

Risk Assessment on Bank of America

Lujing Yang*

College of Liberal Arts, University of Minnesota-Twin City, Minnesota, USA

*Corresponding author: yang7908@umn.edu

Abstract. This paper analyzes the risks faced by Bank of America and the strategies it adopted for risk management in 2021 during the COVID-19 pandemic. Three major risk categories were particularly focused on: liquidity risk, credit risk, and exchange rate risk in this paper. The study examined the bank's risk exposure in these areas, assessed the effectiveness of its risk management practices, and evaluated the impact of market volatility on its financial performance. Based on an analysis of Bank of America's 2021 annual report, this article provides insights into the bank's overall risk position and emphasizes the importance of effective risk management practices in the banking industry. As for the results, Bank of America mitigated the impact of COVID-19 through various risk management strategies but still faces risks in the current unstable economic environment. Additionally, incomplete data and information in the report require further analysis to evaluate Bank of America's risk management situation.

Keywords: Bank industry, liquidity risk, credit risk, market risk, exchange risk.

1. Introduction

Banks are an important part of the financial system, first and foremost responsible for payment and settlement functions and for providing various payment tools. They are also the main deposit and lending institutions, accepting deposits and providing loans to promote the flow of funds and economic development. In addition, banks invest and manage risks in various ways, including investing in stocks, bonds, and foreign exchange, and managing risks on loans to help protect depositors' funds. Finally, central banks and other government agencies usually cooperate with banks to implement monetary policy. Banks help central banks control inflation, maintain exchange rate stability, etc., by adjusting deposit and loan interest rates and injecting or withdrawing funds from the market. As a financial institution, banks' main business is to absorb deposits and lend, which involves various risks such as credit risk, market risk, operational risk, and liquidity risk. Without an effective risk management system, banks' risks could result in insolvency, leading to economic instability.

Risk management is crucial for banks. Firstly, risk management is an important function of the banking industry, aimed at identifying, evaluating, and mitigating the risks faced by financial institutions. Effective risk management is essential to ensuring the stability and resilience of banks and the entire financial system. The banking industry itself operates in a highly regulated and dynamic environment, with risks such as credit risk, market risk, operational risk, liquidity risk, and systemic risk always present. These risks could cause serious consequences for banks, including reputational damage, financial losses, and even bankruptcy. Therefore, risk management is essential for banks to survive and thrive in a competitive and rapidly changing market.

Secondly, risk management in the banking industry is of paramount importance because it can ensure that banks can predict, identify, and control risks in their operations. The goal of risk management in the banking industry is to ensure that banks can remain sound in different market environments and economic conditions while taking on appropriate risks. This requires banks to have a range of risk management measures and tools, including risk identification, measurement, and monitoring, as well as establishing a reasonable risk management framework and policies. Risk management can also help banks gain an advantage in the market, increase investor confidence, and improve bank reputation and profitability.

The 2008 financial crisis highlighted the importance of risk management in the banking industry. Many financial institutions suffered significant losses due to excessive risk-taking and a lack of appropriate risk management measures. As a result, the banking industry refocused on risk

management, with regulatory agencies and policymakers implementing new regulations and guidelines to enhance the resilience of financial institutions. Many banks began to seek reasonable risk management methods to ensure that they could survive in risky situations. For example, financial institutions with greater risk oversight from the board of directors before the crisis were less likely to be affected by sovereign debt crises [1]. In 2021, the financial system faced new risks due to the impact of COVID-19, which made fund flows more difficult. In this situation, many businesses and individuals were unable to repay their loans on time, resulting in an increase in loan default rates and a decline in the asset quality of financial institutions. At the same time, global stock markets suffered severe setbacks, with stock indices in many countries reaching historic lows, causing significant losses to investors. In order to stabilize the economy and the financial system, central banks in many countries adopted interest rate reduction measures, which led to a decrease in borrowing costs, but also squeezed the profit margins of banks.

This article takes Bank of America as an example, based on its 2021 annual report, aiming to analyze the risks faced by Bank of America under the impact of COVID-19 and its risk management methods, in order to analyze the importance of risk management in the banking industry and its role in ensuring the stability and resilience of financial institutions [2].

2. Liquidity Risk

Liquidity risk is a common risk for banks in their operations, and it needs to be carefully managed because an increase in interest income can increase liquidity risk, indicating that banks with growing credit activities tend to increase liquidity risk. If there is an unexpected shock, the bank will be trapped in a liquidity shortage, increasing liquidity risk [3]. In theory, the negative impact of liquidity on bank capital indicates that bank shareholders have increased the pressure on bank managers to increase profitability. Based on this, bank managers convert liquid assets into illiquid long-term high-yield loans and investments [4].

The 2021 annual report of Bank of America emphasizes the bank's focus on maintaining sufficient levels of liquidity to ensure its ability to meet the short-term debt. The bank's liquidity position is reported to be strong, with a liquidity coverage ratio (LCR) of 137% and a net stable funding ratio (NSFR) of 116%, both exceeding regulatory requirements. The LCR measures the bank's ability to withstand 30-day stress scenarios, while the NSFR measures the proportion of stable funding sources to the required stable funding amount. These indicators indicate that the bank has sufficient levels of liquid assets to pay its short-term debt and is compliant with regulatory requirements. The annual report also provides information on the bank's liquidity risk management framework, which includes identification, measurement, monitoring, and control of liquidity risk. The bank's liquidity risk is assessed through stress testing, scenario analysis, and other quantitative and qualitative measures. The bank also has an emergency financing plan and holds a diversified portfolio of liquid assets, including cash, securities, and committed credit lines, to ensure access to funding sources in times of stress.

In addition to these measures, Bank of America has implemented various liquidity risk management measures to further reduce potential risks. These practices include maintaining a sound governance structure, including a dedicated liquidity risk management committee and a chief liquidity officer, as well as daily monitoring of liquidity risk. The bank also regularly assesses its funding and liquidity risk profile and has implemented a risk appetite framework to guide its liquidity risk management decisions. However, in terms of liquidity risk management measures, there is still room for Bank of America to further develop efficient loan recovery and loan restructuring policies to reduce the amount of loan loss provisions if loans are found to be non-performing over a period of time. Commercial banks should ensure credit growth in their business areas by introducing innovative loan products and identifying potential [5].

Although Bank of America's liquidity position is sound, the bank faces competition from other major players in the industry who also place a strong emphasis on liquidity risk management. For

example, JPMorgan Chase has implemented similar liquidity risk management strategies, maintaining a large buffer of high-quality liquid assets to meet potential liquidity demands. Wells Fargo also emphasizes that liquidity risk management is a core component of its risk management framework, with a particular focus on stress testing and scenario analysis. Citigroup also emphasizes liquidity risk management and invests in technology and infrastructure to support its liquidity management capabilities. Therefore, although Bank of America has a considerable number of measures in place to address its liquidity risk, it still has room for further development compared to its peers or is not necessarily at an advantage.

3. Credit Risk

Credit risk refers to the risk that the borrower or debtor may not be able to pay the principal and interest according to the contract during the repayment period. In other words, credit risk is the possibility of loss due to the counterparty's inability to pay on time and in full in financial transactions. Credit risk typically occurs when the borrower defaults. Default refers to the borrower's inability to fulfill the repayment obligation as stipulated in the contract, which may be due to financial problems, poor management, or other unforeseeable circumstances. For financial institutions, credit risk is an important risk because it may lead to the impairment of their loan assets, thereby affecting their profitability and stability. Therefore, financial institutions typically control credit risk by evaluating the credit quality of borrowers and formulating corresponding risk management strategies. These strategies include limiting loan amounts, establishing repayment plans, requiring collateral, etc., to ensure that borrowers can repay on time and minimize credit risk.

Bank of America's 2021 annual report shows that the bank faces significant credit risk exposure due to its lending activities. Credit quality is critical for the bank's maintenance, as a decline in the quality of loans granted would harm the bank, such as a decrease in the level of profits generated [6]. The bank's loan portfolio is diverse, covering multiple areas, including consumer banking, commercial banking, and global banking. The report states that the bank's credit risk management framework aims to effectively identify, quantify, monitor, and manage credit risk.

There are currently two trends in credit risk portfolios, one of which is the impact of the COVID-19 pandemic. The pandemic has increased credit risk in certain industries, such as hotels and leisure, which have been severely affected by lockdowns and travel restrictions. In response, Bank of America has implemented multiple relief plans, including loan deferments and modifications, to help its clients cope with the financial impact of the pandemic. Another trend in credit risk management portfolios is the increasing use of technology to assess credit risk. Bank of America has invested heavily in technology to improve its credit risk management framework, including using artificial intelligence and machine learning algorithms to accurately assess credit risk. This technology enables the bank to better identify potential credit risks and proactively address them.

At the same time, Bank of America has established a risk appetite framework that outlines its risk tolerance levels, risk limits, and risk management processes for various credit risk exposures. This framework helps the bank effectively identify, measure, and manage credit risk exposures. In terms of credit risk assessment, Bank of America performs comprehensive credit risk assessment processes for all new credit requests and regularly reviews its existing credit risks. The credit risk assessment process involves a detailed analysis of various factors such as borrower creditworthiness, collateral, industry trends, and macroeconomic factors. The bank also has a diversified credit portfolio that spans different regions, industries, and product types, which helps to reduce credit risk concentration. Bank of America implements a robust credit monitoring system that tracks credit risk in real time. The bank also conducts stress tests to evaluate the potential impact of adverse economic scenarios on its credit portfolio. In addition, the bank uses a range of credit risks mitigation techniques such as credit insurance, credit derivatives, and collateral to reduce credit risk exposure.

Overall, Bank of America's credit risk management strategy and practices appear to be structurally sound and comprehensive, with a focus on effectively identifying and managing credit risk exposures.

The bank's risk appetite framework, credit risk assessment processes, and credit monitoring system are key advantages in reducing credit risk exposure.

4. Market Risk

Market Risk refers to the risk posed by financial assets or positions held due to price fluctuations or other market changes in the financial market. Market risk primarily arises from market volatility and uncertainty, including the risk of fluctuation in the prices of various assets such as stocks, bonds, currencies, commodities, real estate, etc. Market risk is mainly composed of several factors. Firstly, stock market volatility is one of the main sources of market risk. Fluctuations in stock prices may be caused by various factors such as company financial reports, market sentiment, macroeconomic indicators, etc. Secondly, interest rate risk is the risk posed by changes in interest rates on financial assets or positions. Changes in interest rates may lead to fluctuations in bond prices, thereby affecting the value of the bond portfolio. Exchange rate fluctuations are also a type of market risk, which affects investors holding foreign exchange assets. Changes in exchange rates may lead to fluctuations in the value of foreign exchange assets. Lastly, commodity price fluctuations are caused by various factors such as changes in supply and demand, natural disasters, etc. These factors may lead to fluctuations in commodity prices, thereby affecting the value of the investment portfolio in the commodity market.

Financial institutions typically control market risks by developing risk management strategies. These strategies include diversifying investment portfolios, using financial derivatives to hedge risks, setting risk limits, and monitoring risks. For investors, strategies to control market risks include diversifying investment portfolios, strengthening market research and analysis, and establishing stop-loss strategies. Regardless of how risk is measured, the forces of the loan and deposit markets have a stable and monotonic negative impact on risk. The impact is greater on asset risk and is unrelated to ship rental value and capital ratios. The impact of bank regulatory quality on default risk tends to be reduced, while the regulatory effect of deposit insurance protection is mixed [7]. In addition, higher regulatory power increases bank risk, although the impact of capital tightening and activity requirements indices on bank risk is small. The increase in bank risk is exacerbated by banks with stronger market-driven forces under the leadership of stronger regulatory agencies [8].

However, Bank of America has many ways to manage the market risks it faces, starting with various hedging strategies. The company uses interest rate swaps, options, and futures contracts to hedge interest rate fluctuations. It also uses foreign exchange forwards, options, and futures contracts to hedge foreign currency exchange rate fluctuations. In terms of credit risk, Bank of America has a diversified loan portfolio, which helps to reduce its overall credit risk exposure. The company also uses credit derivatives such as credit default swaps to hedge specific credit risk exposures. In addition, Bank of America uses commodity derivatives such as futures contracts and swaps to hedge price fluctuations in commodities such as oil and natural gas. Secondly, asset valuation is important. The report notes that the bank's assets are primarily comprised of loans, debt securities, and equity securities, and the bank uses a variety of valuation techniques to ensure accuracy and fairness of valuation. The bank's loan portfolio is evaluated based on a variety of factors, including borrower credit quality, collateral for secured loans, and the economic conditions of the industry and geographic region in which the borrower operates. The bank also uses a range of market-based and income-based methods to value its debt and equity securities, including using discounted cash flow models and market multiples.

Overall, the bank's asset valuation practices appear to be sound and reflect best practices in the banking industry. However, the bank acknowledges inherent uncertainties and risks in asset valuation, particularly in volatile market conditions or situations with limited market liquidity. The bank employs a range of risk management practices, including stress testing and scenario analysis, to identify potential risks and appropriately mitigate them.

5. Exchange Risk

Exchange Risk refers to the risk faced by investors who hold foreign currency assets or external debts, which may cause changes in the value of their local currency due to exchange rate fluctuations. Exchange rate risk mainly comes from currency exchange rate fluctuations between different countries or regions. For multinational companies or international trading enterprises, exchange rate risk may have a significant impact on their profitability, capital structure, and market competitiveness. For example, a multinational company sells products in a foreign market and earns foreign currency income, but due to a drop in the local currency exchange rate, the value of its foreign currency income converted to the local currency drops, which affects the company's profitability.

To control exchange rate risk, investors and companies can adopt various strategies, such as using financial derivatives such as futures, options, and foreign exchange forward contracts to hedge against exchange rate fluctuations. At the same time, it is necessary to diversify the investment portfolio, including investing in multiple countries and regions, to reduce exchange rate risk in a single region or country. It is also necessary to strengthen market research and analysis to better understand the impact of various factors on exchange rate fluctuations. In addition, risk limits should be established and risk monitoring should be carried out to ensure that the risk of the investment portfolio is within the acceptable range. The changes in the interest rate and exchange rate risk can explain the observable characteristics of banks, which are related to the interests of stakeholders who want to manage their risk exposure and monitor exposure changes [9]. Banks view currency fluctuations as an additional risk for several reasons. Firstly, banks face regulatory lending limits aimed at reducing their investment portfolio credit risk. Secondly, the availability of bank credit is highly dependent on macroeconomic conditions. Thirdly, credit rating agencies differentiate between foreign and local currency credit ratings when assessing foreign exchange exposure [10].

As a global financial institution, Bank of America is susceptible to fluctuations in exchange rates due to its international operations and assets and liabilities denominated in foreign currencies. In 2021, the bank's financial performance was significantly impacted by exchange rate fluctuations, particularly due to the COVID-19 pandemic and its effects on the global economy. In its 2021 annual report, the bank emphasized that foreign currency exchange rate movements had a negative impact on its revenue and net income. Specifically, the bank reported that the strengthening of the U.S. dollar against foreign currencies had a \$1.5 billion adverse effect on its revenue. In addition, the bank's foreign currency assets and liabilities were also affected by exchange rate fluctuations. The bank holds a significant amount of foreign currency-denominated assets, including loans and investments that are subject to exchange rate fluctuations. The bank also has foreign currency-denominated liabilities, including deposits and borrowings, which increase its exposure to exchange rate risk. Bank of America's international operations primarily involves lending, investing, and trading activities in foreign markets. These activities generate foreign currency income and incur foreign currency expenses, which are then translated into U.S. dollars for reporting purposes. Fluctuations in foreign currency exchange rates affect the bank's financial performance and bring about exchange rate risk. In 2021, Bank of America's international business generated \$12.8 billion in revenue and held \$281 billion in foreign currency assets and \$272 billion in foreign currency liabilities.

Bank of America's international operations and foreign currency-denominated assets and liabilities do indeed expose the bank to exchange rate risk. However, the bank has implemented various risk management strategies to mitigate these risks. The effectiveness of these strategies depends on market conditions and exchange rate movements. Bank of America manages its exchange rate risk through various strategies, including natural hedging, financial hedging, and operational hedging. The bank uses natural hedging by matching foreign currency-denominated assets with foreign currency-denominated liabilities in the same currency, thereby reducing the risk of exchange rate fluctuations. The bank also uses financial hedging, such as forward contracts, options, and swaps, to manage its exchange rate risk. Bank of America also implements operational hedging by establishing local currency accounts, pricing products in local currencies, and managing its cash flows in local currencies.

6. Conclusion

In summary, the 2021 annual report of Bank of America provides valuable insights into the bank's risk analysis and management strategy. Through its analysis of credit risk, liquidity risk, exchange rate risk, and other aspects, it is evident that Bank of America has implemented comprehensive risk management measures to mitigate potential risks and ensure sustainable growth. The report also demonstrates the bank's ability to adapt to dynamic market conditions, particularly during the COVID-19 pandemic. The report emphasizes the bank's strong capital position, efficient cost management, and diversified business model as its main strengths. However, in an uncertain economic and regulatory environment, the bank still faces challenges. Therefore, it is crucial for Bank of America to continue to strengthen its risk management practices and focus on the long-term sustainability of its business.

For the analysis in this article, because it is based on Bank of America's 2021 annual report, there may be some information that the bank does not provide in detail, such as Discounted Cash Flow. Therefore, the analysis of the risks that Bank of America faces under the impact of the COVID-19 pandemic in this article may not be complete. If a more complete analysis is needed, more comprehensive and detailed information is required. Additionally, Bank of America does not provide a detailed explanation of how its risk management system works in the annual report. For example, the report states that it diversifies loan risk, but there is no further presentation on how risk diversification is carried out. As a result, the Bank of America report may have actually been significantly impacted by the COVID-19 pandemic but was to some extent concealed in the report. Therefore, further data analysis is required to make a more comprehensive evaluation of Bank of America's risk management.

References

- [1] Dupire, M., Haddad, C., & Slagmulder, R. The Importance of Board Risk Oversight in Times of Crisis. *Journal of Financial Services Research*, 2021.
- [2] 2021 Annual Reports & Proxy Statements. Bank of America Corporation. <https://investor.bankofamerica.com/annual-reports-and-proxy-statements>, last accessed 2023/3/15.
- [3] Trang, L., Nhan, D., Hao, N., & Wong, W. Does Bank Liquidity Risk Lead to Bank's Operational Efficiency? A Study in Vietnam. *Advances in Decision Sciences*, 2021, 25(4): 46-88.
- [4] Roman, A., & Şargu, A. C. The Impact of Bank-specific Factors on the Commercial Banks Liquidity: Empirical Evidence from CEE Countries. *Procedia. Economics and Finance*, 2015(20): 571–579.
- [5] Islam, K., Alam, M., & Hossain, M. Impact of Credit Risk Management on Bank Performance: Empirical Evidence from Bangladesh. *South Asian Journal of Management*, 2019, 26(2): 32-64.
- [6] Pratiwi, E. Y., & Mukhlis, I. Effect of market risk, liquidity risk, credit risk, and foreign exchange on bank profitability in normal conditions and covid-19 conditions. *Sciend EBooks*, 2022, 114–125.
- [7] Forssbäck, J., & Shehzad, C. The Conditional Effects of Market Power on Bank Risk-Cross-Country Evidence. *Review of Finance*, 2015, 19(5): 1997-2038.
- [8] Danisman, G., & Demirel, P. Bank risk-taking in developed countries: The influence of market power and bank regulations. *Journal of International Financial Markets, Institutions & Money*, 2019, 59: 202-217.
- [9] Kasman, S., Vardar, G., & Tunç, G. The impact of interest rate and exchange rate volatility on banks' stock returns and volatility: Evidence from Turkey. *Economic Modelling*, 2011, 28(3): 1328-1334.
- [10] Kim, Y., Lee, J., & Yi, H. Is Foreign Exchange Risk Priced in Bank Loan Spreads? *Review of Quantitative Finance and Accounting*, 2021, 57(3): 1061-1092.