

The future of structured credit – what comes after the credit crunch?¹

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The market for structured credit has blossomed over the last decade. This new type of investment product has clearly marked a paradigm shift in the business model of financial institutions. Banks are no longer in the business of simply taking deposits and making loans (the 'take and make' model), but have been transformed into securitization houses [Fabozzi and Kothari (2007)], whose main activity is to structure different asset pools and sell them to third-party investors. One prominent structured credit product is the by-now infamous Collateralized Debt Obligation (CDO) [Lucas et al. (2007)]. A CDO is a product backed by a pool of one or more types of the following assets: domestic corporate bonds, domestic bank loans, emerging market bonds, special situation loans and distressed debt, foreign bank loans, asset-backed securities, residential and commercial mortgage-backed securities, other CDOs, and credit derivatives. When the underlying asset pool mainly consists of loans, the CDO is referred to as Collateralized Loan Obligations (CLO). In cases when the primary assets are bonds, the CDO is also known as a Collateralized Bond Obligation (CBO). If the CDO is backed by other CDOs, a product called 'squared CDOs' is created. The structure of the CDO can become complex when the underlying pool contains other credit derivatives such as a Credit Default Swap (CDS). In such cases, a synthetic CDO is formed.

The invention of a structured credit product such as a CDO is often touted as a great financial innovation. When the asset pool backing the CDO includes mainly residential mortgage loans, it is in essence transferring default risk of home buyers from the bank that made the loan in the first place to the investors. As a result, the default risk is now shared among a greater number of investors and the bank can lower the interest rates charged on mortgages granted to home buyers. This development has spawned a surge in the U.S. housing mortgage market and has helped many Americans to fulfill their dream of home ownership.

The rapid development of CDOs backed by mortgage loans caused a change in risk profiling and management by mortgage lenders. The fact that the default risk is detached from those banks that directly make decisions on mortgage loans creates a moral hazard. Banks now have little or no incentive to carefully check the credit status of a potential home buyer, and in the quest for profits they were even incentivized to make as many mortgage loans as possible. As a consequence, a substantial proportion of loans were made to consumers with low credit ratings and the popularly-known 'sub-prime market' was formed.

The collapse of the U.S. sub-prime market, which started in early 2007, and the ensuing credit crisis has raised serious challenges for the future development of the CDO and structured credit product

markets as a whole. The spread of the credit crisis is not confined to the U.S. alone, as many of the end-investor banks are from Europe, Asia, or elsewhere.

Review of the global credit crisis since August 2007

After Bear Stearns reported that it was facing serious difficulties with its investments in the sub-prime market, through structured credit products, other financial institutions followed suit. The scale of the credit crisis became global. On 9 August 2007, BNP Paribas told investors that they would not be able to withdraw the cash represented by their CDOs because the bank could not value their assets due to a "complete evaporation of liquidity." On 28 August, 2007, German regional bank Sachsen Landesbank was sold to a larger rival, Landesbank Baden-Württemberg, to save it from collapse. Also in the same month, major central banks all over the world pumped huge amounts of cash into the financial system in the hope of improving liquidity.

From September 2007 to March 2008, a series of large banks announced huge losses resulting from their investments in the sub-prime mortgage market. A high-profile case on this list is the British bank Northern Rock, a big player in the structured credit market. The bank asked for and was granted emergency financial support from the Bank of England. Later, this bank was nationalized, raising concerns that such action might heavily distort the competitiveness of the market. In the face of a global meltdown, central banks in the U.S. and Western Europe launched a number of schemes to readily bail out troubled financial institutions.

In April 2008, the mortgage market came to a standstill and house prices dropped substantially. Most banks experienced cash shortages and tried to raise more cash through right issues or selling part of their equity to sovereign investment funds (i.e., Citigroup and the Abu Dhabi Investment Authority for U.S.\$7.5 bln, UBS and the Government of Singapore Investment Corporation for CHF 11 bln, Morgan Stanley and the China Investment Corporation for U.S.\$5 bln, Merrill Lynch and Temasek Holdings for U.S.\$4.4 bln, and Citigroup and the Government of Singapore Investment Authority for U.S.\$6.9 bln). Other banks were simply saved from being wiped out through a series of fire-sales, such as the sale of Bear Stearns to JPMorgan.

In July 2008, the crisis hit the giant mortgage institutions. On 13th of July, IndyMac had its assets seized by U.S. regulators, perpetuating the second largest banking failure in country's history. On the following day, the financial authorities were forced to step in to assist U.S.'s mortgage giants, Fannie Mae and Freddie Mac. As owners or guarantors of U.S.\$5 trillion worth of home loans, they are crucial to the U.S. market and could not be allowed to fail. It seems that

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the crisis has swept across the globe and no financial institution can escape the storm regardless of its size.

Almost all major financial institutions were forced to sell at a loss or write off large parts of their CDO investments. Merrill Lynch announced that they were selling their remaining CDOs – which were valued at U.S.\$30.6 bln a year ago – to Lone Star for 22 cents on the dollar, a write-off of U.S.\$19 bln in one year.

According to one estimate by Fortune magazine, approximately €350 billion has been written off by financial institutions globally between August 2007 and September 2008. The same estimate puts €16 bln of those losses on the balance sheets of Dutch financial institutions (ABN Amro/RBS €4.4 bln, ING €3.7 bln, Rabobank €2.7 bln, and Fortis €2.6 bln).

The list of financial institutions which were most heavily impacted by the CDO crisis was headed by Citigroup, UBS, and Bear Stearns, until further disaster struck in mid-September 2008. In a period of one week Lehman Brothers declared bankruptcy, Merrill Lynch was forcibly sold at a bargain to Bank of America, and insurance giant AIG was nationalized by the U.S. government in a U.S.\$85 bln buy-out. At the time of writing of this article investment bank Morgan Stanley is frantically trying to sell itself to universal bank Wachovia, Goldman Sachs is stumbling, and universal banking institutions, such as the U.S.-based WaMu and U.K. bank HBOS, which ended up being sold to Lloyds Bank, are facing significant difficulties. One of the few American powerhouses to escape the curse of the CDO collapse is JPMorganChase, whose CEO Jamie Dimon had the foresight to instruct his management in September 2006 to divest from CDOs at the height of the market.

The credit crisis caused by reckless CDO investments has wreaked havoc amongst the world's most prestigious and well-known financial institutions. A financial meltdown led to a shake-up of the banking industry not seen since the 1930s, and no one knows when the end will be in sight. The U.S. government has drafted an unprecedented plan to bail out its troubled financial institutions, by buying up to U.S.\$700 bln worth of sub-prime debt with tax-payers' money. How could this all happen in our 21st century financial system? More importantly, what can be done to prevent this scenario from happening again in the future?

The future of CDOs and the structured credit market

Back to basics?

There seems to be consensus that even if the widespread use of complex structured credit products is not the main reason for the credit crisis, it has certainly exacerbated it. The question, therefore, is what does the future hold for CDOs and the structured credit market in general? A quite straightforward and easy answer is that banks should return to what they knew and understood. For many

people such a response might imply that banks should abandon all structured credit products and return to the traditional 'take and make' model. For others, such an interpretation seems to be too extreme. If we abandon every financial innovation when something goes wrong, economic development would be impossible. It is obvious that we do not abolish money just because inflation makes our lives miserable. Instead, we aim to design policy to tame inflation. The same logic applies to CDOs and other structured credit products.

According to Shiller (2008), the current crisis presents an opportunity for the financial community to develop a better and more suitable infrastructure for financial innovation and to help boost the development of future products. While the current structured credit market has more than a few shortcomings, the evidence of the benefits it has brought about, in terms of spreading risk and lowering interest rates and the cost of capital (in other words making the market more complete), is just irrefutable.

Many believe that the 'back to basics' notion will still take place, but in a much milder form. Over the short run, new issues of CDOs may have simpler structures; more will be plain vanilla rather than squared or synthetic. In a report by Davies et al. (2008), the market for CDOs is deemed far from dead. The product is still demanded by real money investors, including pension funds, hedge funds, and banks' off-balance sheet entities. In general, the investor base for the structured credit market is not expected to experience a significant shift and its outlook is still solid. But there will be a new set of rules applicable to the structured credit market.

Diversifying the collateral asset

One of the reasons for the misconceptions about the risks associated with CDOs backed by mortgage loans is that the pool of collateral assets is deemed to be well diversified. Although the pool only represents one asset class, the pool should be diversified as the loans come from different regions across the U.S, especially since nationwide property crashes of the kind we are living through have been extremely rare. However, in the case of the current crisis, diversification has turned out to be an illusion as the slump in house prices has not only been nationwide, it is slowly engulfing the globe. Consequently, it is expected that in the future CDOs will be backed by a more diversified pool of assets, including different asset classes.

More stringent regulations for credit rating agencies

Part of the blame for the magnitude of the current credit crisis has been laid at the footstep of the credit rating agencies, whose job it was to assess the riskiness of CDOs and other structured products. It is puzzling that CDOs backed by sub-prime mortgage loans could have been awarded triple-A ratings. According to George Soros, the legendary hedge fund manager, he never saw a triple-A security

default. After the collapse of the sub-prime market, the downgrading of mortgage-backed securities happened on a large scale.

In the near future, we would expect more stringent regulation of the activities of credit rating agencies. In a recent proposal, the Securities and Exchange Commission (SEC) requires credit-rating firms to make more information about ratings publicly available, ban certain practices, and to clearly distinguish between corporate/government debt and the more complex structured products. Furthermore, the rating agencies must disclose any possible conflicts of interest and how they might go about managing these conflicts. However, as argued by Don Brownstein, CEO Of Structured Portfolio Management LLC, a hedge fund, rating agencies are not the only party to blame. Investors should also be more responsible in evaluating what they are buying.

Enhanced risk management and reporting systems

There will be mandatory enhancements to risk management and reporting systems of financial institutions, since they are the main originators and investors of the structured credit product. However, this is expected to be but one result of the credit crisis. As far as the former is concerned, better model stress-testing in a wider range of scenarios should be employed and the heavy reliance on historical data should be lifted. As for the latter, new financial reporting standards are in the pipeline to restore transparency and put the opaque and complex financial instruments back onto the balance sheet. Additionally, there is, of course, the responsibility of the men and women on the trading floor, who should not be put in a position where they are able to override the system and/or ignore the blinking red warning light from the risk management systems.

Many structured credit trades relied on a single brokerage agency or other sources for evaluating the assets in their portfolios [Brummelhuis (2008)]. This practice was officially banned, as it frequently led to overstating portfolio values (and trading profits), and understating portfolio risk. Both factors were often directly linked to a trader's year-end bonus. One notable case is that of a Citibank trader, who ended up behind bars after accepting a plea bargain in his prosecution by U.S federal authorities for overstating/misrepresenting his portfolio assets to his employer Citibank. Although he was only a small fish in a very big pond, the government wanted to set an example and put him in jail for 13 months.

Clearinghouse for credit derivatives

Most credit derivatives like CDOs are over-the-counter contracts between two parties, which means that there is no central clearinghouse. While the contract is usually valid for a fixed period, one party can technically get out of the contract early by entering into an offsetting position with a third party. This process can go on many times. This leads to situations where one party in a particular

contract may not know its de-facto counterparty. Furthermore, the interwoven network of financial obligations may become very complex and generate unexpected risks. As reported by Brunnermeier (2008), the number of outstanding derivatives contracts vastly exceeds the number of underlying securities. For CDS contracts alone, the notional amount outstanding in 2007 was U.S.\$45 trillion, while the value of the underlying bond market was only U.S.\$5 trillion.

In such an interwoven, complex network of financial obligations, the default of one party may cripple the whole system as all parties are to some extent linked to each other. This can create systemic risk. One of the major solutions for this problem is to create a central clearinghouse that monitors all contracts and arranges settlement in case of default. The creation of a central clearer for credit derivatives has been put forward by major clearinghouses in the U.S. and Europe and was recently supported by a group of major global institutions, including Goldman Sachs, Citigroup, JPMorgan, and Morgan Stanley.

In addition to the mitigation of systemic risks in the marketplace, other advantages of such a clearer would be the assumption of counterparty risk by the clearinghouse through novation, a clear and concise overview of outstanding settlements at the end of every trading day, curbing overzealous trading parties through enforcing margin calls on open positions, and managing member defaults early on in order to prevent just the kind of financial meltdown that we have witnessed in 2007 - 2008.

Conclusion

In this article an overview is provided of different characteristics of CDOs and the reasons why this product in particular and structured credit products in general are one of the causes of the 2007-2008 credit crisis. A brief review of the credit crunch since it started in August 2007 is also presented. Finally, the outlook for CDOs and the structured credit markets in terms of investor base, product structure, risk management, reporting, regulation, and initiatives to clear credit derivatives is also elucidated. It is clear that the financial marketplace has learned through trial and error about the correct use of structured products over the last 12 to 18 months.

In our opinion CDOs are here to stay, and as a beneficiary result of the credit crunch the framework in which they are created, structured, and securitized will be vastly reformed. Risks included in the use of any structured investment product should be better understood, identified, and mitigated through diversification of the underlying assets, more stringent regulations on valuations, enhanced and circumvention-free risk management systems, and a more appropriate trading infrastructure such as a central clearer. Only then will the financial world be able to fully benefit from the advantages of structured credit products.

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