II. The global financial crisis: its unfolding and policy responses

With its roots in the subprime crisis originating in the United States (US) in August 2007, global financial turmoil deepened to unprecedented levels during 2008. Following the bankruptcy of Lehman Brothers, the crisis deteriorated further. Compared to past crises, the current one lingered on as the bailout measures adopted did not achieve the initially expected results.

The crisis spread rapidly from the housing market to financial institutions and financial markets in the US. With the flourishing of globalization, it spilled from the US to other advanced countries and then to emerging and developing economies. The adverse consequences incurred were not confined to the financial sector but gradually spread to the real economy, which in turn caused repercussion effects on the financial sector, thus forming a vicious feedback loop.

The far-reaching impact of the crisis has caused various countries to adopt unprecedented bailout measures, including eased monetary and expansionary fiscal policies. The promotion speed, application span, implementation frequency, and special measures undertaken during these emergent times have rarely been seen in the history of financial crisis management. This chapter summarizes the development and causes of the crisis, its impacts on global finance and economies as well as the policy measures adopted in selected countries.

2.1 The development and causes of the crisis

2.1.1 How the crisis evolved

The current global financial crisis originated from the US subprime mortgage problems. US housing prices underwent a prolonged period of huge rises from 2000 to mid-2006 before gradually turning downward. Owing to the decline of house prices, together with rising interest rates from 2004 onwards, mortgage burdens continued to grow and began to affect many subprime mortgage borrowers. These borrowers were faced with the difficulty of refinancing and the predicament of insolvency. Default cases rose rapidly, leading to

increased foreclosures and in some cases contributed to the failure of mortgage banks.

The subprime debacle was initially confined to the US, and the proportion of subprime mortgages to the total value of general housing loans was also limited.[2] However, because of liberal financial innovation, as well as the prevalence of the originate-to-distribute business model, subprime mortgages were packaged through securitization into multiple complex structured products, such as asset-backed securities (ABS) and collateralized debt obligations (CDO). Such financial products not only heightened the risks but also distributed them to investors in other countries via highly efficient global capital markets, and thereby caused the crisis to quickly spread beyond the US and spill over to other parts of the world.

In mid-2007, the credit spread of structured credit derivatives noticeably widened, arousing investors' concerns over the potential losses incurred by financial firms which had heavily invested in mortgage-linked structured products. The subsequent impact confronted the financial firms with losses from depreciated asset valuations and brought about the tough process of de-leveraging. Credit crowding out occurred in the asset-backed commercial paper (ABCP) market, pushing up interest rates and exposing the issuers to the problem of refinancing their bills at maturity. The credit spreads of ABS and CDO continued to widen, and credit rating organizations downgraded those rated companies significantly. The crisis increasingly spread to all financial markets. Subsequent to October 2007, many large European and American firms, including hedge funds, investment banks, commercial banks and insurance companies, registered huge losses related to subprime securities investments. Moreover, some large financial firms were forced to place the assets and liabilities of heavily-in-loss structured investment vehicles (SIV) back on their balance sheets, causing losses to expand significantly.

From 2008 onwards, many banks in European countries and the US were faced with the immense pressure of raising capital and reducing leverage due to increasing losses and decreasing capital adequacy. In particular, those financial firms relying heavily on wholesale funding were subject to more severe pressures because of the drastic rise in inter-bank lending rates. Though the European and American central banks actively injected funds into the financial markets from August 2007 onwards, the effect of theses injections was simply to relieve the demand for shorter-term funds owing to the augmentation of counterparty risk, whereas inter-bank interest rates for periods longer than three months remained at high levels.

[2] The proportion of outstanding balances of subprime mortgages to general housing loans as of the end of 2006 was about 15%. If Alt-A mortgages superior to subprime mortgages in credit quality are added together, the proportion then becomes about 27%.

The worsening trend of the US housing market continued in 2008. Default in repayment was not only limited to subprime mortgages, but also extended to other credit activities, including Alt-A mortgages, prime mortgages, commercial real estate mortgages, and consumer lending. The default rates of these loans were also rising. Along with the proliferation of mortgage defaults, the financial losses of the two US government-sponsored enterprises (GSE), Fannie Mae and Freddie Mac, which engaged in issuing and guaranteeing mortgage-backed securities, continued increasing. Coupled with the extremely high leverage levels of these enterprises, markets became concerned regarding their repayment ability, causing the stock prices of the two enterprises to slump, and investors to incur huge losses. As the scale of the mortgage-backed securities issued by these two enterprises was very vast, their collapse would have led to a further contraction of mortgage markets, a steep rise in mortgage rates and further declines in house prices, causing wide ranging negative impacts on the economy. These enterprises eventually prompted the Federal Housing Finance Agency to step in and take over on 7 September 2008. Both enterprises were provided with capital and financing by the US Treasury. These policy actions increasingly mitigated market concerns.

The bankruptcy protection filed by Lehman Brothers on 15 September 2008, raised the anxiety of many financial firms over counterparty losses, and in turn led to the malfunction of global banks' financing networks. American International Group (AIG) – the global insurance giant – was impacted by AIG Financial Products Corp. (AIGFP)[3], one of its subsidiaries, which transacted bulky credit default swaps (CDS) and was on the verge of bankruptcy from suffering huge losses. The failing group prompted the US government to inject US$85 billion for an emergency bailout, temporarily mitigating its financial crisis. Moreover, major money market funds were faced with floods of redemption orders from their investors, and some of the funds collapsed. Thus, market concerns about whether financial firms relying on wholesale funding would be able to survive or not heightened. These factors aroused strong, swift and broad market reactions, risky assets sold off, overnight inter-bank lending rates surged, the spread of interest rate swaps widened, credit spreads of CDS jumped, and global stock markets dropped. The shocks gradually spilled over from the financial sector to the real sector, thereby causing economic recessions in most advanced and developing countries.

[3] The headquarters of AIGFP is located in London, UK, which is staffed with 377 employees. The company transacted bulky CDS deals and provided insurance against the default of the mortgage assets of banks to earn high premiums. Subsequent to the financial crisis, the company, buffeted by the sharply declining value of mortgages-backed securities, was forced to supplement its collateral; hence, causing a downward drag on the finances of the parent company. AIG announced that the CDS department incurred a loss of US$350 million in the third quarter of 2007, and then losses of US$25 billion in 2008.

2.1.2 The root causes of the financial crisis

The causes of the financial crisis are complex and intertwined. To summarize current international perspectives, the crisis can be attributed mainly to six fundamental causes:

Excessive global liquidity undermined investors' vigilance to risks

The macroeconomic background of the financial crisis is the so-called "Great Moderation" whereby the global economy entered a prolonged period of low and stable inflation along with high and stable economic growth. During the period, the fast growing and rapidly accumulated savings in many emerging countries as well as wealth accumulation in crude oil- and raw materials-producing countries resulted in a glut of global liquidity and increased the demand for financial products, especially low risk ones (such as US government bonds), leading to an excess demand, and persistently sliding real interest rates.

Furthermore, the speedy growth of global liquidity was encouraged by the Fed easing monetary policy in response to the IT bubble burst, Japan continuing its zero-interest rate policy, and the Euro area implementing a loose monetary policy. Excessive global liquidity reduced investors' sense of risk and made them pour funds into risky assets, leading to a rise in asset prices, a decline of risk-premiums and the formation of a bubble phenomenon in credit and asset markets. Consequently, subprime mortgages' risks remained mostly unnoticed until the housing market slump in 2007.

"Originate-to-distribute" model precipitated a lapse in the credit approval process

The development of financial engineering and financial innovation prompted the prevalence of the "originate-to-distribute" model. Mortgage banks originated mortgages and then sold them to investment banks. The investment banks subsequently re-packaged the mortgages into products such as ABS and CDO through securitization to sell to global institutional investors. After transferring the credit risk of mortgages, the main source of originators' profits came from the sale of the mortgages and service fees charged. Because the profits were based on the volume of mortgages, instead of the quality, loose credit approval standards to augment volume became common. The result was that the subprime market grew substantially and the credit quality of loans dropped noticeably.

Information asymmetry and principle-agent problems existed in securitization

Asset securitization allows banks to liquidate illiquid loans and offers an opportunity for risk to be traded. It provides banks with more channels to avert risk, but also suffers from some serious shortcomings. Firstly, the information of the loan collateral and the underlying borrowers' credit remain with the originating institutions and do not actually transfer to the special purpose vehicles (SPV), thereby possibly making the SPV unaware of the relevant information and risks behind securitization. Secondly, when selling the securitized products, asset managers may not play the role of agent well, leading investors to buy risky products without being fully aware of their risks.

Conflict of interest and model bias at credit rating agencies emerged

The intent of credit rating is not only to determine the risk weights stipulated in Basel II, but also to be used as a basis for risk management and investment decision making by many financial institutions. Nevertheless, a conflict of interest exists as the credit rating agencies charge bond issuers. This conflict has intensified when credit rating agencies not only provided rating services but also offered design and consultancy services for securitized products for the same clients, which included providing these clients with the service of how to structure securities to get the best possible credit rating.

In addition, credit rating agencies could not completely acquire the relevant information behind the asset pools and thus a bias of pricing models when rating the securitized products occurred. Furthermore, the agencies played dual roles of designing securitized products and pricing models at the same time, which led to a lack of objectivity of the models. Moreover, the credit rating models designed by the agencies only covered credit risk, neglecting other risks such as market risk and liquidity risk.

Risk management at financial institutions was outpaced by financial innovation

Following the persistent innovation of financial engineering, subprime mortgages were packaged into structured credit products. However, these products' structures were sophisticated and lacked historical information, and financial institutions can only rely on mathematical models to assess and manage risks. The various assumptions of the assessment models were built upon the foundation of financial stability and sufficient market liquidity. Once the financial system became unstable and liquidity dried up, the risk management methodologies ceased to function.

Furthermore, many financial institutions did not aggregate and manage the risks related to subprime mortgages including investing in financial products (e.g. ABS and CDO), providing liquidity facilities, exposing to counterparty risk and taking reputational risk in their sponsored structured investment vehicles. As these institutions were not aware of the high concentration of the risks of subprime mortgages, it led to a series of losses in the wake of the crisis

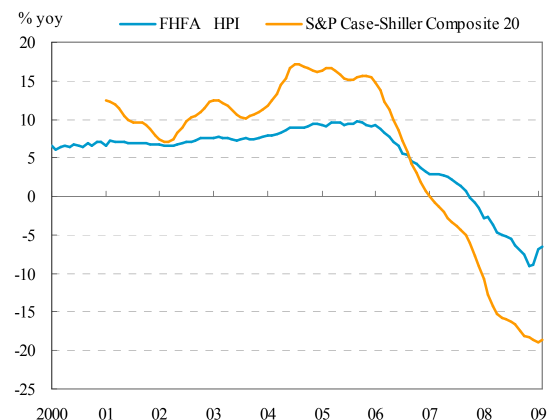
Fair value accounting and Basel II led to pro-cyclical operations by financial institutions

Fair value accounting and Basel II have a procyclicality effect on the economy. When the economy booms, the fair value of assets increases, the leverage ratios of financial institutions decline and the capital adequacy ratios rise. Thus, financial institutions are able to borrow more funds to amplify their assets, producing a positive feedback loop and making the economy much more prosperous. In contrast, when the economy enters a downturn, banks tighten their asset holdings, leading to a much more distressed economy. Such procyclicality increases operating pressure of financial institutions in a downturn and financial system instability.

2.2 Impact on global finance and economy

The financial crisis originating from industrialized countries caused severe impacts on their economies and financial systems. It spilled over to emerging and developing economies and formed a global financial and economic calamity. In the financial sector, financial institutions suffered huge losses, non-performing loan ratios continued to climb, credit spreads remained at high levels, and stock markets fluctuated sharply. In the real sector, economies entered deep recessions, consumer confidence plummeted, unemployment rates climbed, and deflation risks elevated.

Chart 2.1 Annual growth rates across house price indices in the US



Sources: Federal Housing Finance Agency and S&P.