the bond between finance, risk and capital. Conduct capital adequacy stress tests and convert capital shortfalls under light stress tests into components of Pillar II capital requirements.

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