Proceedings of ICEMGD 2024 Workshop: Innovative Strategies in Microeconomic Business Management
DOI: 10.54254/2754-1169/114/2024BJ0161

Systemic Risks in the Derivatives Market: Origins, Impacts, and Mitigation Strategies

Shang Gao[1,a,*]

[1]*College of Economic and Management, Beijing University of Technology, Beijing, 100020, China*
a. 13521610125@emails.bjut.edu.cn
**corresponding author*

Abstract: Derivative markets play an indispensable role in the contemporary financial system. The global financial markets have been repeatedly riddled with turbulence instigated by derivative trading in recent years, underscoring the urgency and necessity for in-depth study in this field. The subject matter of this paper is to delve into systemic risk in the derivative markets, including its genesis, impact, and mitigation strategies. This paper aims to proffer valuable insights and recommendations to policymakers and financial practitioners through comprehensive analysis. To achieve this objective, this study utilizes research methodologies such as literature review, analysis of historical cases, and empirical analysis. The findings suggest that the systemic risk in the derivative markets primarily stems from high leverage operations, market information asymmetry, and complex financial product structures. These risks became particularly prominent during the financial crisis, leading to an upsurge in market volatility, liquidity crises, and a domino collapse of financial institutions. Based on these findings, the paper proposes a gamut of strategies to mitigate systemic risk, including enhancing market transparency, optimizing risk models, augmenting capital requirements, and fostering international regulatory cooperation. Additionally, technological innovations such as blockchain and big data analysis are considered to hold significant potential in enhancing market transparency and improving the accuracy of risk prediction.

Keywords: Systemic Risks, Derivatives, Impacts

1. Introduction

This research paper explores the systemic risks in the derivatives market, their origins, impacts, and mitigation strategies. Derivatives are an essential element of modern finance, providing a means for hedging risk and speculating on future price movements. However, the complexity and interconnectedness of the derivatives market also make it a potential source of systemic risk. The importance of this topic stems from the significant role derivatives play in global finance and the potential for systemic risk to trigger financial crises.

1.1. Case Description

Long-Term Capital Management (LTCM) was a hedge fund known for using complex derivatives and high leverage. Its failure in 1998, triggered by Russia's debt default, threatened to cause a cascade of defaults due to its interconnectedness with other financial institutions. The systemic risk led to

DOI: 10.54254/2754-1169/114/2024BJ0161

decreased market liquidity and increased volatility. The Federal Reserve Bank of New York had to coordinate a bailout to prevent a wider crisis, highlighting the systemic risk posed by complex derivatives and high leverage.

1.2. Analysis on the Problem

The analysis reveals that systemic risks in the derivatives market often originate from a combination of factors, including excessive leverage, lack of transparency, regulatory gaps, and the failure of risk management practices. The impacts of these risks are far-reaching, potentially leading to the failure of financial institutions, disruptions in financial markets, and broader economic downturns.

1.3. Suggestion

Mitigating systemic risk in the derivatives market requires a holistic approach that includes improving transparency, enhancing risk management practices, filling regulatory gaps, and reducing excessive leverage. Specific strategies may include the use of central clearing parties, mandatory reporting of derivatives positions, stress testing of financial institutions, and the implementation of macroprudential regulatory policies.

In conclusion, systemic risks in the derivatives market pose a significant threat to financial stability. Understanding their origins and impacts is crucial for developing effective mitigation strategies. This research contributes to the literature by providing a comprehensive analysis of systemic risk in the derivatives market and suggesting potential strategies for reducing this risk. The findings underscore the importance of continuous monitoring and management of systemic risk in the derivatives market to safeguard financial stability.

2. Prologue

Systemic risk in the financial derivatives market is one of the paramount challenges facing today's financial landscape. With the rapid expansion of the derivatives market, its significance within the financial system has grown substantially, concurrently escalating systemic risk. Systemic risk refers to the potential for widespread disruptions within the entire financial market or system, which could precipitate a financial crisis and have profound repercussions on the overall economy.

Examining the systemic risk inherent in the financial derivatives market allows for a deeper understanding of its origins, impacts, and mitigation strategies. This knowledge is invaluable for financial regulatory bodies and market participants in their efforts to preempt and address systemic risks, thereby ensuring the stability and sound development of financial markets. Consequently, selecting this research topic is of substantial theoretical and practical importance, offering critical insights that promote the stability and sustainable growth of financial markets.

3. Literature Review

This paper's literature selection is meticulously curated across four distinct aspects. Firstly, it includes comprehensive introductions and explanations of financial derivatives. These sources elucidate the development trajectory, content, and real-world applications of financial derivatives, thereby providing readers with a clear understanding and awareness of their concept. Secondly, the paper focuses on literature pertaining to the systemic risk associated with financial derivatives, aiming to offer an in-depth comprehension of the origins and impacts of these risks. The third aspect involves selecting case studies that illustrate severe consequences resulting from systemic risks in derivatives. These cases enhance the understanding of the gravity and implications of systemic risk within this

DOI: 10.54254/2754-1169/114/2024BJ0161

domain. Lastly, the paper incorporates literature that proposes mitigation and preventive strategies to avert significant losses due to systemic risk when utilizing derivatives.

4. Main Body

4.1. Financial Derivatives and Derivatives Markets

Financial derivatives are financial instruments derived from underlying financial assets. These derivatives do not entail direct ownership but rather represent the right or obligation concerning future price movements of the underlying assets. The primary types of financial derivatives include futures, options, swaps, and forward contracts.

The main categories of financial derivatives encompass futures, options, swaps, and forward contracts. Futures are standardized contracts obligating the buyer and seller to transact a specified asset at a predetermined price at a future date, typically traded on an exchange to hedge risks or speculate. Option contracts grant the buyer the right, but not the obligation, to purchase (call option) or sell (put option) a specified amount of an underlying asset at a predetermined price in the future, and they can be traded on exchanges or over the counter (OTC) markets. Swaps are financial agreements wherein parties consent to exchange a series of future cash flows, with the most common types being interest rate swaps and currency swaps. Forward contracts are non-standardized agreements in which the buyer and seller agree to trade a particular asset at a future date for a price set today, usually traded in OTC markets and customizable per the parties' requirements.

The derivatives market is the marketplace for trading financial derivatives and comprises two main segments: exchange-traded markets and over-the-counter markets. In exchange-traded markets, standardized derivatives such as futures and options are traded on formal exchanges. These markets are rigorously regulated, providing higher liquidity and transparency. In OTC markets, participants trade directly without going through an exchange. OTC derivatives, such as forward contracts and certain swaps, can be tailored to meet the specific needs of the trading parties, though they generally lack transparency and can involve more complex risk management.

Derivatives markets play a pivotal role in modern financial systems, utilized for risk management (hedging), investment and speculation, price discovery, and enhancing market efficiency. However, due to the complexity and potential high risks involved in derivatives markets, participants must possess adequate knowledge and risk management capabilities, and regulatory bodies must effectively oversee the markets to mitigate systemic risks.

4.2. Systemic Risk

Systemic risk refers to the danger that a risk event within a segment of the financial system could precipitate the collapse or severe malfunction of the entire system. This risk is not confined to individual institutions or markets; it has a broad reach, potentially impacting the entire financial system and extending to the real economy. A distinguishing characteristic of systemic risk is its pervasive propagation and domino effect.

4.3. The Origins of Systemic Risk

The principal reasons why financial derivatives markets generate systemic risk lie in their complexity, leverage effect, interconnectivity of market participants, and information asymmetry, among other factors. Derivative transactions typically involve high leverage, signifying that investors can control a substantial amount of assets with minimal capital. This high leverage exposes market participants to significant potential losses during price fluctuations. For instance, if market prices fluctuate adversely, investors might suffer losses exceeding their initial investment, culminating in insolvency.

DOI: 10.54254/2754-1169/114/2024BJ0161

Such a scenario could trigger a domino effect during large-scale market volatility, leading to financial distress for multiple market participants simultaneously, thereby engendering systemic risk.

Many derivative structures are complex, making valuation and understanding challenging. This complexity and opacity contribute to information asymmetry, potentially preventing market participants from accurately assessing risks. During market disruptions, this opacity can exacerbate panic, leading to market malfunction. For instance, during the 2008 financial crisis, the risks associated with numerous complex mortgage-backed securities and credit default swap products were severely underestimated, ultimately sparking a systemic crisis.

Financial institutions and market participants are closely intertwined through derivative transactions. The collapse of a single institution could set off a chain reaction, impacting the stability of other institutions. For example, AIG's substantial CDS contracts plunged it into trouble during the 2008 financial crisis, posing a significant risk to the global financial system. Transactions in the derivatives market are often concentrated among a few large financial institutions. If these institutions encounter trouble, it could have a significant impact on the entire financial system. For instance, when Lehman Brothers declared bankruptcy in 2008, its vast derivative contracts triggered a chain reaction, causing severe volatility in global financial markets.

Derivative transactions also involve counterparty credit risk, the risk that the trading counterpart cannot fulfill their contractual obligations. If a major counterparty defaults, it could trigger a series of cascading defaults, leading to systemic risk. While central counterparty clearinghouses alleviate this issue to some extent, they cannot eliminate credit risk. During periods of market turbulence, the derivatives market might experience liquidity droughts, leading to impaired trading and further intensifying market volatility and systemic risk. For instance, during periods of market panic, investors might simultaneously attempt to close out positions, leading to a rapid depletion of market liquidity and extreme price volatility.

4.4. Mechanisms and Development of Systemic Risk

The genesis of systemic risk involves a multitude of interconnected causes. It is typically triggered by one or more catalytic events, such as the collapse of major financial institutions, market crashes, or significant economic occurrences like sovereign debt crises. Such trigger events often initiate a chain reaction, rapidly propagating through the financial system via the interconnections between financial institutions and the interactions of market participants. For instance, the default of one institution can precipitate financial distress in others, leading to further defaults and market volatility. This chain reaction can erode market participants' confidence, resulting in market panic. Investors may simultaneously withdraw funds and liquidate assets, exacerbating market volatility and liquidity crises. Ultimately, market panic and the ensuing chain reaction can cause partial or total dysfunction of the financial system, manifesting as bank runs, market freezes, and credit market collapses.

The development of systemic risk is the outcome of multiple sequential processes. During the risk accumulation phase, risks begin to build up within certain parts of the financial system or specific financial institutions. This accumulation may stem from factors such as excessive leverage, asset price bubbles, credit expansion, or high investment concentration. At this stage, the risks may not be apparent, leading market participants to either underestimate or ignore potential hazards. Systemic risk typically erupts due to a triggering event or series of events, which might include economic recessions, the failure of significant financial institutions, political instability, or natural disasters. These events alone may not suffice to cause a systemic crisis, but they can act as catalysts that accelerate the manifestation of risks when the financial system is already vulnerable.

Following a trigger event, risk begins to disseminate from the initial localized area throughout the entire financial system. This dissemination can occur through various channels, including the debt relationships between financial institutions, the panic-driven behavior of market participants, and

DOI: 10.54254/2754-1169/114/2024BJ0161

sharp declines in asset prices. The interconnectedness and interdependence of financial institutions play a crucial role in this process, enabling the rapid spread of issues from one institution to others. As risk further propagates, multiple institutions within the financial system may simultaneously encounter financial difficulties, leading to a freeze in credit markets and significant asset price declines. In such scenarios, the normal functioning of the financial system is threatened, and economic activity may be severely disrupted due to financial market turmoil.

To mitigate the economic damage caused by systemic risk, governments and regulatory authorities often implement emergency measures, including providing liquidity support, enacting bailout plans, and lowering interest rates. These actions aim to restore market confidence, stabilize financial markets, and prevent the collapse of key financial institutions. Post-crisis, a series of financial system reforms and regulatory overhauls are typically undertaken to reduce the likelihood of future systemic risks. These reforms may include enhancing financial regulation, increasing the transparency of financial institutions, and improving risk management practices.

4.5. The Impact of Systemic Risk

Systemic risk can precipitate a loss of confidence in the financial markets, triggering a precipitous decline in asset prices, a drying up of liquidity, and potentially a collapse in market trading mechanisms [1-4]. For instance, markets such as equities, bonds, and foreign exchange may experience significant volatility. Essential financial institutions like banks, insurance companies, and investment funds may face bankruptcy or severe distress. This can set off a chain reaction, further affecting other financial institutions and market participants.

The materialization of systemic risk can lead to a tightening of credit, a reduction in consumption and investment, thereby instigating an economic recession or even a more severe economic crisis [5]. Unemployment rates rise, corporate bankruptcies increase, and economic growth slows or turns negative. Businesses facing financial difficulties may be unable to make necessary investments and expansions, leading to a decrease in productivity and a weakening of economic vitality.

In response to systemic risk, governments and central banks may be forced to take emergency measures, such as injecting capital to rescue financial institutions, lowering interest rates, and implementing quantitative easing. These measures can increase government debt, which in the long run may lead to higher taxes or inflation. The government may need to increase fiscal expenditure to stabilize the economy and society, further inflating the fiscal deficit and national debt burden [6].

Due to the close ties in the global financial markets, systemic risk often spreads across borders, leading to global financial market turmoil and a global economic recession. For example, the 2008 financial crisis originated in the United States but quickly spread worldwide. The instability of the global economy may lead to a decrease in international trade and cross-border investment, further dragging down global economic growth [7,8].

Economic recession and corporate bankruptcies can lead to mass unemployment, increasing poverty and social inequality. Economic hardship and uncertainty may incite social unrest, increase crime rates, and even lead to social upheaval and political instability.

Systemic risk events can lead to a crisis of public trust in the financial system and regulatory institutions, which in the long run can affect the stability and efficiency of the financial markets. To guard against future systemic risks, governments and regulatory agencies may adjust financial regulatory policies and macroeconomic policies, potentially having long-term impacts on financial markets and economic activities.

If the systemic risk originates from a collapse in the real estate market, it could lead to a significant drop in property prices, affecting homeowners and real estate developers. Fintech companies may face funding difficulties and a lack of market confidence, affecting their development and innovative capabilities.

DOI: 10.54254/2754-1169/114/2024BJ0161

4.6. Systemic Risk Mitigation and Resolution Measures

Numerous strategies exist for averting systemic risk. By diversifying one's investment portfolio, allocating funds across various asset classes, industries, regions, and financial instruments, the impact of fluctuations in a single market or economy on the entire portfolio can be mitigated. A robust risk management system should be established, which includes continuous risk assessment, monitoring and control, as well as regular analysis and early warning of market trends, credit risk, liquidity risk, etc. By doing this, one can better grasp the direction of risk. Maintain ample liquidity reserves and a reasonable leverage ratio to deal with situations of financial strain. Companies should ensure sufficient cash flow to cope with potential financial crises. Financial institutions should comply with relevant regulatory requirements, such as capital adequacy requirements, stress tests, etc., to enhance their own stability. New financial tools and strategies, such as insurance and derivatives, can be explored to help transfer and diversify risk.

There are also numerous resolution measures that can be adopted in the event of systemic risk. In times of systemic risk, government and central banks may need to take emergency measures such as providing liquidity support, lowering interest rates, implementing fiscal stimulus policies, etc., to stabilize the financial market and economy. Rescue plans may need to be implemented for key financial institutions or important industries to prevent their collapse from triggering a domino effect throughout the system. For financial institutions that cannot be rescued, they should be orderly handled through restructuring or liquidation procedures to minimize the negative impact on other market participants. After a crisis, it is usually necessary to review and reform the financial regulatory framework to increase transparency, strengthen supervision, and reduce the likelihood of similar crises in the future. Due to the globalization of financial markets, systemic risks often cross-national borders. Therefore, international cooperation, including information sharing, policy coordination and joint response measures, is crucial for managing and resolving systemic risks.

4.7. Case Study

4.7.1. Company Overview

A renowned example of systemic risk in the derivatives market is the 1998 crisis involving Long-Term Capital Management (LTCM). LTCM, an American hedge fund, was established in 1994 by John Meriwether, former Vice President of Salomon Brothers, and prominent financial and economic scholars including Nobel laureates Myron Scholes and Robert C. Merton.

4.7.2. Crisis Development

LTCM employed highly leveraged strategies, seeking profits in the global bond market through hedging and arbitrage trading. Initially, LTCM achieved immense success, its high returns attracting substantial investment. However, the landscape shifted with the advent of the Asian financial crisis in 1997 and the Russian financial crisis in 1998. These events sparked a significant increase in global market volatility, causing severe losses in some of LTCM's investment strategies.

The issue with LTCM resided in its use of extreme leverage ratios (capital to debt ratio), implying that even minor market reversals could result in substantial losses. By 1998, LTCM was facing enormous losses, its capital rapidly dwindling, threatening the stability of the entire financial system. Given LTCM's tight connections with major banks and financial institutions, and its substantial positions in multiple markets, its potential collapse instigated panic in the global financial market.

DOI: 10.54254/2754-1169/114/2024BJ0161

4.7.3. Government Intervention and Outcome

To prevent a financial system collapse, the Federal Reserve Bank of the United States orchestrated a bailout, requesting fourteen major banks and securities companies to form a consortium, collectively providing approximately $3.6 billion to support LTCM, thereby averting a potential domino effect from its rapid liquidation. This rescue mission staved off an immediate crisis, whilst also prompting widespread concern and regulatory reform regarding the derivatives market and hedge funds employing high leverage strategies.

4.7.4. Analysis

The failure of LTCM serves as a classic case study on systemic risk in the derivatives market, demonstrating that even top-tier financial and mathematical geniuses can underestimate market risk, and how high leverage and complex financial instruments can amplify these risks, potentially jeopardizing the stability of the entire financial system. The case illustrates the rapid and profound impact of systemic risk propagation and the potential outcomes of a chain reaction, highlighting the urgency of implementing effective measures swiftly in the face of systemic risk. In this case, timely government intervention and the establishment of a rescue plan prevented a domino effect in the derivatives market, proving to be a precise and effective measure, offering valuable lessons for dealing with systemic risk issues.

4.8. Risks and challenges in the application of financial derivatives

4.8.1. Market risk

The volatility risk of financial derivatives market refers to the fluctuation of the price of financial instruments due to changes in market factors. This volatility can be influenced by a variety of factors, including macroeconomic indicators, market sentiment, political events, and other market interactions. The price of financial derivatives is often closely related to the price fluctuations of the underlying assets (such as stocks, bonds, commodities, etc.). Therefore, the volatility of the underlying asset market directly affects the volatility of the derivatives market. In addition, factors such as market sentiment, lack of liquidity, macroeconomic data releases and policy changes can also cause market volatility. High volatility can lead to dramatic changes in derivative prices, making it difficult for investors to predict and manage risk, increasing potential losses. For institutional investors, high volatility can lead to increased margin requirements, further impacting liquidity management. In response, market participants can manage market risk through hedging strategies, the use of volatility indices (such as the VIX), and diversification. In addition, financial models and pricing tools, such as Black-Scholes models, can help assess and manage risk.

4.8.2. Credit risk

Credit risk is the risk that a counterparty will fail to fulfill its contractual obligations. This is particularly important in the case of financial derivatives, where derivatives contracts are usually bilateral agreements involving the credit standing of both parties. In derivatives trading, credit risk mainly comes from the default risk of the counterparty. For example, in forward and futures contracts, if one party fails to deliver the underlying asset or make settlement payments on time, the other party will face losses. There are many ways to manage credit risk, including using credit default swaps (CDS), requiring counterparties to post collateral, setting credit limits, and conducting credit assessments. Central counterparty clearing (CCP) is also an effective credit risk management mechanism that reduces the impact of individual counterparty defaults through centralized clearing.

DOI: 10.54254/2754-1169/114/2024BJ0161

In credit risk assessment, financial institutions usually use credit rating, credit scoring model and default probability model to evaluate the credit risk of counterparties. It is also necessary to regularly monitor and review the financial position and credit ratings of counterparties.

4.8.3. Operational risks

Operational risk refers to the risk of loss due to internal processes, people, systems, or external events. In financial derivatives trading, operational risk can arise from a variety of factors, such as trading errors, system failures, legal risks, etc. Trading errors are manual input errors, mistransmission or misunderstanding of trading orders, which can lead to significant losses. The use of automated systems, while reducing human error, may also introduce new technical risks. A system failure is a trading system outage, network failure, or data error that may result in a transaction not being executed or executed incorrectly, resulting in potential financial loss and reputational risk. Legal and compliance risk means that failure to comply with laws and regulations, internal policies or contractual terms may result in legal disputes and fines. Ensuring compliance requires robust internal controls and audits. For operational risk management, financial institutions can manage operational risk by establishing sound internal control systems, conducting regular risk assessments and audits, using advanced technology solutions, and strengthening staff training.

4.8.4. Regulatory challenges

The complexity and globalization of the financial derivatives market make the regulation face many challenges. Effective regulation is essential to maintain market stability and protect investors' interests.

Cross-border regulatory harmonisation is one of the challenges. Because of the global nature of the financial derivatives market, cross-border transactions and regulatory arbitrage problems are prominent. National regulators need to strengthen cooperation and coordination to develop unified regulatory standards and information sharing mechanisms. Improving market transparency is one of the core objectives of regulation. Requiring market participants to disclose trading information, positions and risk exposures can help regulators monitor market dynamics and identify potential risks in a timely manner.

Regulation of systemically important financial institutions (SIFIs) is also important. Because large financial institutions are so important in the derivatives market, their default could trigger systemic risks. Strengthening capital requirements, liquidity management and risk control for SIFIs is the focus of regulation. Central counterparty Clearing (CCP) refers to the promotion and regulation of central counterparty clearing mechanisms, which help reduce credit risk and systemic risk. Regulators need to ensure that CCPS have adequate capital and liquidity, and that effective risk management systems are in place.

Therefore, for policy recommendations, it is recommended that regulators strengthen the monitoring and analysis of the financial derivatives market and regularly release market risk assessment reports. At the same time, financial innovation and the development of risk management tools are encouraged to enhance the risk management capabilities of market participants [9-10].

5. Conclusion

This paper has delved into the systemic risks inherent in the derivatives market, tracing their origins, impacts, and possible mitigation strategies. The study has revealed that these risks emanate from the interconnectedness of market participants, the complexity of derivative products, and the lack of transparency in the market. The impacts of systemic risks are far-reaching, with the potential to precipitate financial crises and disrupt the functioning of financial markets. However, the paper also

suggests mitigation strategies, including the adoption of central clearing parties, improved regulatory oversight, and the implementation of risk management practices.

The findings of this research carry significant business value, especially for participants in the derivatives market. Understanding the origins and impacts of systemic risks can help market participants make informed decisions and adopt appropriate risk management strategies. Furthermore, the suggested mitigation strategies can aid in the development of more robust and resilient financial markets, thereby promoting stability in the broader economy. The research also resolves the problem of lack of understanding of systemic risks in the derivatives market, contributing to the body of knowledge in the field of financial risk management.

Despite these significant findings, the study is not without limitations. The research primarily relied on secondary data, which could limit the depth of the analysis. The use of primary data, such as interviews or surveys with market participants, could have provided more detailed insights into the topic. Furthermore, the study didn't make any model. In more far-reaching studies, relevant models can be built to carry out more diversified and specific studies.

In terms of future studies, there is room for more granular research on systemic risks in different types of derivatives markets, such as options, futures, or swaps. Additionally, future research could employ primary data collection methods, such as surveys or interviews, to gain a deeper understanding of the perceptions and behaviors of market participants regarding systemic risks. This would enrich the source of data and enhance the reliability of research results. Overall, this study opens up avenues for further exploration into the complex and critical area of systemic risks in the derivatives market.

References

[1] *Yaxin Yao, Tao Wang, Sisi Jiang, et al. A Review of the Development of Financial Derivatives in China [J]. Business Observer, 2023, 9(35): 102-107+116.*

[2] *Jiaqian Cheng. Analysis of Systemic Financial Risk Based on Financial Derivatives [J]. Shanghai Commerce,2022(02):80-81.*

[3] *Yufan Liu, Jun Dai. Analysis of Systemic Financial Risk Based on Financial Derivatives [J]. Hebei Enterprise, 2020(06): 61-64. DOI: 10.19885/j.cnki.hbqy.2020.06.027.*

[4] *Ziyu Li. Risks and Risk Control of Financial Derivatives [D]. Tianjin University, 2012.*

[5] *Han Yunqiu. Analysis of the correlation between financial derivatives and financial crises [D]. Shandong University, 2017.*

[6] *Xinhong Liang. Research on Business Risks and Countermeasures of Financial Derivatives [J]. Contemporary Petroleum and Petrochemicals, 2022, 30(08): 11-15.*

[7] *Hang Zhou. Risk Assessment and Risk Prevention Strategies for Quantitative Investment in Financial Derivatives [J]. Economic Outlook of the Circum-Bohai Sea, 2021(05): 29-31. DOI: 10.16457/j.cnki.hbhjjlw.2021.05.014.*

[8] *Jinfeng Zhang. Case Analysis of the American International Group (AIG) Crisis [J]. Times Finance, 2019(14): 108-109+132.*

[9] *Yue Zhu. Research on Risk Management of Financial Derivatives in China's Banking Industry—Based on Case Studies of Credit Suisse Bank and Bank of China [J]. Zhejiang Finance, 2022(06): 38-51.*

[10] *Yu Xin. Economic reflections on the bankruptcy of Bahrain Bank [J]. Financial Economics, 2019(10):86-88. DOI:10.14057/j.cnki.cn43-1156/f.2019.10.035.*