Proceedings of the 3rd International Conference on Business and Policy Studies
DOI: 10.54254/2754-1169/77/20241595

Research on Risk Management of Financial Derivatives in Chinese Commercial Banks

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Abstract: Financial derivatives play an important role in modern financial markets, and they are widely used in a variety of financial activities, including risk management, investment, and asset pricing. However, with the continuous expansion and increasing complexity of the financial derivatives market, the associated risks are increasing, especially for financial institutions such as Chinese commercial banks. Therefore, the study of risk management in this area has become crucial since it involves the stability of the financial system as well as the security of the national economy. This paper examines the risk management of financial derivatives in Chinese commercial banks and concludes that there are legal, operational, liquidity, credit, and market risks associated with financial derivatives in commercial banks. In order to avoid these risks, Chinese commercial banks should reasonably and clearly limit the authority of traders and establish an effective constraint mechanism. At the same time, a system should be developed to disclose risk information on a large scale, thereby further enhancing the credit monitoring of the financial market and continuously improving the laws and regulations in favor of management.

Keywords: Chinese Commercial Banks, Financial Derivatives, Risk Management, Market Regulation.

1. Introduction

Although Chinese commercial banks started their financial derivatives business relatively late and in the initial stage, the overall scale of their business transactions has been increasing dramatically year by year. Among them, joint-stock commercial banks, such as Pudong Development Bank and Industrial Bank, have the most obvious increase in the transaction scale of the financial derivatives business. However, the number of the types of financial derivatives transactions of Chinese commercial banks is still relatively small. Under the influence of the China Banking and Insurance Regulatory Commission (CBIRC), there are only about 10 types of financial derivatives for commercial banks, mainly including the type of exchange rate, the type of interest rate, and other types (e.g., equity, commodities, etc.) [1]. As the complexity of the market continues to increase and the diversity of the financial derivatives market expands, commercial banks must respond to these changes and develop appropriate risk management strategies to address market risks. Commercial banks may be exposed to market risks, such as interest rate risk, exchange rate risk, and stock market risk, as a result of their financial derivative investments. Therefore, effective risk management strategies are essential to minimize these risks.

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Looking back at the global financial crisis of 2008, the inappropriate use of financial derivatives was cited as one of the causes of the crisis, which emphasized the need for commercial banks to be more prudent in their use of financial derivatives while strengthening their risk management [2]. While there are generic risk management approaches, commercial banks usually need to develop individualized risk management strategies based on their specific risk exposures and investment objectives. In the Chinese regulatory environment, how to balance the development of risk management strategies between compliance and regulatory requirements is an important issue. In addition, further research is needed to explore how to develop more accurate and reliable risk measurement tools and monitoring methods, and how to use them in a high-frequency trading environment.

This paper analyzes the risks and their causes of financial derivatives in commercial banks and proposes risk management strategies related to financial derivatives in Chinese commercial banks. The research provides useful insights for the future development of risk management of financial derivatives in Chinese commercial banks, promoting them to manage and reduce risks more effectively, ensuring the stability of the financial system, and playing a positive role in national economic security.

2. Risks of Financial Derivatives of Commercial Banks and Their Causes

Under the trend of the rising scale of financial derivatives transactions of commercial banks, management risks are also becoming more and more prominent. As an important means for commercial banks to hedge and avoid risks, financial derivatives play an important role in promoting commercial banks to increase the liquidity of funds, and at the same time, they also have an important value in the improvement of commercial banks' profitability and optimization of asset allocation. While financial derivatives play an essential part in promoting risk avoidance and the high-quality development of commercial banks, they also bring certain risks to commercial banks. Therefore, the relationship between financial derivatives and commercial banks can be described as the one between a boat and water, since "water can carry a boat, but it can also overturn a boat". The risks of commercial banks' financial derivatives mainly include credit, market, operation, liquidity, and legal risks. In addition to the characteristics of financial derivatives, macroeconomic factors and micro-mechanisms are also important reasons for the formation of risks. From the perspective of the characteristics of financial derivatives, since they are derived from the underlying assets, they will be affected by the price changes of the underlying assets, and the price fluctuations are more random, thus bringing risks. Meanwhile, the endless innovations in the types of financial derivatives, which are highly flexible, will also increase the risk [1].

2.1. Legal Risk

Legal risk refers to the legal defects in the terms of derivative financial contracts. Failure to perform due to legal invalidity, the tax system, or the bankruptcy system is associated with the risk of legal reasons (e.g., change) [3]. One of the deficiencies presented by the global universal countries is the problem of legal-related risks in the financial sector of commercial banks. In order to promote the reduction of the risk factors of the legal aspects of financial derivatives, developed countries in the West have gradually established a more complete system of legal systems to effectively control derivatives. In the transaction process of financial derivatives, if the bank has serious economic losses, it may be caused by the customer's failure to fulfill the contractual obligations in violation of the law.

2.2. Operational Risk

Operational risk refers to the risk caused by computer malfunction or market prediction judgment error, imperfect operation procedure, lack of internal management, and other factors in the process of buying and selling operations of derivatives [3]. Although there are now many different types of financial derivatives, more commercial banks have not set up research and development departments and management departments specialized in providing services for financial derivatives. Without a specialized financial market planning department, it is impossible to effectively prevent and control problems arising from the operation of financial derivatives.

2.3. Liquidity Risk

Liquidity risk refers to the risk that the head office of a commercial bank assigns tasks to front-line employees during the circulation of financial derivatives, and the employees must market the products within a certain period of time, or else the commercial bank will suffer significant economic losses [4]. As an innovative financial instrument, the liquidity risk of financial derivatives is very high, especially for financial derivatives that have just been developed and listed for a short period of time, which involve fewer traders, and the market is not deep enough. Besides, there is usually no counterparty to undertake the transaction if the market is volatile and unstable. The liquidity risk of over-the-counter derivatives is higher than that of the over-the-counter market because they are usually only suitable for large clients and are not liquid in the market. There is a higher likelihood of liquidity risk arising, causing irreparable losses for all aspects of the bank's operations. Funding is also extremely important in traded products, and the liquidity risk, including funding liquidity risk, affects the operational risk.

2.4. Credit Risk

Credit risk, also known as default risk, is the risk caused by the default of one of the two parties to a transaction [3]. Credit risk arises in the process of trading products between the customer and the commercial bank, and it has a two-way character, therefore, both may have a certain credit risk. Credit risk also includes the subsequent risk after the transaction between the two parties. Credit risk is characterized by its asymmetry, cumulative, unsystematic, and endogenous features. Since the two parties to the transaction have asymmetry in access to information, the two parties to the transaction are also decentralized. Credit risk varies with time and changes in the price of the underlying asset, which are all irregular. Therefore, compared with traditional credit risk, the credit risk of derivatives is more complex and more difficult to examine and predict.

2.5. Market Risk

Market risk is closely related to financial information. Financial information is hidden, and the difficulty of financial market management is closely related to the disclosure of hidden financial information [4]. The access to financial information is more abundant, the possibility of triggering financial market risk is smaller, and the degree of the management difficulty of the financial market is relatively low. On the other hand, if financial information in the market is scarce or not detected in a timely manner, the difficulty of managing financial markets increases, and financial market risks arise. The difficulty for holders of financial derivatives to discover intrinsic financial information relevant to the financial market can also lead to the emergence of market risk.

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3. Risk Management Strategies Related to Financial Derivatives in Chinese Commercial Banks

3.1. Establishment of Effective Constraint Mechanisms

It is necessary to clearly limit the authority of traders, adopt a reasonable and clear way to stipulate these authorities, and establish an effective constraint mechanism for the purpose of avoiding operational risks [5]. Appropriate management of front-line traders is essential to help ensure the safety of non-generic funds as well as risk control at the completion of trades. It is important to separate front-office trading operations and back-office risk management so that multiple benefits can be gained, including the establishment of effective disciplinary mechanisms [6]. First, there is a need to define exactly what each trader is authorized to do, in terms of the types of trades they can make, the dollar limits, and the timing of the trades. These authorities must be allocated according to the experience, skills, and background of the traders to ensure that they have enough autonomy but do not take excessive risks [7]. Second, monitoring mechanisms need to be in place to track each trader's trading activity in real time. This includes monitoring their positions, how long they have held them, profit and loss, etc. Monitoring can help detect abnormal behavior or risks in time so that control measures can be taken in a timely manner.

3.2. Scaling up the Development of a System for Risk Information Disclosure

The development of a system of risk information disclosure on a large scale is expected to eliminate operational risks that could have been avoided, thus contributing to the healthy and rapid development of the financial derivatives market. A scaled-up risk disclosure system can effectively help avoid liquidity risks, and once a comprehensive scaled-up disclosure system is established, further development of the financial derivatives market will be possible. Firstly, more comprehensive and transparent risk disclosure standards need to be established. These standards should cover a wide range of financial derivatives, including options, futures, swap contracts, etc., to ensure that all risk factors in the market are properly managed and disclosed. This could be done by drawing on international best practices while customizing them to the characteristics of China's own market.

3.3. Further Improvement in Credit Monitoring in Financial Markets

The scientific and monitoring performance of financial market credit monitoring is constantly improving, which can promote the healthy development of commercial banks' financial derivatives and improve the quality and scientificity of the bank’s credit monitoring. In order to ensure that the development of financial derivatives is benign, a high degree of attention should be paid to the research and development of financial derivatives and the promotion of specific markets, and the managers are supposed to be able to understand the relevant situation of the financial derivatives carried out at any time. Improving the science of credit monitoring means adopting more sophisticated techniques and tools to monitor credit risks in the market, including the credit risk for financial derivatives [7]. This can be achieved by building more sophisticated credit rating models, improving data analytic techniques, and using artificial intelligence and machine learning. To ensure a healthy financial derivatives market, regulators should closely monitor the development and marketing of financial derivatives. This means that regulators need to develop and enforce appropriate regulations to ensure compliance and transparency of new products. Managers also need to keep an eye on the development of the financial derivatives market to understand the market situation and the potential risks that may exist in the market.

3.4. Continuously Improving Laws and Regulations Conducive to Management

Sound laws and regulations can help regulators better address management risks and development risks. This includes establishing a regulatory framework, setting out regulatory responsibilities, and ensuring that regulators have sufficient powers and resources to effectively oversee the market. In addition, laws and regulations can set out risk management requirements, including capital adequacy and risk disclosure, so as to ensure that financial institutions are capable of managing risk. Well-established laws and regulations contribute to the healthy and stable development of the market for optimal results [6]. They can ensure fair competition and transparency in the market, encourage the investor’s confidence, and attract more capital to the market. In addition, laws and regulations can encourage financial innovation and product development, providing the market with more choices.

4. Conclusion

This paper examines the risk management strategies of financial derivatives in Chinese commercial banks. The author discusses the expanding and complex trends in the financial derivatives market and the various risks that commercial banks face in this market, including legal risk, operational risk, liquidity risk, credit risk, and market risk. This study also focuses on how to develop effective risk management strategies to mitigate these risks, with a particular emphasis on compliance challenges in the Chinese regulatory environment. Since the interactions and complexities between different risk factors have not been fully considered in this paper, future research can examine the linkages between them in-depth and integrate knowledge from different fields into the study, including finance, economics, mathematics, and computer science, to provide a more comprehensive analysis. For example, the impact of China's financial regulatory policies on commercial bank risk management can be researched, and how to better harmonize risk management practices with regulatory requirements can be studied. In addition, emerging financial innovations in the financial derivatives market, such as digital currencies and blockchain technology, which may also have an impact on risk management, can be explored.

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