

# The Global Financial Crisis 2007-8

*Crisis of human knowledge and government intervention*

## Abstract

If liquidity were the problem, then providing more liquidity by making borrowing easier and cheaper by the Federal Reserve would be appropriate and then capital markets would have absorbed the losses, allowing the financial system to move forward. Crises of worse estimated losses have only caused hiccups in the system in the past. The difference between these other crises and the sub-prime mortgage crisis is not in the magnitude of the primary losses, but in the systemic linkages and repercussions.

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*March 1, 2009*

## INTRODUCTION

The global financial crisis of 2007-2008 is without a precedent by history's account even though economists tend to compare it to the Great Depression in 1929, the Russian crisis of 1992 and the Asian one in 97-98, etc. There is almost universal agreement that the fundamental cause of the crisis was the combination of a credit boom and a housing bubble.

In the last five to seven years the ratio of debt to national income has gone up by 100% from 3.75 to 4.75 to one. During this same period, house prices grew at an record rate of 11% per year. Since August 2007, financial markets and financial institutions all over the world have been hit by shattering developments that had started earlier with problems in the performance of sub-prime mortgages in the United States. A housing boom followed by a bust led to defaults, the implosion of mortgages and mortgage-related securities at financial institutions, and resulting financial turmoil. Financial institutions have written off losses worth many billions of dollars and are continuing to do so. Liquidity has virtually disappeared from important markets and stock markets have plunged. Central banks have provided support with hundreds of billions, intervening not only to support the markets and provide liquidity but also to prevent the breakdown of individual institutions. Currently governments in the United States and Europe are stepping in to support financial institutions on a massive scale.

## REVIEW OF THE ARGUMENTS

While the immediate causes and development of the crisis are well-accepted, economists tend to diverge on the global causes, inherent in the system, which have started a financial turmoil unknown by its scale. Krugman (2009) blames it on Greenspan's bubbles and especially lenient regulatory framework on the risk-taking financial institutions, leading the economy to a "magneto trouble" (p. 189) as said by Keynes. Even though Krugman has warned on various occasions about the fragility of a fairly liberal system, tolerating huge amounts of risks, he himself admits to be surprised by the effects of the failed banking shadow system. He quotes Tim Geithner (now head of the economics department of the US government) on the risks of the rise of the shadow banking system:

*"Once the investors in these financing arrangements – many conservatively managed money funds – withdrew or threatened to withdraw their funds from these markets, the system became vulnerable to a self-reinforcing cycle of forced liquidation of assets, which further increased volatility and lowered prices across a variety of asset classes. In response, margin requirements were increased, or financing was withdrawn altogether from some customers, forcing more de-leveraging. Capital cushions eroded as assets were sold into distressed markets. The force of this dynamic was exacerbated by the poor quality of assets – particularly mortgage-related assets – that had been spread across the system. This helps explain how a relatively small quantity of risky assets was able to undermine the confidence of investors and other market participants across a much broader range of assets and markets."*

Indeed, the relatively small portion of sub-prime mortgages to other risky assets puzzles analysts as to why the system could not have absorbed the shock. Hellwig (2008) states that the share of subprime mortgages rose from around 9 % of new mortgages in the early 2000's to above 40 % in 2006. By the end of 2006, subprime mortgages accounted for some 14 % of the total stock of outstanding securitized mortgage. It is important also to remember that residential housing and real estate account for an important part of the economy's aggregate wealth, in many countries more important than net financial assets. Slacalek (2006) claims that the USA exhibited a mean ratios of housing wealth to income of 3.01 and of net financial wealth to income of 3.84 in 2002.

If liquidity were the problem, then providing more liquidity by making borrowing easier and cheaper by the Federal Reserve would be appropriate and then capital markets would have absorbed the losses, allowing the financial system to move forward. Crises of worse estimated losses have only caused hiccups in the system in the past. The difference between these other crises and the sub-prime mortgage crisis is not in the magnitude of the primary losses, but in the systemic linkages and repercussions. The biggest fault also lies in the fact that the big financial institutions ignored their own business model of securitization and chose not to transfer the credit risk to other investors.

The burst of housing bubble and the lack of down payments have caused a shock to the availability of funds for refinancing for the individual institution which on its own part needs funds to repay its short-term debt. Due to the lack of an alternative source of finance, the institution needs and must have a fire sale of its long-term assets which depresses the assets' prices in the market. The decline in the assets' prices puts pressure on all institutions that hold such assets and turns into a spiral or a domino effect. Observations of difficulties at one institution induce investors to be worried about other institutions and to withdraw funding from them. Such worries arise if one suspects that the other institutions may have followed similar strategies or if one suspects that the other institutions may be threatened by domino effects, through contractual relations or through asset prices.

Fears of such a domino effect have forced the New York Fed rescue Long-Term Capital Management in 1998, which gained justification on the grounds that bankruptcy of LTCM and a quick liquidation of its portfolio would have created serious problems for some of its creditors (which included leading commercial banks and investment banks) and could have meant fire-sale prices for some of the assets to be sold as part of its liquidation. While the LTCM was a systematically insignificant institution and may not have caused repercussions on other institutions, the situation today causes acute fears of the domino effect.

Fiscal measures are often cited as the main reason to why investors ran into a largely risky market such as sub-prime. The government started the practice with the issuance of mortgage-backed securities but its share went from 76 % in 2003 to 43 % in 2006. At the same time, there was a relative decline in prime mortgage lending and a significant increase in sub-prime mortgage lending which did not meet the standards of the government-sponsored enterprises. The origins of Fannie Mae and Freddie Mac as government institutions led many investors to believe that, even though these institutions had been privatized, their assets were guaranteed by the government and therefore deemed to be reliable. The position of Fannie Mae and Freddie Mac in the system of housing finance in the United States is too important for the government to look aside when these institutions run into trouble. Thus, at the time when the system of mortgage-backed securities was developed, the neglect of moral hazard induced by securitization was at least partly due to a reliance of market participants on government guarantees.

### **ERA OF MODERATED GROWTH**

Nassim Taleb (2007) may be thought of as a herald of the idea for an unprecedented, unexpected shock to the financial system which reverts the illusion for an era of moderated growth. Overconfidence on stability and growth path has fooled bankers into ignoring systemic risk which combined with complexity in the world led to the crisis. While busts have happened before, the scope was largely unexpected and statistically dismantled before the event appears as a black swan. Risk management becomes unpredictable because of the interlocking links between banks, turning it to one global bank due to globalization. The system risk is inherently fragile due to underestimation of risk. The key

elements here are devising a multi-factor risk scenario that is sufficiently extreme to constitute a tail event.

The rating agencies did not warn of this systemic risk the reliability of a quantitative risk model is limited. Statistical inference from empirical data presumes that, at some level, the data can be interpreted as instances of experiments with common underlying parameters and independent disturbances; reliance on this inference for decision making presumes that the common underlying parameters will still be relevant in the future. In practice, however, the data that can be used as inputs for quantitative risk models do not exhibit the stationarity and independence properties that the statistical theory assumes. A greater feeling of protection from harm or a stronger sense of being able to maintain control may induce people to take greater risks. Professional enthusiasm about the new risk control technology may give rise to overconfidence or even market mania. Thus, the rating agencies failed to investigate the structure underlying the increases in real-estate prices since 2000 and that, therefore, they underestimated the probability of a downturn in real-estate prices and the associated danger for mortgage lenders.

The reason why banks face capital requirements is that they have incentives to take on excessive risks given their high leverage. Capital requirement ensures that first, banks find it costly to take on risks, and second, when they get hit by a shock, there is enough of a buffer zone to protect them. However, these requirements have not turned to be effective because while they provide a sliding obstacle, the regulator ignored the importance of interlinkages and its implications for systemic risk.

## **SYSTEMIC RISK**

Any asset portfolio is, in essence, a financial network. So the balance sheet of a large financial institution is a network, with nodes defined by the assets and links defined by the correlations directional lending relationship among those assets. The financial system is similarly a network, with nodes defined by the financial institutions and links defined by the financial interconnections between these institutions. These network uncertainties make it tremendously difficult for risk managers to identify and price, and hence manage, balance sheet risk. Relatively little is known about how the structure of a banking network may affect its susceptibility to systemic breakdown.

Nier's review of the network externalities (2008) finds that decreases in net worth causes a non-linear increase of the number of contagious defaults. While for relatively high levels of net worth, contagious defaults are, as we said, hiccups to the system but when capitalisation reaches a break-even point, a further decrease in net worth leads to sharp increases in the risk of a systemic breakdown, where a large number of banks default as a result of contagion. Such a threshold of capitalization can be reached through a commonly felt shock that may lead to such decreases in overall net worth. The results suggest that systemic risk can be deeply affected by common shocks and interlinkages. Thus, the housing bubble bursting presented a common shock, exacerbated by most institutions' involvement on the sub-prime market, leading to a spiral effect, lack of liquidity and loss of trust among financial institutions.

Furthermore, Nier shows that increases in the size of inter-bank liabilities tend to increase the risk of knock-on default. Moreover, this can also be observed even when banks hold capital against interbank assets in the same way as they hold capital against external assets. This suggests capital requirements that are a function of the asset side of banks' balance sheets may not protect against the threat of systemic breakdown that arises when banks are interlinked through interbank liabilities. This finding

that the capital requirement, as one of the threshold of the regulatory system, is an ineffective measure in a highly globalized financial world.

For highly developed financial system where connectivity is high, a further increase in the number of links increases the capacity of the system to withstand shocks. This leads us to the finding that more concentrated banking systems tend to be more prone to systemic breakdown. However, the presence of liquidity effects increases the chance of systemic breakdown for any given aggregate capitalisation and any given degree of connectivity between banks. Moreover, more concentrated banking systems are particularly vulnerable to the presence of such liquidity effects. More concentrated banking systems tend to be more fragile even in the absence of liquidity effects. However, the less liquid is the market for failed banking assets the more concentration increases the risk of systemic breakdown.

The moral hazard problem is also evident, bearing in mind that an institution's assets are usually very diverse. This makes it difficult for outside investors to monitor the institution's activities and to take corrective actions if they see something going wrong. One always had to suspect that the securitization of credit risks would be a source of moral hazard that could endanger the viability of the system. The fact that risk premia on sub-prime mortgages went down even as risks in sub-prime mortgages went up indicates that the expansion of sub-prime mortgage lending was driven by the supply of funds rather than the demand for funds in these markets.

It is a truism that ensuring the soundness of each individual institution ensures the soundness of the system as a whole. In fact, the 'too big to fail' argument has been extended from (deposit-taking) banks to cover a whole range of financial institutions whose failure would have no direct or intrinsic systemic significance whatsoever, but that acquire indirect or derived significance through their relationships with other financial institutions that are generally considered to be inherently systemically important. Hedge funds, private equity funds and investment banks are examples of institutions that are sometimes argued to have derived or indirect systemic significance because other institutions that are intrinsically or directly systemically important are exposed to them.

## **CONCLUSION**

Globalization and financial innovation combined with the asymmetry of information are effectively the main reasons for this financial crisis. The financial system would have contained the effects from the housing bubble and there would be limited repercussions if there were not as much systemic risk in the system. The need for a new regulatory framework is the new paradigm which is being discussed across the world and which will shape the financial system in the decades to come.

In the end, the financial regulation systems failed in predicting consequences of the housing bubble. The effect from greater regulation is debatable and the chance for the regulatory reform to improve financial system's robustness with as little damage as possible to its efficiency and creativity is negligible. The crisis itself, however, has made economic agents aware of the existence of black swans which will probably rationalize expectations on a larger scale than the regulatory framework could ever achieve. Human knowledge, however, has continued to suffer. My personal belief is that the future of financial innovation lies in further research on how to measure and learn more about the underlying systemic risk.

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