Risk Assessment on Banks under Rising Interest Rates

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Abstract. This paper explores the critical role of the banking sector in the economy and society, with a focus on various risk dimensions affecting this industry. These dimensions include liquidity risk, credit risk, market risk, and systemic risk. The paper underscores the banking sector's significance for the national economy and financial stability, defining and explaining these risks' impact. The liquidity risk section delves into the definition, causes, and implications of liquidity risk, examining policies and measures taken by banks, especially in response to the challenges posed by the COVID-19 pandemic. Credit risk is explored through a case study of Credit Suisse, discussing the definition and consequences of credit risk and its potential role in bank bankruptcies. Market risk is analyzed with a focus on interest rate changes and their effects on banks, using the case of Silicon Valley Bank to illustrate how market risk can lead to bank failures. Systemic risk is explained, emphasizing its definition, causes, and significance to banks while also suggesting measures to avoid it. This paper concludes by summarizing the impact of these risks on the banking sector and offers recommendations for risk management and the future direction of the industry. Through case studies, it highlights the complexity of these risk dimensions and their crucial role in maintaining banking sector stability and overall economic well-being.

Keywords: Banks and Financial Institutions, Liquidity Risk, Credit Risk, Market Risk, Systemic Risk.

1. Introduction

The existence of the banking sector is vital to society and the economy as a whole, and it bears important responsibility for liquidity and economic growth. Banks serve as the financial backbone of a nation, facilitating the flow of capital, enabling economic transactions, and offering essential services to individuals and businesses. They play a pivotal role in channeling savings into investments, thereby fostering economic development and prosperity. This pivotal role underscores the significance of the banking sector as a linchpin of economic stability and growth.

However, the banking sector's importance is paralleled by the myriad of risks it faces. These risks, encompassing liquidity risk, credit risk, market risk, and systemic risk, pose continuous challenges to the industry. Liquidity risk pertains to a bank's ability to meet its short-term financial obligations, a factor crucial for ensuring smooth day-to-day operations and safeguarding depositor funds. Credit risk emerges from lending activities, and any defaults or non-performing loans can erode a bank's capital and profitability. Market risk arises from fluctuations in financial markets, including changes in interest rates and asset prices, impacting the value of a bank's holdings. Lastly, systemic risk represents the potential for a disturbance within the banking sector to spread throughout the broader financial system, causing a domino effect that could destabilize the entire economy [1]. The consequences of failing to manage these risks are not confined to individual banks or the banking sector. Indeed, the repercussions can be far-reaching, permeating throughout the entire economy and society. A failure in risk management can lead to bank crises, economic downturns, and financial instability, as witnessed during the global financial crisis of 2008.

Recognizing the significance of the banking sector and the potential ripple effects of risk mismanagement, this paper delves into these various risk dimensions from multifaceted perspectives. It meticulously examines the origins and manifestations of these risks, highlighting the potential impacts on the broader economy. Case studies of different banks are employed to illustrate real-world scenarios, shedding light on the complexities and challenges faced by the industry.

Moreover, this exploration underscores the pivotal role that effective risk management plays in maintaining stability within the banking sector and the broader economy. Governments can formulate

more informed regulations and decisions through comprehensive risk analysis, leading to a more resilient financial system. Investors can adapt their strategies and regain confidence in the sector, bolstering market stability. Ultimately, the entire economy and financial system can benefit from enhanced risk management practices that protect against unforeseen disruptions and crises. This paper aims to contribute to a deeper understanding of the intricate relationship between the banking sector and risk management, and its far-reaching implications on economic and societal well-being.

2. Liquidity Risk

In finance and banking, liquidity refers to the ability of an institution to repay the debt it has assumed. In contrast, liquidity risk is a risk that arises when an institution cannot obtain the funds needed to repay the debt in a timely manner, and can also indirectly indicate the possibility that a bank will not be able to repay the debt it has assumed [2]. Generally speaking, the liquidity risks of financial institutions such as banks are mainly caused by three factors. The first is market movements, which directly affect the value of the assets held by banks and their ability to monetize them quickly. The second is the confidence of investors and depositors. A decline in confidence or the large-scale withdrawal that may be triggered when investors turn pessimistic will also deteriorate banks' liquidity. Finally, it should not be ignored that implementing and adjusting policies may also exacerbate the liquidity risk of banks and other institutions in some periods of time, and of course, reducing liquidity risk is also a possible result.

Liquidity risk has a far-reaching impact on banks. As an institution that manages the inflow and outflow of funds, the existence of liquidity risk may have a negative impact on the income and funds of banks, resulting in a series of problems such as the operation of banks or the failure of some banks with the ability to repay debts, and even harm the entire financial system [3]. One of the more famous examples of a liquidity failure was the UK bank Northern Rock. In 2007, with the outbreak of the subprime mortgage crisis, Northern Rock Bank could not raise enough liquidity from the market due to its strategy of relying on a short-term funding market. As its financing channel was affected, it had to borrow from the Bank of England to ensure its liquidity. After the news of the bank's loan to the Bank of England was made public, it triggered a massive run on the bank's depositors, further aggravated the bank's liquidity crisis, and eventually led to the bankruptcy and nationalization of Northern Rock Bank.

In general, many strategies and policies address liquidity risk and the problems it creates. For central banks, lowering interest rates is a very common measure used to reduce liquidity risk. The reduction of interest rates reduces borrowing costs for enterprises and individuals, thus encouraging enterprises and individuals to increase investment, indirectly increasing bank deposits and loans and increasing liquidity. And with less return on saving, consumers would be more inclined to spend more, boosting economic activity. As for commercial banks, due to the reduction of borrowing costs, it is easier for them to obtain financing from the central bank to a certain extent so as to stabilize and ensure the liquidity of banks. The COVID-19 pandemic in 2019 has also had an impact on the liquidity risk management strategies of many companies and financial institutions. Marsh McLennan’s article points out that, in addition to the policy of lowering interest rates adopted by the US government, many other ways exist to help companies deal with liquidity instability in the wake of a pandemic [4]. One of the key things is to reduce the cost of claims and mortgages. This initiative can help companies reduce reserves and free up more funds for other purposes while increasing the financing capacity of enterprises and providing financial institutions with greater financial flexibility to better cope with liquidity pressures and reduce liquidity risks. In addition, some enterprises also choose to obtain funds by increasing debt financing and adopt more complete digital applications to monitor liquidity risks and other operations to reduce the impact of liquidity risks on financial institutions. More and more institutions may also adopt these operations in the future to avoid the impact of risk.

3. Credit Risk

At the same time, for financial institutions such as commercial banks, credit risk is also one of the major risks that banks need to evaluate. In essence, credit risk is the risk that banks must consider when borrowers or counterparties fail to fulfill their obligations on time, resulting in bank losses when issuing loans or signing contracts with borrowers. Generally speaking, banks will measure a contract from different perspectives, such as the average risk, the probability of failure to repay, and the average loss, to quantify the credit risk of a contract and make it controllable [5]. Credit risk management is a major factor in bank risk management, and higher credit risk will bring harm to banks. The first point is that when the loan cannot be repaid or the contract cannot be executed, the bank will likely suffer direct financial losses, the reduction of bank capital, and other problems, which will further deepen the harm to the bank's finance and the institution that manages the inflow and outflow of capital. The second point is that credit risk will have an impact on the profitability of banks [6]. In their report on credit risk and the rate of return of commercial banks, it is pointed out that banks with better credit risk management tend to have higher rates of return among American commercial banks. In contrast, bad debts and unpayable loans associated with credit risk will directly bring financial pressure to banks, thus affecting their profitability.

The most serious consequences of credit risk on banks may directly lead to the collapse or bankruptcy of commercial banks. Credit Suisse, a huge bank, was eventually acquired by its rival UBS for $3.2 billion, which is closely related to credit risk. First of all, when Archegos Capital Management collapsed in 2021, Credit Suisse suffered huge losses. Due to Archegos Capital Management's aggressive investment strategy and the leverage strategy of its manager, Bill Wong, the company lost its ability to fulfill its contract with Credit Suisse after the sell-off, and Credit Suisse ultimately lost about $5.5 billion in the event. At the beginning of 2023, due to the scandal, public opinion, the deterioration of the social environment and confidence, serious capital outflow, the statements of the shareholder Saudi National Bank, and various capital losses caused by the problems of credit risk control, Credit Suisse Bank declared bankruptcy. Its rival UBS Group finally acquired it under the coordination of the Swiss government. Credit risk in this event not only brought Credit Suisse's low price acquisition but also forced the Swiss government to forgive about 17 billion dollars of bonds issued by Credit Suisse Bank, causing bondholders to suffer huge losses and even affecting the entire financial market in the future.

In a guide to credit risk management at the end of April 2023, McKinsey also published a concept of five characteristics through simulation scenarios, perfecting risk limits, specifying forward-looking indicators, managing leverage, and agile strategies with flat structures, in order to overcome high inflation, low consumer confidence, and low-risk. Manage credit risk under the influence of multiple factors, such as geopolitical and economic instability [7]. In general, after the acquisition of Credit Suisse Bank, society, financial institutions, and regulatory agencies began to re-evaluate credit risk, and also changed some radical and bold lending strategies to a certain extent, and better monitored and managed credit risk after learning the experience of the harm of credit risk to commercial banks and other financial institutions.

4. Market Risk

As a kind of risk that can significantly impact commercial banks and other financial institutions, market risk is essentially the impact of macroeconomic events on investment and property loss caused by changes in market factors. Fluctuations in interest rates, stock prices, exchange rates, and other values, new monetary policies issued by central banks, geopolitical events, natural disasters or wars, and economic recessions are all potential factors that generate market risks [8].

Among the many factors that cause or affect market risks, the rise of interest rates is undoubtedly a very important and high-weight one, which will have far-reaching impacts on the financial market, the real economy, consumers, and the government. First of all, higher interest rates will affect enterprises’ and individuals' consumption and investment decisions. As mentioned above, higher

interest rates will make consumers more inclined to deposit funds in commercial banks to obtain higher returns. At the same time, the cost of loan investment will become higher, leading consumers to delay the purchase of major commodities that may require loans, including houses and vehicles. These moves will undoubtedly slow economic activity and lead to a recession, thus increasing market risks. Second, for financial markets, interest rates will hit fixed-income assets such as bonds. When interest rates rise, bonds with fixed interest rates become less attractive to investors, resulting in a negative correlation between interest rates and bond prices [9]. When bond prices fall, investors holding bonds may face capital losses, which aggravate market risks to a certain extent, and investors are worried about the uncertainty of the future. Finally, for the foreign exchange market and currency of a country, a higher domestic interest rate will attract the inflow of foreign capital and investment, which will increase the demand for the domestic currency and lead to the rise of the currency exchange rate, thus damaging the competitiveness of export products and the economic growth of the country and increasing market risks. Other influences that cannot be ignored also include the volatility caused by corporate financing, asset discounts and the profitability of financial institutions such as banks, thus changing the risk profile.

Due to the market risk to commercial banks losses and even bankruptcy examples are not uncommon, and in the past year, it has to mention Silicon Valley bank. Silicon Valley Bank is a commercial bank founded in 1983, focusing on providing financial services for innovative industries and start-up companies. Still, the impact of market risks and the incorrect management of risks by the management of Silicon Valley Bank led to the bankruptcy of this commercial bank in March 2023. Silicon Valley Bank had a large number of deposits and funds in the three years before the bankruptcy, and the management of the bank invested most of the funds and deposits in relatively low-risk bonds. However, with the policy of the Federal Reserve to raise interest rates in 2022 in order to cope with high inflation, the bonds held by Silicon Valley Bank are becoming riskier and riskier. In addition, as the negative correlation between bond prices and interest rates described above, the value of the bonds held by Silicon Valley Bank fell all the way, which eventually led to a loss of 1.8 billion US dollars in its bond-dominated investment portfolio and triggered a plunge in stock prices and crazy withdrawals by customers. The parent company of Silicon Valley Bank also filed for bankruptcy on March 17 due to risk management problems [10].

The example of Silicon Valley Bank provides a good illustration of the market risk caused by interest rate changes. However, market risk is often not related to a specific financial institution or enterprise but is a common risk faced by the entire market. Therefore, asset or investment diversification cannot eliminate market risk. However, effective asset allocation, hedging with derivatives, or holding cash and cash equivalents can still help financial institutions mitigate the impact of market risks to a large extent.

5. Systemic Risk

In addition to the above three kinds of risks, systemic risk has the biggest impact on the financial system and the overall national economy, which is fundamentally different from liquidity, credit, and market risk. Systemic risk refers to the possibility of instability or collapse of the financial system caused by events at the level of financial institutions or financial infrastructure involving the entire financial system, and generally speaking, the scale of financial institutions that cause systemic risk is quite large. It can have a high degree of impact on the entire system. These companies are generally called too big to fail [11]. The concept of systemic risk began to be paid attention to around the end of the last century. At the same time, many policy agreements and legal provisions came into being to avoid and solve the harm caused by systemic risk to the whole society, among which the Basel Agreement has to be mentioned.

The Basel Committee on Banking Supervision formulated the Basel Agreement. The first edition of the Basel Agreement appeared in 1988 with the purpose of strengthening the international banking supervision standards, ensuring the stability of the banking system, and solving the problem of

inconsistent banking supervision standards in different countries. Its content mainly focuses on credit risk management and capital adequacy. In 2004, Basel II, which built on the old rules, included three key elements: minimum capital requirements, market discipline, and regulation. Compared with Basel 1, Basel 2 clearly proposes that banks' capital reserves should equal at least 8% of their risk-weighted assets. At the same time, it adopts a three-level regulatory capital classification method. Also, it details the rules of risk weighting and risk rating so that the supervision of systemic risks becomes more comprehensive [12]. However, Basel II can be considered a failure in the 2008 financial crisis. Lall Ranjit pointed out in his article that the failure of Basel II was mainly due to a large amount of information asymmetry and the fact that Basel was actually controlled by a small group of international banks so that the latercomers could only follow the decisions of the former [13].

Thus, in 2010, drawing on the shortcomings and shortcomings of the financial crisis and Basel II, Basel III was formally ratified, which increases the amount and quality of capital that commercial banks must hold while at the macro level proposing a set of measures to reduce and address systemic risks to the financial system at the global level [14].

6. Conclusion

In general, the risk management of the banking industry is a key link to financial stability, including liquidity risk, credit risk, market risk, and systemic risk, which will bring different potential impacts on commercial institutions and the financial system, from causing commercial banks to lose money or go bankrupt, to even causing financial and economic damage. It may be caused by irregular risk management or careless attention. Although various uncertainties and changes are gradually increasing in today's financial and economic environment, banks and governments gradually attach more importance to risk management and introduce many related policies and strategies to better manage risks, thus stabilizing commercial institutions and financial systems and weakening the impact of various risks. In the future, the banking industry will encounter many challenges and opportunities. The rapid development of technology, especially new technologies such as artificial intelligence, big data, and blockchain, has brought unprecedented opportunities for risk management, providing innovative tools and strategies. However, these technologies also introduce new risks, which require the banking industry to constantly update its risk management models to adapt to this rapidly changing environment.

References

[1] Major risks for Banks (2023) Corporate Finance Institute. Available at: https://corporatefinanceinstitute.com/resources/career-map/sell-side/risk-management/major-risks-for-banks/.

[2] Drehmann, M., & Nikolaou, K. (2013). Funding liquidity risk: Definition and measurement. Journal of Banking and Finance, 37 (7), 2173–2182.

[3] Arif, A., & Anees, A. N. (2012). Liquidity risk and performance of banking system. Journal of Financial Regulation and Compliance, 20 (2), 182–195.

[4] Kahn, C. M., & Wagner, W. (2021). Liquidity provision during a pandemic. Journal of Banking and Finance, 133, 106152.

[5] Konovalova, N., Kristovska, I., & Kudinska, M. (2016). Credit Risk Management in Commercial Banks. Polish Journal of Management Studies, 13 (2), 90–100.

[6] Saeed, M., & Zahid, N. (2016). The impact of credit risk on profitability of the commercial banks. Journal of Business and Financial Affairs, 5 (2).

[7] Pathak, K., Rougeaux, C. and Singh, H. (2023) Navigating economic uncertainty: New guidance for credit risk management, McKinsey & Company. Available at: https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/navigating-economic-uncertainty-new-guidance-for-credit-risk-management.

[8] Von La Hausse, L., Rohleder, M., & Wilkens, M. (2016). Systemic interest rate and market risk at US banks. Journal of Business Economics, 86 (8), 933–961.

[9] U.S. Bank. (2022). How rising interest rates affect bonds. Available at: https://www.usbank.com/investing/financial-perspectives/market-news/interest-rates-affect-bonds.html

[10] Gobler, E. (2023) What happened to Silicon Valley Bank? Available at: https://www.investopedia.com/what-happened-to-silicon-valley-bank-7368676.

[11] Feinstein, Z., Rudloff, B., & Weber, S. (2017). Measures of systemic risk. Siam Journal on Financial Mathematics, 8 (1), 672–708.

[12] Shakdwipee, P., & Mehta, M. (2017). From Basel I to Basel II to Basel III. International Journal of New Technology and Research, 3 (1), 263367.

[13] Lall, R. (2009). Why Basel II failed and why any Basel III is doomed. GEG working paper.

[14] King, P., & Tarbert, H. (2011). Basel III: an overview. Banking & financial services policy report, 30 (5), 1-18.