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From Subprime Mortgages to a Global Pandemic: An Assessment of Systemic Risk in the 2008 Financial Crisis and COVID-19

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Abstract: The COVID-19 crisis and the 2008 financial crisis are two major global events that have significantly impacted the global economy and society. Although both contributed to the economic downturn to some extent, they were fundamentally not social events of the exact nature. The COVID-19 crisis was caused by a global pandemic that has resulted in business closures and travel restrictions. The 2008 financial crisis, which resulted in widespread financial panic and a credit shortage, was mostly caused by the collapse of the housing market and the accompanying financial catastrophe. This paper first explores what triggered the 2008 financial crisis. The Federal Reserve's loose policy made it extremely easy to borrow during that period, which fueled the subprime loan market and the housing market bubble; the lack of regulation in the market made many financial institutions take excessive risks. This paper then also analyzes government interventions, including the implementation of the Dodd-Frank Act and the introduction of Basel III, to prevent further collapse of the economy. Despite extensive government intervention, the post-crisis recovery has been slow and uneven. The lessons that countries should learn from the crisis strengthen the resilience of the global financial system and prevent similar crises from recurring in the future.

Keywords: financial crisis, systemic risk, COVID-19 pandemic

1. Introduction

COVID-19 was not only a massive epidemic that killed and injured people but also caused the global economy to facing a massive recession. Since the massive outbreak of COVID-19 in 2020, regions have taken precautions. The "stay-at-home" measure prevented people from attending public gatherings, leading to decreased crowd mobility. This was a fatal blow to the traditional service industry. Therefore, the widespread blockade has caused a certain degree of suppression of people's offline consumption. The economic contraction was reflected not only in the consumption of goods but also in unemployment. COVID-19 had a significant negative impact on the real urban economy. Many small and medium-sized businesses were forced to close, and job requirements in all sectors were reduced, which led to massive unemployment. With the massive economic closures, banks are also negatively affected by the contraction of the economy due to the massive unemployment. In times of economic recession, external finance premiums usually rise and lead to increased credit market stress [1]. In order to avoid unemployment due to COVID-19, a large number of borrowers

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are unable to repay their bank loans in time and depleting the banks' capital [2]. The standards of the credit market became very strict in such a period, which led to stricter requirements for borrowers to apply for loans in order to avoid low-credit borrowers. The banking crisis could have had disastrous consequences, but a strict system of banking supervision would have prevented such an outcome. This COVID-19 crisis is not a banking crisis, unlike the financial crisis of 2008. It was a crisis caused by public health and started without any financial problems. Although there was a short-lived economic contraction caused by a large number of business failures during COVID-19, the government was able to enact policies in time to make the crisis less severe than expected. The financial crisis of 2008 was called a crisis because the collapse of the real estate market caused a chain reaction that led to problems in a large number of financial institutions and plunged the entire financial market into a state of collapse. It is difficult to say that the 2008 financial crisis was triggered by a single reason; rather, it was a complex interaction of a number of causes. It is the consequence of multiple causes, which are intertwined and mutually reinforcing. It can divide the causes into three categories. The first is that the financial bubble was driven by the monetary policy of the American central bank; the second is the combination of subprime loans and deregulation of financial institutions; the third is the loosening of government oversight and regulation of the CDS market creates high risk.

2. Causes

2.1. Loose Monetary Policy

The monetary policy adopted by the American central bank was the primary contributor to the financial crisis in the United States. The Federal Reserve cut the federal funds rate from 6.5% to 1.0% between 2001 and 2003, as Figure 1 shown. During this period, the low-interest rate policy implemented by the Fed encouraged to leverage and helped encourage speculative behavior, such as the housing bubble. The Fed then assisted in lowering the price of long-term borrowing for households and companies. With lower interest rates, the cost of lending became much lower than before. Freddie Mac's data on mortgage rates shows that the typical 30-year fixed-rate mortgage rate decreased from 8.5% in 2000 to 5.5% in 2003 [3]. The decline in mortgage rates has made it more affordable to purchase a home. These factors have led to an increase in demand for housing, thereby artificially raising housing prices. As housing prices rise, many people buy houses not necessarily to live in them but to sell them in the future at a higher price and make a profit on the difference. The loose monetary policy helped inflate the enormous housing bubble and made it very difficult to recover to its previous state. However, when interest rates suddenly rise, or there is a significant recession, The ability of many residents to make their mortgage installments on time may fail. This can lead to defaults, foreclosures, and falling home prices, and eventually, the bubble bursts and leads to a financial crisis.

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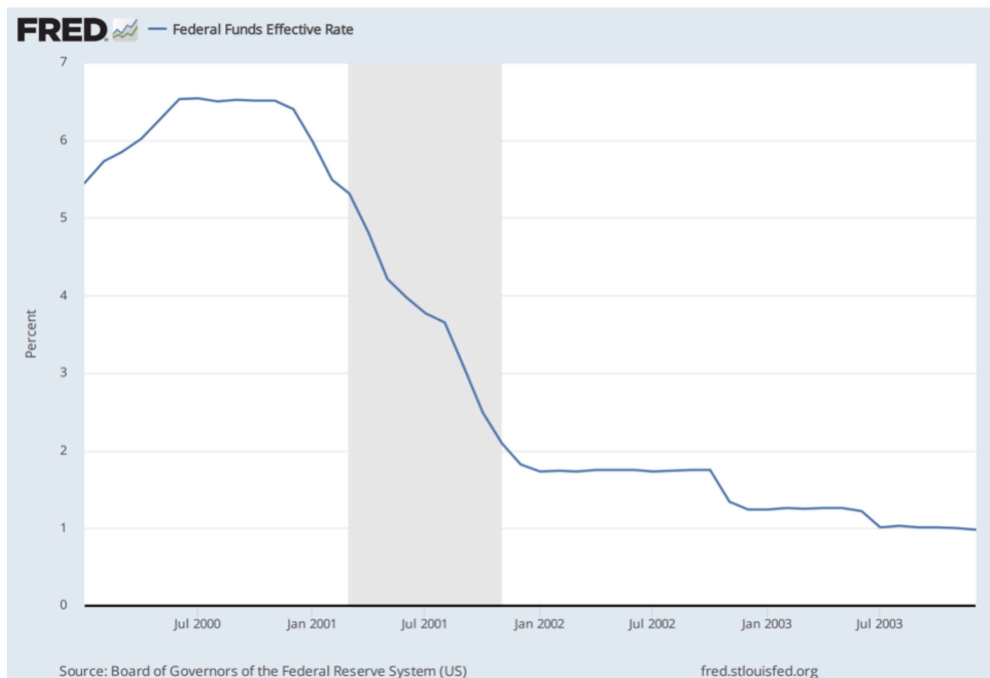

Figure 1: Federal funds rate from 2001 to 2003 [4].

2.2. Subprime Mortgage

Subprime lending was the financial crisis' second root cause. A loan granted to a borrower with a poor credit score and a high chance of default is referred to as a subprime loan. In the years before to the crisis, the sub-prime sector experienced significant growth, allowing borrowers with poor credit to obtain mortgages with lower initial interest rates, adjusted payment terms, and little or no down payment. Since the subprime mortgage market was highly dependent on the housing boom, this led to an increase in housing demand and a corresponding increase in housing prices. Coupled with policy support, people have entered the subprime mortgage market. At the same time, the combination of the subprime mortgage market and financial institutions created credit default swaps (CDS) that brought fear and uncertainty to the financial markets and contributed to the broader financial crisis in 2008. Subprime mortgages and CDS are closely related because CDS are often used as a hedge against the risk of default on subprime loans. Several subprime mortgages were packaged together and sold to investors as mortgage-backed securities. These investors then purchased CDS as insurance against the possibility that these securities might default. In this way, CDS holders could protect themselves against the risk of default on subprime loans and speculate on the possibility of default. At the same time, sellers of CDS received a premium for assuming this risk. Many financial institutions were eager to profit from the booming housing market, and subprime mortgages were seen as a high-yield investment opportunity. The notional value of outstanding CDS reached close to $2 trillion at the end of 2005. At the market's peak in 2008, the notional value of CDS outstanding was over $30 trillion, as Figure 2 shown. It shows that between 2005 and 2008, the notional value of CDS increased by 15 times, which is an impressive growth rate. As a result, the global financial system is now more complex and interconnected as a result of the CDS market's expansion.

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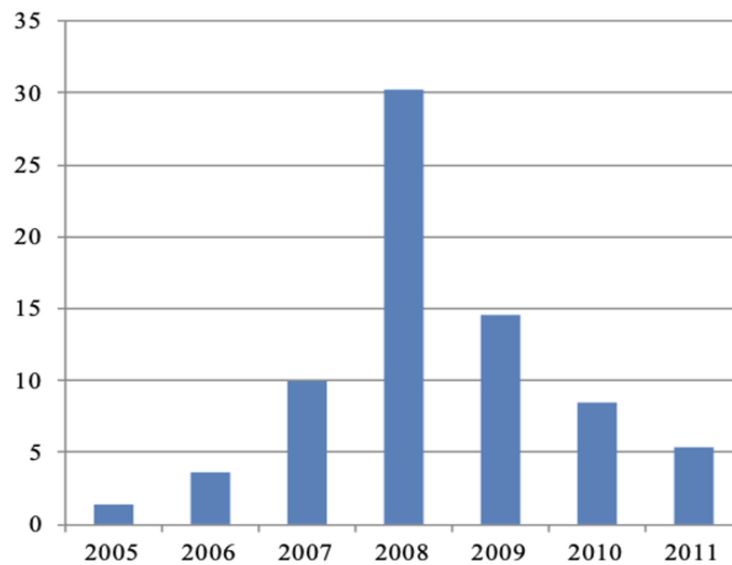

Figure 2: Notional value of CDS from 2005 to 2008 [5].

2.3. Credit Default Swaps

The high riskiness of CDS, which is essentially a type of insurance whereby a person purchases insurance on a specific bond, makes a financial institution or insurance company promise to make restitution in the event of a default on that product or a downgrade of the bond's rating, was the third reason for the financial crisis. It does not, by itself, directly enhance leverage. However, they can indirectly affect leverage through their impact on the pricing and availability of credit. However, the introduction of CDS not only increases leverage but also relaxes credit restrictions [6]. As a result, CDS can increase leverage for investors who use them to take on additional risk. This is because a CDS can provide a high degree of leverage, allowing an Although CDS can be a useful tool for managing risk, using CDS to increase leverage can also magnify potential losses if the bet does not go as planned. Additionally, there are many financial entities that are not insurance firms that can issue CDS because they are not subject to the same regulations as the insurance industry regulators. As a result, the CDS market is largely unregulated and opaque, with few rules governing CDS trading and pricing. These properties allow investors to take excessive risk without proper oversight and magnify systemic risk, potentially leading to financial market instability. CDS provides investors with an incentive to take excessive risk by inflating leverage and relying on the opacity and asymmetry of market information, and provide investors with a false sense of security, suggesting that credit risk has been transferred elsewhere. This can lead to a concentration of risk in the financial system, increasing the likelihood of widespread defaults and financial crises.

3. Consequence

The global financial crisis of 2008 had substantial and far-reaching repercussions. It led to a severe economic recession and banking crisis, resulting in massive government debt and deficits. The collapse of the American housing market was one of the main factors contributing to the financial crisis in 2008. A housing bubble developed in the US in the years before to the crisis. As banks and other financial institutions invested heavily in subprime mortgages and packaged the loans into mortgage-backed securities to sell to investors, some investors used them to take excessive risks and speculate on the possibility of default. Many investors and financial institutions were eager to profit from the booming housing market, and subprime mortgages were seen as a high-yield investment

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opportunity. However, when the housing bubble burst, many homeowners began to default on their mortgages, a large number of the underlying credit instruments defaulted simultaneously, and the large banks trading CDS as well as financial institutions faced huge losses. The collapse of the real estate market was like a domino effect on the financial markets. With the subprime mortgage market's gradual collapse, many financial institutions, such as Lehman Brothers, eventually went bankrupt. Lehman Brothers had invested heavily in the subprime mortgage market. Moreover, when the housing market started to decline in 2007, the value of Lehman Brothers' investment in the subprime mortgage market plummeted, and their balance sheet reached $750 billion [7]. The Lehman Brothers balance sheet shows their investments' highly leveraged nature. A liquidity crisis resulted from the amount of debt it assumed becoming increasingly difficult to service as borrowers started to fail on their mortgages as the value of its investments fell. While Lehman Brothers' overconfidence exposed it to excessive risk, the lack of regulation in the market was also a significant factor in driving it toward bankruptcy. Since mid-2007, the SEC learned of the crisis caused by Lehman Brothers' high leverage through its balance sheet, but this agency did not require to do anything about it [8]. The "shadow banking" system, which is used to describe financial entities that generate credit outside of the conventional banking system yet are not regulated, is an illustration of this lack of oversight. The shadow banking system's potential dangers were made apparent by the fall of Lehman Brothers, a significant participant in it. This chain reaction would be a systemic risk and a significant factor in the financial crisis of 2008. Housing market collapse in the United States in 2007-2008 led to widespread mortgage defaults. Financial institutions took much leverage to increase their risk of loss for their investments, so there was a potential cascading effect for institutions in the event of a significant market downturn. Moreover, the financial system is highly interconnected, and when mortgage defaults begin to rise, even financial institutions that do not hold similar types of assets can be affected [9]. These factors led to a breakdown in the functioning of the financial system, with many institutions facing significant losses and a lack of liquidity. Due to the widespread fear this caused in the financial markets, there was a credit bottleneck and a global recession.

4. Responses

4.1. Government Intervention

The 2007–2008 financial crisis was brought on by the bust of the housing market bubble, loose lending regulations, and excessive risk-taking by financial institutions. Both the US economy and the world economy were significantly impacted by the crisis. In response to the crisis, the government took various measures and passed many bills to recover and intervene in the economy to prevent further collapse of the financial system. One of the bills passed was the Dodd-Frank Act, a bill designed to reform the financial industry and protect the interests of consumers. It included the creation of FSOC, the establishment of CFPB, the regulation of credit card issuance, lending, and mortgage processes, the clarification of the Volvo Rule, and the regulation of derivatives, among other provisions. FSOC was established to identify systemic risks across the U.S. financial sector and to designate nonbank financial companies as "systemically important". If the FSOC monitors nonbank financial firms that are too large and likely to pose some risk, it will refer them to the Federal Reserve for stricter regulation, such as requiring firms to raise reserve requirements to ensure adequate cash flow [10]. CFPB aims to protect the rights of consumers in the financial market. It has established many mandates to regulate the lending process, including mortgages, credit cards, etc. In addition, the agency is responsible for monitoring banks and nonbank financial institutions to comply with federal consumer financial laws. According to the FDIC, since the adoption of the Dodd-frank Act, the number of U.S. commercial banks has decreased from 6,519 in 2010 to 4,127 in 2022 [11]. Close to 2,400 U.S. banks have already failed. Some smaller banks have been forced to merge or exit

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the market due to consolidation within the industry, increased regulatory costs, and changes in consumer behavior. This simultaneously demonstrates the critical role that the CFPB has played in promoting consumer protection and financial stability. In addition to the creation of these two regulatory agencies, the Volcker Rule plays an essential role in stabilizing financial markets. It is against the law for banks to hold hedge funds for their own gain and to use deposit money for proprietary trading. Its objective was to prevent banks from taking excessive risks themselves and to control the market's liquidity to some extent. Overall, the Dodd-Frank Act has significantly impacted the financial industry and made the U.S. financial system more stable and resilient.

4.2. Banking Regulation

In addition to passing the Dodd-Frank Act, the market also made corresponding adjustments on the basis of Basel II and launched Basel III in response to the 2008 financial crisis. Basel II builds three complete pillar frameworks of capital regulation, including enterprises themselves assessing the minimum regulatory capital requirements, regulators need to regularly review bank risks, and strengthen market discipline through public disclosure, which reflects risks more comprehensively and transparently [12]. However, the outbreak of the financial crisis in 2007-2008 exposed the defects of Basel II. Basel II requires banks to calculate capital charges based on their risk assessment, but many banks undermine the risk associated with their assets. Many banks have relied on short-term funding, which has resulted in insufficient capital buffers during the crisis and contributed to systemic risk. Moreover, during the 2008 financial crisis, banks sold large amounts of CDS, exposing them to counterparty risk and forcing them to pay huge sums if the underlying entity defaulted. Many banks faced sudden and severe funding shortages, which put them at liquidity risk. The financial crisis exposed weaknesses in the banking system and highlighted the need for more substantial supervision and risk management. In order to guarantee that the regulatory system remains effective, the Basel Committee on Banking Supervision introduced Basel III in 2010 as a reaction to the financial crisis of 2008. Its provisions include requiring banks to hold more high-quality regulatory capital to absorb potential losses, clarifying the definition of capital to improve the quality and level of capital, introducing new liquidity regulatory standards to make sure that banks maintain enough high-quality liquid assets to meet their short-term financing needs, and introducing a minimum leverage ratio of 3% to better monitor systemic risks [12]. Basel III was finally launched through a series of lessons learned from the financial market. It created a stronger and more resilient system while addressing some of Basel II's shortcomings.

5. Conclusion

An unheard-of economic slowdown in the United States and even the global economy was brought on by the 2008 financial crisis. The Federal Reserve's loose monetary policy, the extreme looseness in the subprime loan market, and lax market regulation are only a few of the factors contributing to the systemic danger that the crisis represents. These factors contributed to a bubble in the real estate market and led to excessive risk-taking by banks and financial institutions. These crises spread across the entire financial market in an instant, leading to the collapse of the financial system. High leverage exposed many institutions to significant losses and illiquidity and ultimately led to a credit crunch. The government put in place a number of steps to stabilize the financial sector in response to the crisis. The passage of the Dodd-frank Act has strengthened the supervision of financial institutions, increased market transparency, and reduced information asymmetry. In addition, the introduction of Basel III strengthens the banking system's resilience and ensures the financial system's stability. Overall, the 2008 financial crisis was a wake-up call for banks and financial institutions. Although the government has implemented a series of policies to remedy the situation, the impact of the crisis

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is lasting. This underlines the importance of strengthening supervision and preventing systemic risks, as well as the need to maintain the financial system's stability.

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