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The Shock of Emergencies on Financial Markets and Its Countermeasures

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Abstract: In recent years, the frequent occurrence of major emergencies and their potential impact on the financial market have brought great challenges to the stability and development of the global economy. In this context, it has become an urgent issue to explore how major emergencies affect the financial market and take corresponding measures to deal with them. Through literature research and analysis, this paper concludes the impact of natural disasters, accidents and disasters, public health emergencies and social security emergencies on the financial market respectively, clarifies the transmission path of the impact including the social level, the real economy level and the policy level, and puts forward suggestions for the construction of financial emergency management. That is, to improve the precise prevention and control system, optimize the domestic market environment and the rule of law of financial emergency management rights. The research results are helpful to maintain the stability of the stock market and the overall situation of economic development in major emergencies.

Keywords: Emergencies, Financial market, Risk management.

1. Introduction

In the past two decades, the frequent occurrence of major emergencies has promoted emergency management into people's vision. Public health emergencies such as SARS and COVID-19, natural disasters such as the Wenchuan earthquake and typhoon Mangkhu, or geopolitical wars have all taken a huge toll on people's lives and property. According to the United Nations, disasters in the past 20 years have cost the world $2.97 trillion in economic losses. Major emergencies not only affect the normal survival of organizations and individuals in the affected areas, but also affect the performance of entire financial markets and economic operations. As an important link in the modern economic system, the financial market plays an important role in the economic growth and prosperity. It is an urgent research topic to clarify how major emergencies affect the financial market and the financial emergency management measures.

Based on this, this paper attempts to explore the impact of major emergencies on the financial market and the countermeasures. Specifically, it can be decomposed into the following three sub-questions: 1) What are the specific impacts of major emergencies on the financial market? 2) What is the transmission path of major emergencies affecting the financial market? 3) How to achieve financial emergency management?

In order to answer the above research questions, this paper specifically analyzes the impact of natural disasters, accidents and disasters, public health emergencies and social security emergencies

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on the financial market through literature research, and analyzes the transmission path from the social level, the real economy level and the policy level, and then puts forward some suggestions for financial emergency management. This paper not only helps to summarize the law of the impact of major emergencies on the financial market, to achieve rapid response and precise control of financial market risks, but also helps regulators to grasp the dynamic trend of risks between markets, fully grasp the operation mechanism of each market and take emergency measures to ensure the stable operation and development of the financial market and the overall economy.

2. The Shock of Emergencies on Financial Markets

2.1. The Specific Impact of Natural Disasters on Financial Markets

Natural disasters mainly include flood disasters, drought disasters, meteorological disasters, fire and earthquake disasters, Marine disasters, major biological disasters, etc. It is generally believed that natural disasters will have a negative impact on the economic growth, industrial output, political stability and other aspects of the affected areas. Disaster losses can be reflected in the capital market and affect the decision-making of enterprises. For example, the impact of natural disasters has strong sectoral differences -- floods may have a large impact on agriculture and insurance industries, but a small impact on technology or service industries. This sectoral variability can lead to different rises and falls in stock markets across sectors. Specifically, the specific impact of natural disasters on financial markets can be divided into the following three aspects:

Natural disasters can reduce short-term returns in financial markets. Based on the study of natural disasters from 1970 to 2003, Noy found that the adverse impact of climate disasters on the macro economy was short-lived [1]. By studying the impact of investor sentiment on stock returns in the Wenchuan earthquake, Shan and Gong found that the closer the investors are to the disaster area, the more likely they are to be affected by pessimism, and the more significant the negative impact on investment returns is. However, the negative impact on stock returns does not exist for a long time before and after the earthquake. It cannot be explained by actual economic losses or changes in systemic risks [2]. Starting from the perspective of limited attention, Choi et al. pointed out that investors significantly increased their concern about climate change when the weather in their location was unusually hot, thus paying more attention to carbon-intensive companies and avoiding buying such companies' stocks due to poor market performance [3]. There is uncertainty about natural disasters and their economic impact, and investors may sell stocks in a panic, leading to a short-term decline in stock prices.

Natural disasters can lead to mispricing of assets. Rehse et al.'s quasi-natural experiment on the impact of Hurricane Sandy in 2012 on uncertain transactions in the financial market shows that the bid-ask spread of real estate transactions will increase due to the uncertainty of natural disasters [4]. Painter found that climate change will increase underwriting expenses and initial yields, thus raising issuance costs, especially affecting long-term bonds [5]. Bai et al. constructed an asset pricing model, taking disaster factors into account, and revealed that value companies are more difficult to adjust their capital in the face of emergencies, thus more vulnerable to the impact of disaster risks, because they bear more unproductive capital [6]. Kruttli et al. studied the impact of the landfall hurricane on the economy and stock market, and showed that the implied volatility of ROE of enterprises in the affected areas increased due to the uncertainty of the disaster, and the implied volatility of the insurance industry even increased by 40% [7]. The uncertainty and destructiveness of natural disasters increase non-fundamental risks in financial markets by affecting investors' emotions and beliefs.

It is worth mentioning that when non-enterprises announce actions such as charitable donations and resource support to the disaster-affected areas, the capital market will react positively to such information, thus increasing the stock returns of enterprises. Muller and Kraussl studied the Hurricane

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Katrina event as a case study, and found that after the announcement of donation, the abnormal return of stocks showed a significantly positive response, while the announcement of events containing substantial donation would lead to more positive abnormal return [8]. Patten analyzed the donation announcements of 79 American enterprises among the Fortune 500 enterprises after the 2004 Indian Ocean tsunami, and believed that donation announcements at least would not bring negative returns, while the larger the donation scale, the more significant the positive reaction of the market [9]. After the natural occurrence, charitable donation, resource support and other actions can help enterprises create a positive public image, which can help maximize shareholder value

2.2. The Specific Impact of Accidents and Disasters on Financial Markets

Accident disasters refer to man-made disasters occurring in the process of people's production and life, mainly including all kinds of safety accidents, public facilities and equipment accidents, traffic accidents, environmental pollution and ecological damage events of industrial, mining, trade and other enterprises. Accidents and disasters usually have a huge impact on the valuation of the enterprise. In 1982, the Tylenol poisoning incident of Johnson & Johnson Company caused a shrinkage of up to $1 billion. In addition to the direct economic loss caused by the accident, the loss caused by the accident also includes indirect loss, such as the risk of legal proceedings, the risk of goodwill derogations, contract disputes and so on.

Accidents and disasters will have a certain negative effect on the company's stock return rate. Capelle-Blancard and Laguna investigated 64 chemical accident disasters that occurred in the United States and Canada between 1990 and 2005 and found that the stock price fell by 1.3% on average two days after the accident, and the decline of the stock price on the first day was related to the pollution level, the number of casualties and the severity of the accident [10]. Air accidents and nuclear accidents are the two major accidents that scholars focus on. As for air accidents, Davidson found through a study of 57 air accidents in the United States from 1965 to 1984 that air accidents led to a decline in the stock price of airlines, but due to the effect of the purchase of liability insurance, the stock price of airlines would reverse on the fifth day after the air accident [11]. Walker et al. pointed out that although the air crash will lead to a short-term decline in the stock price of the manufacturer of aircraft, the air crash will lead to maintenance demand and purchase demand, so it can have a positive impact on the enterprise value of the manufacturer in the long run. Legal action can protect the manufacturer who is not responsible for the accident from suffering greater value loss [12].

In terms of nuclear accidents, Hill and Schneeweis analyzed the relationship between the Three Mile Island nuclear accident and the daily return rate of US public utility stocks, and the results showed that the impact on nuclear-related enterprises was much larger than that on nuclear-related enterprises, but the impact was still short-term [13]. Ferstl et al. pointed out that the stock return rate of electric utilities was significantly negative in the short term after the Fukushima nuclear accident in Japan, but the long-term impact was not significant [14]. For different trading markets, the impact of the same accident and disaster is different. Kollias et al. found that the Gulf of Mexico oil spill had a significant difference in the impact of the London and New York Stock exchanges, mainly due to the different degrees of media exposure, and the more lasting the media attention that influenced the trading market through public opinion [15].

2.3. The Specific Impact of Public Health Emergencies on Financial Markets

Public health emergencies can seriously affect the safety and health of the public, mainly involving infectious diseases, food poisoning and occupational poisoning, mass diseases of unknown cause and other events. Public health emergencies can lead to a decline in national real GDP [16], an increase in public sector medical costs, a decline in tax revenue, a sharp decline in FDI, and a collapse in oil

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prices [17,18]. In addition, changes in labor market and capital factor market are also important ways for public health emergencies to affect the performance of financial markets.

Public health emergencies can have a negative impact on financial markets. McTier et al. found that the spread of infectious diseases would lead to reduced trading volume in the stock market, lower investment returns, and wider spreads between buying and selling stocks [19]. By exploring the long-term impact of infectious diseases on economic activities, Jorda et al. The magnitude of the impact on the return on assets during this period has been decreasing, but the impact can last up to 40 years [20]. Yang et al. Pointed out that during the outbreak, the risk output power of finance, real estate, information technology and daily consumption industries, which are the main risk recipients of healthcare, public utilities and industries, increased significantly [21]. Barro et al., through an empirical study on the prediction of the economic consequences of COVID-19, pointed out that the stock return rate of stocks affected by influenza would decrease with the increase of influenza mortality, and the return rate of short-term Treasury bonds would be the most seriously affected by morality [22]. The occurrence of public health emergencies will have an impact on the normal operation of economic activities, thus affecting the performance of financial markets for a long time.

Media coverage is an important way for public health emergencies to affect financial markets. Huberman and Regev pointed out that the public response to disease prevention and control is so rapid that even repeated news reports can push the market to reallocate resources [23]. Donadelli et al. found that news related to infectious diseases can interfere with investors' judgment, for example, through public media such as news, affecting the stock market returns of related pharmaceutical companies [24]. In fact, after the occurrence of public health emergencies, pharmaceutical companies that successfully provide treatment solutions can convey positive information to the society through media channels, thus achieving outstanding market performance in the face of adversity.

2.4. The Specific Impact of Social Security Emergencies on Financial Markets

Social security emergencies generally include large-scale mass incidents, terrorist attacks, ethnic and religious emergencies, foreign emergencies, school security incidents, etc., which will affect the coordination of social relations and the organization of social activities. Serious social security emergencies can cause economic recession, social chaos, political turmoil and other consequences. At the economic and financial level, the possible consequences of social security emergencies include the reduction of long-term income and consumption, the decrease of international trade volume, the decrease of multinational subsidiaries, the decrease of FDI scale and so on.

Terrorist attacks will have a negative impact on the financial market as a whole. Johnston and Nedelescu studied the September 11 terrorist attack in the United States in 2011 and the terrorist attack in Madrid in 2004, and found that property damage, communication system collapse and infrastructure damage would affect the return rate and volatility of the financial market [25]. Goel et al., by analyzing and comparing the global terrorist attacks from 1991 to 2010, found that most of the terrorist attacks had a relatively short-lived effect on the bond market and stock market [26]. The case study of terrorist attacks in Israel by Eldor and Melnick found that the impact of terrorist attacks on the foreign exchange market was long-term [27]. However, using a sample of terrorist attacks in Israel, Berrebi and Klor pointed out that terrorist attacks usually have a positive effect on defense industry stocks [28].

For the impact of the same terrorist event, there are obvious differences in the reaction of different stock markets. Chen and Siems took the September 11 terrorist attack in the United States and the Kuwait War in 1990 as cases, compared the reactions of the US capital market and other capital markets after the disaster, and found that the panic degree of the market was significantly lower than that of other capital markets because the developed banking groups in the US could provide liquidity guarantee for the market. Therefore, the price rebound of the US capital market can occur earlier and

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its market performance is relatively stable [29]. Arin et al. argued that the response of emerging markets to terrorist attacks is more dramatic than that of developed markets, because developed countries have relatively perfect institutions, which can effectively buffer the impact of emergencies [30].

The uncertainty caused by foreign emergencies, such as wars and coups, also has a significant impact on the capital market. In terms of the stock market, Bittlingmayer took the German coups between 1880 and 1940 as an example and found that political uncertainty would increase market volatility [31]. By analyzing the impact of political conflicts on the stock market, Abadie and Gardeazabal argued that the truce would promote the positive performance of the market, while the continuation of the conflict would reduce the expectation of investment returns [32]. In terms of commodity market, under normal circumstances, when war breaks out, investors tend to choose hedge investment varieties such as crude oil and gold. Wolfers and Zitzewitz found that the spot price of crude oil will increase with the increase of the possibility of war [33].

3. The Transmission Path of Emergencies Shock

3.1. The Social Level

The impact of major emergencies on society can be divided into direct impact and indirect impact. The direct impact on society mainly includes people's psychological expectations and life safety, while the indirect impact on society is mainly reflected in social structure and social stability.

The occurrence of major emergencies is usually accompanied by the threat to the safety of life and property. After obtaining the latest information related to the event, investors determine the market sectors that may be affected by the event through fundamental analysis, that is, to reduce the expected return of specific assets and quickly reallocate assets to avoid the loss caused by the risk. However, on the one hand, the uncertainty of major emergencies brings challenges for investors to make rational decisions, and the perception of risks will affect the accuracy of investors' analysis and judgment. On the other hand, it will trigger panic and pessimism of investors, which will not only misprice assets, but also further lead to halo effect. Emergencies will take "market" as the link and stimulate the occurrence of group behavior through group interaction and emotional contagion of securities trading [34]. Investors rush to sell risky assets and turn to assets regarded as safe in the financial market, resulting in market overreaction and aggravating market volatility.

Major emergencies may change the social structure and affect social stability to a certain extent. When large-scale emergencies directly destroy and damage enterprises and factories, the area where they are located may be used in the post-disaster reconstruction work for the construction of other industries that are more conducive to the rapid recovery of normal life of the people in the disaster area, and the original industrial structure of the disaster area will be changed to a certain extent. The occurrence of disasters will bring about new technological changes and the birth of new industries, new consumption and new forms of business [35]. In addition, in the long run, major emergencies may cause people to think and adjust their lifestyles, values and other aspects. For example, after the COVID-19 pandemic, people's health awareness has been greatly improved, and the medical industry has taken this opportunity to expand from serious medical care to consumer medical care, ushering in a golden period of development for the industry.

3.2. The Real Economy Level

At the economic level, the impact of major emergencies mainly refers to the impact on the production and trade of industrial and commercial enterprises and financial institutions.

On the supply side, major emergencies may lead to transportation paralysis, threaten the health and life safety of employees, investors reallocate assets, etc., so that enterprises are faced with

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logistics and transportation obstruction, trade costs increase, cash flow shortage and other aspects of the resumption of work pressure, nationwide and even worldwide production and operation activities stagnation, enterprise supply capacity under significant pressure, trade volume decline. This will not only lead to a decline in corporate profit expectations, but also make the financial market violently volatile and further cause systemic financial risks. What's more, economic growth will slow down significantly due to the suppression of the real economy, which will plunge the country into a medium - and long-term economic downturn and bring continuous disturbance to the financial market. The impact of some emergencies is highly industry-specific, and the specific impact is shown in Table 1:

Table 1: Certain Emergencies and Their Affected Industries.

Emergencies	Mainly Affected Industries	Impact Performance
Natural disasters	Agriculture, insurance	Increased insurance payouts for crop damage
Public health emergencies	Travel, catering, film and television	Traffic has decreased and business has stagnated
Geopolitical conflicts	Energy, military industry	Energy prices fluctuate and military industry demand increases

On the demand side, the occurrence of major emergencies will have a significant negative impact on residents' consumer confidence and consumption. The strength of consumer confidence has a universal impact on all components of total consumption [36]. This means that in the early stage of the event, the uncertainty, destructiveness and scope of the emergency will cause a corresponding impact on consumer confidence, which will lead to panic and pessimistic expectations, resulting in a decline in consumption willingness, and thus restrain domestic consumption demand.

In addition, major emergencies lead to the "cumulative effect" of the industrial chain and supply chain, which has a significant risk impact on the capital chain of downstream departments, triggering violent shocks in the daily consumption industry with a high proportion of small and medium-sized enterprises, and the risk of the financial sector rises sharply, which is easy to produce cross-sector transmission to other industries, and greatly exacerbates the hidden systemic financial risks.

3.3. The Policy Level

Major shocks could also alter the course of monetary and fiscal policy. In the face of emergencies, the government can take a series of policy measures to stabilize the economy and financial market, including monetary policy, fiscal policy, financial regulation policy and so on. Through interest rate adjustment, fiscal subsidies and other tools, the government can stabilize market expectations, increase market liquidity, stimulate economic activities and other purposes, thus affecting the capital flow and asset prices in the financial market.

As for monetary policy, in the face of market panic and liquidity crunch, the central bank may provide liquidity support by lowering interest rates to stimulate the borrowing needs of enterprises and households and promote economic recovery. Or it may implement quantitative easing to increase market liquidity and stabilize the financial market by purchasing assets such as government bonds and corporate bonds. For fiscal policy, after a major emergency, the government usually increases spending to support post-disaster infrastructure construction and assistance to disaster-hit areas, while increasing the disposable income of enterprises and households through tax cuts and other means, thus relieving pressure on corporate profits and stimulating economic recovery. For example, after the outbreak of COVID-19, many countries have adopted large-scale fiscal stimulus measures,

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including providing financial assistance and tax cuts. For financial regulatory policies, regulators can temporarily relax institutional requirements such as capital adequacy ratio and liquidity requirements for financial institutions to provide them with more flexibility and support; At the same time, they can strengthen risk monitoring and intensify supervision of risky assets to better cope with market fluctuations and increased risks. However, economic policy itself has a lag effect, and as a means to deal with the impact of major emergencies, it is more dependent on the acquisition of information about disasters and their actual impact. There is strong uncertainty in the evaluation of policy effect, and investors' market reaction after receiving the information released by the policy may not be as expected. In addition, the political structure and governance system may also be affected by emergencies. For example, when the government makes mistakes in handling public health events, it may lead to policy changes and adjustments to the public health system; Terrorist attacks may lead to the improvement of national and regional security awareness and the adjustment of external relations.

4. Construction of Financial Emergency Management

4.1. Improve the Precise Prevention and Control System

Timely and prompt adoption of precise and whole-process risk prevention and control measures is an effective means to deal with "black swan" and "gray rhino" emergencies. When a certain type of major emergency occurs, the return and volatility of a specific capital market are usually subject to a strong negative impact, which is contagious and may even affect the economic growth performance for a period of time in severe cases. Therefore, financial regulatory authorities should formulate different coping strategies according to the different reactions of financial markets to different types of emergencies, analyze the causes of events, risk level and transmission mechanism, market conditions and development trends with a prudent attitude, so as to clarify targeted coping strategies and form emergency plans, and improve the risk prevention and control system of financial markets. To avoid major emergencies continuously affecting the financial market and even the macro economy.

Specifically, combined with the characteristics of China's market, financial regulatory authorities should pay attention to the risks between financial markets, and achieve the stability and steady operation of the market through dynamic management of the risks between markets. Big data, artificial intelligence, cloud computing, blockchain and other technologies are important tools for the risk management of the stock market. By closely tracking the dynamic changes of the return level and volatility of each sector of the stock market, the stock market policy can be adjusted for the short-term situation, and the prevention mechanism such as stock pledge can be improved for the medium and long term situation. By expanding the transaction scale and enriching the bond categories, the bond market can achieve risk control in short-term shocks, while the medium and long term shocks rely more on the continuous improvement of risk prevention and control system and the adoption of dynamic decision-making mechanism. In addition, we should strengthen the special management of disaster management funds and improve the policies related to the post-loan management level of financial institutions, so as to improve the efficiency of post-disaster fund use and relieve the pressure of fiscal expenditure. The globalization of financial markets also requires the prevention and control of imported risks. The government should pay attention to the possibility of international risks caused by major emergencies, reduce the impact of global market linkage and vulnerability by improving foreign exchange management capabilities, and ensure smooth cross-border capital flows.

4.2. Optimize the Domestic Financial Market Environment

By optimizing the domestic financial market environment, the resilience of the market can be effectively enhanced, so as to better absorb shocks and recover quickly from shocks. In order to

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reduce the liquidity risk caused by major emergencies, we should create an appropriately loose financial environment through proactive monetary policy and other means, so as to reduce market panic and its impact and maintain market stability. At the macroeconomic level, by expanding domestic demand and stimulating consumption, the domestic consumption environment and market expectations can be improved, thus effectively enhancing overall resilience and spreading downward pressure on the economy in case of major emergencies.

The impact of major emergencies on micro, small and medium-sized enterprises is particularly obvious, and even directly threatens their sustainable viability, which further affects employment and national income. In order to ensure the normal operation of the capital chain of small, medium and micro enterprises and the reasonable allocation of assets and liabilities structure, therefore, the government and relevant financial institutions should actively strengthen the assistance to small, medium and micro enterprises, reduce the costs related to indirect financing, broaden the channels of direct financing, and provide policies such as R&D subsidies and tax deferred, so as to enhance the resilience of enterprises at the financial level. In order to ensure that enterprises can maintain normal operation after major emergencies. In addition, the development and application of digital technology is an important factor to help small, medium and micro enterprises get rid of offline operation constraints, improve investors' expectations by realizing flexible operation, so as to stabilize financing costs and paths.

4.3. Legalize the Financial Emergency Management Rights

Zhu pointed out that the right of financial emergency management includes both administrative power (administrative emergency power) in administrative law and macro-control power in economic law [37]. By incorporating the financial emergency management right into the framework of the rule of law and formulating the financial emergency law, it can effectively guide and restrict the behavior of relevant power subjects, ensure the flexible use of the emergency management right within the scope of law through supervision, management and comprehensive coordination, and uphold the principle of consistent action; Due to the suddenness, uncertainty and urgency of emergencies, the law needs more discretionary space based on the financial emergency management right.

In addition, the determination of the power subject is also an important proposition of financial emergency management. After the occurrence of major emergencies, it is necessary to clarify who is in charge, how and when of the financial market. By integrating the organizational structure of emergency management subjects into the legal framework, all emergency actions can be carried out by professional teams at different levels and in different categories, and the relevant procedures can be quickly concluded after the end of the emergency handling process, and the management power can be returned to the normal department. In view of China's national conditions, a special emergency response organization can be established in the Financial Commission of the NPC, which can be activated quickly when a major emergency occurs. An office can be set up in the central bank, and the whole process of emergency management can be controlled through direct macro-control and guiding the coordinated actions of the banking, securities and insurance industries. In terms of the linkage of various emergency management bodies at all levels, the Ministry of Finance, the Tax Bureau and other departments should cooperate closely with the emergency management organization and improve the coordination mechanism among departments, so as to ensure the smooth implementation of emergency response.

5. Conclusion

In the process of studying the impact of major emergencies on the financial market and its countermeasures, this paper deeply analyzes the specific impact effect of major emergencies on the

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financial market, the impact transmission path and the construction of financial emergency management. Through the study, we can draw the following conclusions: first, the impact of major emergencies on the financial market is usually short but significant, which may lead to the aggravation of market volatility, the sharp fluctuation of asset prices and other phenomena, thus affecting the overall economic stability. Secondly, different types of major emergencies have different impacts on the financial market, so we need to take countermeasures according to local conditions. Finally, in terms of the construction of financial emergency management for major emergencies, this paper calls for strengthening the cooperation and cooperation between all parties in the financial market, and improving the flexibility and effectiveness of emergency plans. In the future, the relationship between major emergencies and financial markets can be further explored, and the influence mechanism and quantitative relationship of different types of events in specific capital markets can be further explored, so as to better predict risks and fine control. Strengthening the construction of risk prevention mechanism and emergency management system in the financial market and improving the anti-risk ability of the market will be an important link for the stable operation of the financial market after major emergencies.

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