

The 2008 Financial Crisis: Causes, Consequences, and Responses

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Abstract. This article discussed the origin, process, and consequences of the subprime mortgage crisis that occurred mainly during 2008, in addition to the further improvement of policies by the American government to prevent the occurrence of a similar crisis in the future. Overall, the subprime mortgage crisis was primarily caused by expansionary monetary policy, lax regulation, and securities such as credit default swaps. Following the collapse of the housing bubble and the resulting turmoil in the credit market, the crisis led to bankruptcy for investment banks and other companies, significant financial losses, recession, unemployment, and a substantial amount of government bailout funds. In response to the crisis, the U.S. government implemented several policies to regulate the financial market and reduce risk for banks. Two of the most well-known policies are the Dodd-Frank Act and Basel III, which aim to regulate the financial market and banking system. These regulatory measures were enacted to enhance transparency, strengthen risk management practices, and foster greater stability in the financial system, marking a pivotal shift in the aftermath of the subprime mortgage crisis.

Keywords: Subprime Mortgage; Securitization; Basel III.

1. Introduction

Since the 17th century, human civilization has gone through countless amount of financial crises, they engender catastrophic consequences and massive amounts of expenses used for solving the problem and recovery. The 2022 Nobel Prize in Economic Sciences was given to Ben Bernanke, Douglas Diamond, and Philip Dybvig to examine the bank's role in the economy, especially during the financial crisis, which Ben Bernanke researched about the Great Depression in the 1930s. In addition, COVID-19 has just ended, which has influenced the whole economy in an extremely negative way [1]. Meanwhile, the persistence of the conflict between Ukraine and Russia facilitated the deterioration of the global economic situation, particularly for the European countries, because of the supply chain disruption. The warfare between the two world's largest suppliers of wheat and oil resulted in a rising price of commodities. This series of unexpected incidents, which cause a sustainable negative impact, might lead to a disastrous recession. Hence, the research on the financial crisis and the method to prevent the economy would be magnitude and meaningful. This paper chooses one of the most influential cases, the 2008 Financial Crisis, as the research object to further discuss the causes, consequences, and effects contributed by this event.

The financial crisis began with cheap credit and lax lending standards, in addition to the housing bubble promoted by this loose regulation. To stimulate the economy, which went downward because of the bursting of the dot-com bubble, corporate accounting scandals, and the September 11 attacks, the funds rate dropped, encouraging people to borrow money from banks to invest in the housing industry. The banks then packaged the loans and sold them to investment banks, including the subprime mortgages (loans graded as substandard) and Mortgage-backed securities (MBSs). However, in 2004, the Federal started to raise interest rates, which reached 5.25% two years later and remained until 2007. As a result, people couldn't pay their debts gradually and initiated to sell their houses; nevertheless, some of them still didn't have the ability to repay, which resulted in the burst of the housing bubble, followed by the bankruptcy of subprime lenders and investment banks. Starting in 2008, the overall recession began, and the global investment bank Bear Stearns closed down and was bought by JP Morgan Chase in March. In September, the Lehman Brothers went bankrupt, too,

which became the largest bankruptcy in American history. The loss of this event was massive; the cost was approximately 1488\$ billion, including the Fannie and Freddie bailouts, Bear Stearns Bailout, TARP Bank Bailouts, ARRA tax cuts, and its spending [2]. Moreover, there was a rapid increase in unemployment and a decline in foreign investment and transactions caused by the recession. Lastly, reorganizing the rules is more rigorous to prevent the replay of the Subprime Crisis.

2. Causes

Three main factors led to the Financial Crisis in 2008. The expansionary monetary policy is used to stimulate the economy in addition to loose regulation and lending criteria, which promote the existence of the second factor, the subprime mortgage. The subprime mortgage refers to the loans provided for people with poor credit or low income, which means that these loans are riskier, as the borrower will be more unlikely to pay back the loans. Yet, the banks pack these risky loans with better credit rating loans and sell the Collateralized Debt Obligation (CDO) to produce Credit Default Swaps (CDS). Both needed to be under more regulation and sow the seeds of trouble. Afterwards, when the housing bubble burst, all of these derivative financial products collapsed while the subprime mortgage couldn't be paid.

2.1. The Fed's Monetary Policy

The government policy of expansionary monetary and deregulation policies was the major cause of the Subprime crisis 2008. Since 2000, the federal funds rate was decreased by the Federal Reserve from 6.5% to 1% used for stimulating the poor economy after a series of impacts that caused negative impacts, such as the dot-com bubble [3]. This action successfully promotes the people and society's willingness to invest and purchase. As a result, the economy recovered and soon became prosperous again, meanwhile creating the housing bubble.

Two laws led to the deregulation of the financial system and financial products, allowing the banks to invent and invest in derivatives related to real estate and riskier borrowers and sell money-spinning but hazardous financial products, which laid up trouble for the future economy. Firstly, the Financial Services Modernization Act of 1999 allowed banks to invest in derivatives using deposits. Besides, the Commodity Futures Modernization Act was passed to dispense the regulation toward derivatives, which is the reason for the rise of products represented by MBSs and CDO [4].

2.2. Subprime Mortgage

The defaults of massive amounts of subprime mortgages also claimed to be a crucial factor in the crisis. Subprime mortgages are loans borrowed toward low-credit borrowers, which were graded below A and B, which refers to a higher risk for the banks that people graded from C to F have less ability to repay the loans. Since 2001, the subprime mortgage market had a dramatic expansion, in addition to the increase in subprime share in the mortgage market from 8% in 2001 to 20% in 2006 [5]. The increase in profit from subprime mortgages and the rising demand further encouraged investment banks to provide subprime loans and lower the criterion. During the 2008 financial crisis, subprime mortgages were used extra widely. Many of them were known as NINJA loans, meaning "no income, no job, and no assets". The deregulation effectively lowers the requirements for borrowing. These mortgages asked for no down payment and proof of income. The financial institutions pack these risky mortgages into several securitizations, adding leverage and making the product even riskier. After the housing bubble started to burst, the price of houses declined rapidly and soon became lower than the mortgages the borrowers owned [6]. At last, the default of the borrowers led to the disintegration of countless securitizations and, furthermore, the bankruptcy of investment banks.

2.3. Securitization

Securitization is when issuers collect mortgages, either poor-rated or high-rated, and then issue these mortgage-backed securities collateralized by the mortgages, which is called MBS, a kind of security [7]. Credit default swaps are a kind of default insurance against mortgages. Creditors sell the risk of debt through CDS contracts, and the price will be the premium. If the mortgages didn't default in the period of time signed in the CDS contract, the buyer constantly pays fees to the creditors. However, the creditors will pay the buyers' loss when the mortgage defaults. In fact, debt insurance policies were not effectively regulated by giving it attributes of financial products. The market without regulation had grown substantially from 900 billion dollars in 2000 to 50 trillion dollars in 2008 [8]. Collateralized debt obligations are documents that bundle all possible cash flows and repackage them. This cash flow could come from various types of bonds, debt, and even premiums, which include CDS fees, while its operation is similar to CDS.

Overall, all of these securities played a vital role in the subprime mortgage crisis. MBS, CDS, and CDO are the first innovative housing loan financial products designed to promote the development of the housing market and financial economy in the United States. The market for these products then expanded dramatically with the developing US economy and the housing bubble. In addition to the deregulation policy, the Commodity Futures Modernization Act created a massive and hazardous calamity for the U.S. economy.

3. Consequences

The collapse of the American housing bubble and subprime mortgage market had led to catastrophic results comprehensively. Firstly, there was the collapse of hundreds of financial institutions. Lehman Brothers, which used to be the fourth-largest investment bank in the U.S. and the largest holder of mortgage-backed securities, failed by the end of 2008 and created the largest bankruptcy filing in American history for approximately 619 billion dollars [9]. Before the collapse of Lehman Brothers, there was Bear Stearns, which used to be the world's largest investment bank, was acquired by JPMorgan for 10 dollars per share [10]. Another famous case was the purchase of Merrill Lynch by the Bank of America for 50 billion dollars to save Merrill from the ending like Lehman Brothers [11]. However, Bear Stearns, Lehman Brothers, and Merrill Lynch were only the tip of the iceberg; hundreds of investment banks, hedge funds, private equity firms, and so on had failed to inflict heavy losses on Wall Street and the whole finance market.

The failure of corporations has also happened in other industries due to the recession and the bankruptcy of individuals who bought those securities. These ultimately lead to serious unemployment and recession in America. Around 7.5 million jobs were lost during and after the crisis, doubling the unemployment rate. Even though the jobs slowly added back after 2009, the jobs were relatively of lower quality compared to the past. The U.S. real gross domestic product fell 4.3 % from the fourth quarter in 2007 to the second quarter in 2009 [3]. A study from the Federal Reserve Bank of San Francisco shows that the American gross domestic product was about 7 % lower than it should have been ten years later if the crisis had not happened, proving that the subprime mortgage crisis not only led to the immediate fallout but also long-term effects that still influences current world economy and policies.

Apart from the countless bankruptcies, unemployment, and the long-term effect on the economy. The Federal Reserve's remarkable use of money aiming to bail out and reduce further influences was also one of the consequences brought by the crisis. According to the statistics, there was a total of 1488 billion dollars in cost for the 2008 financial crisis. The majority was the ARRA Tax cuts and spending, using 831 billion dollars. Afterwards, there was the spending of 441.8 billion dollars for the Troubled Asset Relief Program (TRAP), which the investment reached 442.7 billion dollars in 2018. The TRAP funds mainly spend their capital on buying preferred stocks from the bank to provide cash, bailout for auto companies and AIG, shore up the credit markets, and modify the Homeowner Affordability and Stability Plan in addition to the use to stimulate the market, which was the American

Recovery and Reinvestment Act signed by former President Barack Obama. Ultimately, there were the bailouts for Fannie Mae, Freddie Mae (187 billion dollars), and Bear Stearns (30 billion dollars) [12].

4. Changes

4.1. Dodd-Frank Act

Recall the painful experience of the financial crisis in 2008. The Federal Reserve and the American government had practiced a number of policies and acts to prevent this catastrophe. The most representative one was the Dodd-Frank Act passed in 2010, targeting to make the American financial system safer while protecting consumers and taxpayers.

Within the Dodd-Frank Act, hundreds of law keys could be summarized into a few main points: firstly, the aim to improve financial stability. The setup of Financial Stability Oversight Council and the Order Liquidation Council are responsible for liquidating and supervising major financial institutions. For the extremely vital firms that would negatively influence America's economy, the government would not let them fail but provide help financially or reorganize the firm. The council also has the entitlement to split the banks that are considered to be oversized and risky, in addition to forcing the bank to raise their reserve requirement ratio. Afterwards, the sophisticated securities, mortgage clause and mortgage brokers who charge high fees was claimed to be one of the root cause of the 2008 subprime mortgage crisis. The Dodd-Frank Act also established the Consumer Financial Protection Bureau (CFPB). CFPB's responsibilities include monitoring mortgage brokers to prevent them from inducing consumers to borrow money, simplifying the mortgages' information and clauses to enable non-financial workers to understand, and dealing with consumer complaints.

Moreover, the Volcker Rule limits the investment banks from investing and speculative trading and eliminates proprietary trading. Banks were forbidden to interact with hedge funds or private equity firms, which are considered too risky for the banks. As well as using risky financial derivatives to prevent the failure of big and crucial firms. Also, credit default swaps were commonly agreed to be one of the factors of the Subprime Mortgage Crisis. Hence, the Dodd-Frank Act provides centralized exchanges for credit default swaps to reduce defaults and shows more information about credit default swaps.

Lastly, the SEC Office of Credit Ratings was set up. During the crisis, credit rating agencies were said to be responsible for providing misleading investment ratings that also led to the security market overheating. Besides, there was the Whistleblower Program, specifically for whistle-blowing toward firms, in which the informer could gain 10% to 30% of the proceeds from a litigation settlement [13].

4.2. Basel III

To foreclose the repetition of the Subprime Mortgage Crisis in the future or to reduce the loss as much as possible. The Basel Committee on Banking Supervision (BCBS), which was established by the central bank governors of Group of 10 and expanded in 2009, developed Basel III. Basel III is the improved version based on Basel II and Basel I, aiming for better regulation, supervision, and risk management in the banking industry after the 2008 Subprime Mortgage Crisis [14].

Basel III has several key points and the main changes compared to Basel II. Firstly, it is the minimum capital requirement for the banks. Banks contain two main types of capital. Tier 1 is the bank's core capital, including equity and the disclosed reserves shown on the bank's financial statements. Tier 2 refers to the supplementary capital like undisclosed reserves and unsecured subordinated debt instruments. Comparing the two silos, Tier 1 is considered to be more liquid and secure than Tier 2. According to Basel III, the lowest total capital ratio a bank should maintain is 8% of its risk-weighted assets (RWAs). In comparison, the minimum Tier 1 capital ratio should be 6%, and the rest could be Tier 2 capital. Meanwhile, the assets banks owned as Tier 1 capital should be raised from 4% in Basel II to 6% in Basel III.

Countercyclical capital buffers were a new concept and rule added in Basel III, which is the additional reverse and should be constructed by only T1 capital. During the economic expansion period, the counter-cyclical capital could be added by 0% to 2.5% of the bank's risk-weighted assets. As a result, when facing a recession, the banks would have more capital to use. In addition to considering the minimum capital and buffer requirement, there will be a requirement of 10.5% reserve ratio for the banks to hold constantly.

Ultimately, there were new requirements for the leverage and liquidity of the bank's assets to avoid inordinate and dangerous loans. Primarily, Basel III asks the banks for enough storage of high-quality liquid assets (HQLA) that could enable the banks to survive under serious pressure. Then, there is the measure of banks' net stable funding, in which the banks' capital adequacy ratio should be at least 100% to encourage banks to fund from stable sources.

5. Conclusion

Being one of the most effective and harmful crises in human history, people could learn many lessons from this disaster to perfect the regulation and financial systems, trying to avoid similar events. In addition to having experience in dealing with subprime mortgage crises, actions should be taken for recovery. As a result, research about the subprime mortgage crisis has always been a valuable topic, showing that the examination of banks' role during the crisis by Ben Bernanke, Douglas Diamond, and Philip Dybvig won the 2022 Nobel Prize. This article discussed the reasons, the course process, the consequences, and the improvement of policies toward the credit and banking markets.

Overall, the subprime mortgage crisis was the most severe crisis America had suffered since the collapse of Wall Street in 1929. The expansionary monetary policy mainly caused the crisis, loosened regulations, and securities like credit default swaps. After the breakdown of the housing bubble and the enormous credit market, the crisis led to the bankruptcy of investment banks and other companies, serious loss of money, recession, unemployment, and a large amount of money used by the U.S. government for the bailout toward banks, Freddie Mae, Fannie Mae, and subsidies. After the crisis, the U.S. government published several policies to regulate the financial market and lower the risk for banks. The two most famous ones are the Dodd-Frank Act and Basel III, used to regulate the financial market and banking system, respectively, both still influence people's lives.

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