CAUSES AND CONSEQUENCES OF THE SUB-PRIME CRISIS

Rasiah F. Rajkumar

ACMA, ACA, CFA, CISA, MBA

Banking Surveillance Dept, Central Bank of Oman

US sub-prime crisis is a classic example that clearly illustrates the interlinkages within various sections of the financial markets and their circular impact on the real economy, especially in the present globalized environment. Thus, the study of the causes and consequences of the sub-prime crisis provides valuable lessons for policymakers, regulators and various market participants, not only for those in the US but also globally.

The impact of defaults and foreclosures in the US sub-prime mortgage market, which started in the second half of 2007 and still continues with no sign of any recovery, is considered to be one of the worst financial shocks that the United States has confronted since the Great Depression in the 1930s. Sub-prime mortgages are the home loans made to borrowers who are perceived to have high credit risk, often because they lack a strong credit history or have other characteristics that are associated with high probabilities of default such as poor credit scores and inadequate income/cash-flows to support such loan repayments. Further, these loans generally involved very high loan-to-value ratios - as high as 95% or sometimes even 100% - and low monthly installments during the first few years. Thus, subprime mortgage lending made home loans possible for borrowers who in the past might not have qualified for a mortgage.

Sub-prime mortgage loans originated/granted by lending banks (originators) were sold to investment banks (issuers) which in turn securitized these loans by issuing structured finance instruments such as Residential Mortgage Back Securities (RMBS) and Collateralized Debt Obligations[1] (CDO) collateralized by RMBS. These RMBS (and CDOs) were serviced and repaid out of the cash flow streams generated by the underlying mortgage loans. Generally, issuers created Special Purpose Entities (SPE) to take over the mortgage loan pools and issue RMBS to fund the purchase of these mortgages from loan originators. Further, issuers structured these SPEs as "Qualifying' SPEs in line with the US GAAP, which meant that the assets and liabilities of these SPEs could be excluded from consolidation so as to get several benefits including reduction in capital requirements.

[1] Financial innovations led to the creation of multitude of other SF instruments/vehicles such Asset Back Commercial Paper (ABCP) conduits and Structured Investment Vehicles (SIV) which purchased RMBS and other Asset Back Securities (ABS) and re-securitized them. In the article, all structured finance instruments will be referred to as RMBS.

Further, issuers structured the RMBS in consultation with the rating agencies, in such a way as to obtain the best possible credit rating to facilitate the marketing of these securities. The secret of turning high risk sub-prime mortgage loans into higher rated RMBS was based on the concept of structuring the pool of mortgage loans into different tranches of varying seniority - senior tranches getting priority of repayments over subordinated tranches. Issuers could create as many 'tranches' of RMBS as desired from a particular mortgage pool with the most senior tranche targeting a higher rating and other tranches lower ratings. The highest-rated RMBS would have the first priority on cash received from mortgage holders until they were fully paid, then the next tier of RMBS and so on. The RMBS at the bottom, usually called the equity tranche, was paid the highest interest rate for the highest risk that they took by absorbing the first losses from mortgage defaults. Furthermore, to make RMBS more attractive to investors, issuers also offered enhancements such as credit default insurance through which hedge funds or investment banks themselves guaranteed the loans in a given MBS tranche against default. In the period 2004-2007, sub-prime mortgage loans and securitizations backed by such loans showed phenomenal increases compared to mortgage loans made to creditworthy customers on the basis of prudent lending criteria (i.e. nonsub-prime mortgages).

Securitizations became hugely popular with lending (i.e. originating) banks mainly because it unburdened their balance sheets and facilitated cash inflows required to multiply loan originations and business volumes with limited or no additional capital requirements. By 2004 more than 80% of home loans in the US were securitized and sold. Banks found this 'originate and distribute' model, which enabled them to rapidly grow business volumes, much more profitable than the traditional 'originate and hold' model. In addition, securitizations also offered the benefit of allowing for more active distribution of risks among several market participants locally as well as globally. Losses from the sub-prime crisis are indeed dispersed among various market participants within and outside the US. Substantial part of the sub-prime losses are with the Asian and European institutional investors who invested heavily in MBS. Many more sub-prime loan originators in the US may have gone bust during the crisis if not for the transfer of risk through securitizations.

However, the latter benefit also created a moral hazard problem- a serious shortcoming which partly contributed to the subprime crisis. As the loan originating banks did not have the intention of holding them, there was no incentive for them to put in place strong and prudent lending policies and practices to mitigate credit risk. On the contrary, to boost business volumes and market share, banks diluted their lending criterions and in some cases even directly or indirectly colluded with mortgage brokers and prospective borrowers by condoning or encouraging the declaration of false income and other relevant information so as to justify the borrowers' ability to pay and the suitability of such loans to the borrowers.

Banks also promoted various loan schemes that made home loans appear affordable to customers when in fact such loans did not make any economic sense to any of the parties involved. Such loan schemes included variable rate loans/adjustable rate mortgages (ARM) with lower initial interest rates that would reset at much higher rates after a few years and also usually required little or no down payment. Banks even offered grace periods for the first few years or

required only the servicing of interest. Further, banks and the mortgage brokers encouraged prospective home buyers who had some doubts as to their ability to continue repayments after the initial concessionary period, stating that in case they find it difficult to make bigger monthly repayments after the interest reset, they could refinance their homes that would have, by then, appreciated in value. This of course was the expectation or the wishful thinking of everyone who had something to profit from the continuation of the housing market boom.

Bursting of the Housing Bubble

As any asset market bubble could not be sustained indefinitely, overheated US housing market too had to undergo a correction at one point. US housing prices leveled off in 2006/2007 and started reversing with steep declines around the country. As a result of decline in home values, borrowers (some of whom were speculators) could not refinance their homes as originally planned in order to meet the steep rise in installment payments after the loan reset. Consequently, sub-prime defaults and foreclosures increased at an alarming rate. Even the borrowers who had the capacity to pay, especially the speculators, in a negative equity position defaulted as they did not have any incentive to continue with the mortgage payments as their houses were worth less than the money they owed. Further, foreclosed properties could not be sold anywhere close to pre-foreclosure prices because there was too much supply and little demand and prices started to drop further in a vicious cycle as banks started auctioning properties well below the pre-foreclosure prices. This set off a chain of events which resulted in the present financial crisis and continue to pose a threat to the US economy with global consequences.

Flaws in the Securitsation Model

Apart from the 'moral hazard' problem referred to earlier, securitization model had another shortcoming, namely the dispersion of risk, which aggravated the sub-prime crisis. Till the eruption of the crisis and its ripple effects on the whole credit and liquidity markets, only the positive side of risk dispersion was talked about. Distribution of risk- across national borders and among several market participants, who have the capacity to take up such risks and manage it effectively- was touted as the biggest benefit of the securitization model. Little was publicly discussed about the negative effects of risk distribution through securitizations despite senior officials of the Bank for International Settlements (BIS), repeatedly warning that risk dispersion might not always be benign. However, such warnings were largely kept out of public view, partly because the US Federal Reserve was convinced that financial innovation had changed the system in a fundamentally beneficial way.

Dispersion of risk and the consequent lack of transparency as to who held the ultimate risks of sub-prime defaults led to widespread panic and lack of trust among market participants. As a result of the difficulty in judging the health of the counterparty in such an uncertain environment, banks which had better managed the sub-prime risk and had surplus liquidity started hoarding cash and were reluctant to lend to other banks that were short of liquidity leading to a liquidity crunch with widening spreads in the money market. Significant loss of confidence in credit

ratings and an accompanying re-evaluation of risks led investors to pull back from a wide range of securities, especially structured credit products, leading to a severe credit crunch.

Impact of the Crisis on Various Market Participants and their Role in the Crisis

Mortgage Lenders: Despite the transfer of risk through securitizations many banks went bust due to heavy losses and/or liquidity problems. Although loan originating banks had sold the mortgage loans to issuers of RMBS, when some issuers could not meet their obligations to investors due to mortgage loan defaults, banks were forced to provide backstop funding for reputational reasons. This had a major drag on their liquidity and capital requirements. Further, when the RMBS market dried up with investors' flight to quality and little or no demand for mortgage loan pools from securitisers (i.e. issuers), banks had to keep the new mortgage loans that were in the pipeline with mounting mortgage defaults. Some banks whose investment divisions had invested in MBS attracted by the higher short term profit opportunity too suffered losses.

Issuers of RMBS (Investment banks): As a result of mounting mortgage defaults and the drying up of short term liquidity lines, issuers could not meet their obligations to RMBS investors. Hedge funds and other writers of credit insurance had not anticipated such a hike in default rates and could not honor their commitments with many of them facing financial difficulties and declaring bankruptcy. Moreover, some investment banks were holding the equity tranches of securitized mortgage pools, which took the first losses in, their balance sheets. Issuers also had no takers for RMBS, which were in the securitization pipeline. All this meant that many issuers disappeared from the market and large ones who were 'too big to fail' had to be bailed out by the US Government.

Credit Rating Agencies (CRA): RMBS were marketed by issuers on the back of high ratings and the investors purchased these securities trusting the expertise and reliability of CRAs. But the large number of defaults on highly rated MBS during the crisis had a severe impact on the credibility of CRAs. Large number of downgrades of ratings of RMBS and the speed of multiple notch reductions has led to a loss of confidence in structured finance ratings as an accurate reflection of credit risk. Moreover, the extent of ratings failure could be gauged from the recent sale of top-notch triple-A rated RMBS by Merrill Lynch at 22% of its face value i.e. at 78% discount.

Although many had contributed to the sub-prime crisis by their actions and/or inactions, CRAs, in particular, have come in for severe criticism for their role. CRAs independence and objectivity have been called into question with several allegations of conflicts of interests. In most cases rating agencies have rated the securities that they themselves had advised in structuring so as to target a rating desired by the issuer. It has also been alleged that the original models used to rate RMBS were created in close cooperation with the investment banks that issue these securities.

These are clear conflicts of interest and as the former SEC chief was quoted as saying 'CRAs were playing both the coach and referee in the debt game'. Another problem which had been discussed is the fact that rating agencies are paid for by the issuers and not by the investors, which may also raise issues relating to independence.

In fact investigations carried out recently by the SEC have revealed several serious conflicts of interests. An e-mail sent by an analyst at a CRA, prior to the onset of the crisis, states in part that "the rating agencies continue to create an 'even bigger monster – the RMBS market. Let's hope we are all wealthy and retired by the time this house of cards falters'. This clearly shows that the CRA analysts were well aware of the problems and risks relating to ratings of RMBS but the management chose to ignore the warnings or risks for reasons best known to them. Further, SEC investigations have also revealed that none of the rating agencies had specific written procedures for rating RMBS, contrary to what was publicly claimed by CRAs.

Another flaw that may have contributed to the ratings failure is the power that was bequeathed on CRAs by regulators without a proper regulatory framework to hold them accountable for the misuse of that power. Banks, insurance companies and pension funds are required, by several regulations or internal investment guidelines, to purchase only debt securities rated above a certain threshold with CRAs empowered to decide on such ratings with little or no accountability. Although, recently SEC was charged with the regulatory responsibility, they have not been authorized to question the CRAs rating judgments.

A paper published by the Bank for International Settlements (BIS) after a recent study on the sub-prime crisis identified several key risk factors that contributed to the failure of rating agencies to correctly assess the credit risk of RMBS. Reasons attributed in the paper include underestimation or not factoring the decline in housing prices, not taking into account the originator risks etc.

However, it would be difficult, especially for those who suffered heavily putting their whole trust in CRAs, to accept that the main cause of rating failures was the genuine misjudgment on the part of rating agencies. Any independent professional monitoring the developments in overheated US housing and credit markets could not have been confident that housing price increases would continue indefinitely. Further, many including the BIS have been cautioning financial institutions and regulators about the risks relating to overheated housing and credit markets.

Failure of CRAs to consider originator risk is another serious omission on their part. The main source of repayment of RMBS was the collections from underlying mortgages. Hence, it would be difficult to support the rational for ignoring the correlation between the laxity in credit standards and the default rates on mortgage loans. One could argue that CRAs assigned high ratings on RMBS based on the credit insurance bought by issuers. In that case, CRAs should have first assessed the health of the underwriters of credit insurance and their ability to make good the losses arising from mortgage defaults under both normal and stress conditions.

Recent discussions by regulators relating to CRA rating processes and relationships with issuers have been focused on addressing issues such as conflicts of interests. SEC, in particular, following its investigations, has been discussing how to address the credit rating failures and evaluating proposals for new rules including a special and separate rating system for structured securities. SEC may also be advised to consider enforcing a “cooling off” period for rating analyst before they can work for a client as it would greatly enhance the integrity and independence of the rating process.

Further, in May 2008 the International Consortium of Securities Commissioners (IOSCO) of which the US, SEC is a member, revised the code of conduct for rating agencies which was originally issued after the Enron collapse. Revised Code includes rules to be followed by CRAs in developing ratings for structured products. Accordingly, CRAs would be required to enhance disclosures including how ratings are determined, use different rating symbols for structured products and adopt reasonable measures to acquire adequate information to support a credible rating. Code also prohibits CRAs from recommending the design of RMBS to an issuer and requires CRAs to conduct regular reviews of remuneration policies of analysts employed by them. However, unless and until the code is adopted by SEC and made mandatory, market participants are unlikely to draw comfort as to the efficacy of non-mandatory rules.

Voluntary codes of conduct and self-regulations do not always work especially in situations where there are severe commercial pressures and huge competition to maintain market share. In this respect, the reforms mandated by the State of New York are in the right direction. Under these reforms CRAs are to be paid a fee to assess a product and issue a rating, regardless of whether the issuer finally selects that agency or not. This new fee structure would go a long way in reducing commercial pressures on CRAs. Under the old set up CRAs did not charge any fees during the initial rating assessments that were used as an input in the negotiation process. This enabled issuers of securities to get free previews of ratings and hire the agency which provided the best rating. State of New York has also mandated that CRAs conduct their own reviews of loan originators and also perform more thorough due diligence on the individual loans in the mortgage pools so as to address some of the other shortcomings attributed to CRAs.

Regulators and Policymakers: The government and the regulators were initially complacent as the housing boom created by the easy availability of credit helped the economy look good and also increased the proportion of home owning population by making home loans affordable to even low income segments both of which made them popular. Consequently, regulators failed to question the suitability of loan schemes and loan amounts offered by banks to sub-prime borrowers and the serious lowering of lending standards and disciplines. Moreover, regulators encouraged financial innovations which attracted global capital into US housing at reduced cost and feared any regulatory control would inhibit such innovations and inflows. In fact, Alan Greenspan, the former Chairman of the Fed Reserve was highly taken up with the securitization model which in his opinion was fostering constructive innovation that was both responsive to market demand and beneficial to consumers. Further, he was quoted as saying that ‘financial innovation and advances in technology have enabled lenders to offer a multitude of new products such as sub-prime loans

to a wider spectrum of consumers taking advantage of credit scoring models and other techniques to efficiently judge the individual borrower risk and price that risk appropriately'.

Greenspan has also been criticized for maintaining low interest rates over the period of 2002-2006 that encouraged inexpensive mortgages and thus partly contributed to an overheated housing market. However, as the head of Fed Reserve, Greenspan had an unenviable task of balancing multiple conflicting objectives of economic growth, price stability and financial stability. Lower interest rates helped economic growth and also perhaps lowered the cost of the huge US government debt. Moreover, resultant liquidity glut helped ensure financial stability. However, Greenspan was wrong in expecting too much from self-regulation and market disciplining process to limit or control the excesses and irregularities by market participants which partly contributed to the crisis. Further, the oil price shock and several other factors in the real economy did not help him in the balancing act either.

With the sub-prime crisis deteriorating and threatening to disrupt the whole financial system Fed Reserve had to take several emergency measures to ease the liquidity crisis and restore market confidence. The Federal Open Market Committee began to ease monetary policy as it grew concerned about the impact that the contraction in housing activity and a possible credit crunch, could have on economic growth. Further, the Federal Reserve announced the creation of the Term Auction Facility (TAF) to provide secured term funding to eligible depository institutions accepting an expanded set of assets as collateral to further help banks in trouble. As market conditions once again worsened in March 2008 and investors pulled back from lending against all but the safest assets, the Federal Reserve established the Term Securities Lending Facility, which allows primary dealers to swap a range of less-liquid assets for Treasury securities in the Federal Reserve's portfolio for terms of about one month. Further, the Federal Reserve again used its emergency lending authority to create the Primary Dealer Credit Facility (PDCF), which provides a backstop source of liquidity to primary dealers similar to that available to depository institutions through the discount window.

The Federal Reserve has also calmed the markets by demonstrating its resolve to bring the situation under control by bailing out several banks including Bear Stearns. Federal Reserve and the US Treasury Dept also appear determined to take any action to save the Government sponsored enterprises (GSE) Freddie Mac and Fannie Mae as they have also been severely affected by the sub-prime crisis.

Notwithstanding regulatory actions which had cost billions for tax payers in addition to creating 'moral hazard' and other problems, banks have incurred to date a massive $476 bn on account of write-downs and losses as a direct consequence of the US subprime crisis.

Write-downs and losses from Aug 2007 to Aug 2008

Name of FI	$ bn	Name of FI	$ bn
Citigroup	46.40	Ambac	9.22
M Lynch	36.80	Credit Suisse	9.17
UBS	36.70	Wachovia	8.90
AIG	20.23	MBIA Inc	8.41
HSBC	18.70	Washington Mutual	8.10
RBS	16.50	Deutsche Bank	7.35
IKB	14.73	HBOS	6.09
BOA	14.60	**Top 16 losers**	**273.60**
M Stanley	11.70	Others	202.40
		Total	**476.00**

Source : Institute of International Finance and Financial Times, USA

Had the Federal Reserve not stepped in the consequences for the real economy would have been quite severe although there is still no sign that the worst is over. In fact economists predict that a further $900 bn will have to be written off before the crisis comes to an end.

Conclusion

Sub-prime crisis which started with defaults in the sub-prime mortgage market has had far reaching consequences dragging down the whole housing market including prime loans and other asset markets, equity and debt markets and the entire financial system and the global economy. US consumer spending has been hit by falling home and equity prices, job losses and reduced incomes, and tighter credit conditions following the crisis on top of rising oil and energy prices. As the US consumption demand is a significant component of global demand, any slump in US demand for exports would have a noticeable impact globally. While emerging economies have benefited from globalization, they are also now more vulnerable to contagion effects from developed economies. In fact, in August 2008 HSBC has warned that the credit crunch is spreading to Asia.

Nevertheless, it is hoped that banks and other financial market participants worldwide would have learnt several valuable lessons from the crisis including the fact that financial innovations and the availability of sophisticated models to rate and price risk can only support not replace common sense judgments and basic credit standards and disciplines. Investors in complex financial instruments are also well advised to use credit ratings only to support not replace their own due diligence based on fundamental analysis regardless of whether the current regulatory actions to improve the quality and reliability of credit ratings succeed or not.

Consequent to the crisis, RMBS market has dried up and hence the availability of structured finance securitizations as a source of funding has been severely curtailed. However, securitizations

may still make a come back provided the quality and reliability of risk assessments considerably improve with the new initiatives and the risk distribution is done with adequate transparency and disclosures.

In addition to the proposed new initiatives, the implementation of Basel 2 disclosures relating to securitization structures and capital requirements based on the assessment of actual risks inherent from the substance of securitization transactions rather than the legal form, may also help investors and other market participants to perform their own due diligence. Moreover, Basel 2 requirements regarding maintenance of robust policies, processes and procedures may also lead to better management of securitization structures by originators, issuers, guarantors and investors.

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