Credit Default Swaps and Structured Credit: A Primer for Wealth Managers

Jeffrey T. Prince, CFA
Managing Director
Babson Capital Management, LLC
Springfield, Massachusetts

As the title indicates, this presentation is designed to be a primer for wealth managers, and it begins with a look at the big picture of structured credit and what went wrong in the structured credit market. Next, I will talk about the current state of the credit derivatives market and conclude with a discussion of the outlook and opportunities in structured credit.

The umbrella term, “credit derivative,” encompasses a number of different products, but I like to divide the market into two parts: cash products and synthetic products. Among the synthetic products, I will focus on single-name credit default swaps (CDS), and among the cash products, I will discuss asset-backed securities (ABS), collateralized debt obligations (CDOs), and collateralized loan obligations (CLOs).

Starting with the big picture, Table 1 shows the distribution of public and private debt in the United States, which was $33.2 trillion as of the third quarter of 2008. Asset-backed securities, which include cash CDOs, represent 8 percent of the total, or approximately $2.8 trillion. Table 2 is a deeper look at the ABS segment. CLOs constitute 11 percent, or $310 billion, of securities, and ABS CDOs are 14 percent, or about $400 billion. The $400 billion represents ABS CDOs that are still outstanding because about half of that market has disappeared through defaults. Not long ago, ABS CDOs constituted more than 25 percent of outstanding ABS.

Definition of a CDO

A CDO is a special purpose vehicle (SPV), sometimes referred to as a special purpose entity, that finances the purchase of securities (the collateral) through the issuance of debt and equity tranches. The debt and equity are paid back from the cash flow of the collateral based on rules (generally referred to as the CDO waterfall) that are hardwired into the SPV structure. Senior securities are paid first as cash flows down the capital stack, or down the waterfall, to the subordinate tranches. This definition is the classic thumbnail sketch of a CDO. It is helpful, however, for many to visualize what is happening in a risk–return diagram.

In Figure 1, a portfolio of loans (the collateral) is represented on a risk–reward diagram with a dot labeled “P.” As shown, we can see that the investment is not suitable for many investors. Through securitization, however, the portfolio can be separated into a set of securities with different risk–return characteristics that collectively appeal to a wider investor base. Each security falls on the capital allocation line that runs through point P. The lowest risk tranche, and thus the lowest-expected-return tranche, would be rated AAA and is typically called the “Class A” tranche. Tranches that are higher risk and thus have a higher expected return are positioned to the right and above the Class A tranche. Some tranches, such as the equity tranche, fall far to the upper right of the original portfolio,
consistent with their high-risk and high-reward profile. The important point is that, although the initial portfolio of loans might have limited appeal to investors, the CLO tranches are potentially attractive because they may suit particular indifference curves of individual investors. For example, a bank with very low risk tolerance may purchase the senior tranche (lowest risk tranche) of a CLO. Conversely, a hedge fund may be more interested in the highest yielding (but riskiest) equity tranches. Securitization opens investment possibilities to investors who were previously locked out of a market, but it really should be thought of more as a technique than a product in itself.

Types of CDOs
CDOs can be classified into four categories based on the (1) collateral, (2) structure, (3) purpose, and (4) level of management. First, the type of collateral supporting a CDO is clearly important, and various types of asset classes, such as high-yield bonds, investment-grade bonds, leveraged loans, middle market loans, ABS securities, as well as other CDOs, have been securitized. Second, securities can be defined based on their structure. Although CDOs can be constructed with market value triggers or constructed synthetically, most follow the cash flow
structure previously described. Third, CDOs can be classified based on their purpose. For example, some securitizations occur because an arbitrage exists between the price of the CDO assets and liabilities whereas other assets may be securitized as a financing vehicle or to remove them from the balance sheet. Finally, CDOs can be unmanaged, lightly managed, or actively managed.

This description seems fairly straightforward and logical. So, why are CDOs generally brought up in such a disparaging way? I think it has to do with the role CDOs have played in the housing crisis.

CDOs and Housing

In 2007, the total public and private debt as of year-end was $32.0 trillion. Mortgage-related debt, which includes jumbo, Alt-A, and subprime loans, represented approximately 9 percent of the total outstanding debt or about $2.7 trillion worth of securities. ABS CDOs were only about 1 percent of total debt, but they had a much greater impact on the market because the riskier tranches of other securitizations were being fed into the ABS CDOs. These ABS CDOs were then sold to monolines, banks, and other investors at yields that were far lower than appropriate for the risk being taken. As the monolines and banks began to struggle under the weight of their ill-advised investments, other markets were quickly infected, such as the municipal market (municipal securities are often wrapped by monolines) and the corporate debt market (companies need to borrow). The contagion spread from there.

Several things went wrong with ABS CDOs. First, the “originate-to-distribute” model led to poor underwriting (at both the residential mortgage-backed securities [RMBS] and ABS CDO levels). Second, a long supply chain from the original borrower to the institutional investor who bought the ABS CDO meant that few really understood the risk transfer process or the nature of the assumptions being made at each stage. Third, investors were guilty of extrapolating historical trends, particularly in relation to housing (for the previous 30 years, year-over-year house price depreciation had not occurred at the national level), and investors seemed to substitute rating agency analysis for their own due diligence. Fourth, risk managers at the banks were obviously marginalized because the banks were left with a great deal of risk. Finally, homeowners were allowed to buy more home than they could afford.

The creation of an ABS CDO starts with an aspiring homeowner who wants a mortgage. The new homeowner engages a mortgage broker, who introduces the potential homeowner to a bank that, in turn, makes a loan. The bank then bundles the new mortgage with other new mortgages into RMBS and sells the resulting securities to an investment bank. The investment bank takes the RMBS and packages them into an ABS CDO. Ultimately, the ABS CDO is sold to an institutional investor. Obviously, cash flows through the chain in the opposite direction from the mortgage.

Several pitfalls exist in this process and are now readily apparent. As mentioned, the originate-to-distribute model led to poor underwriting and, in many cases, fraud. In a paper from Fitch Ratings in November 2007, Fitch reported that it had reviewed the underwriting on 45 delinquent mortgages from 2006. Although these loans were a small subset of loans from that year, they were loans on which the borrower could not make payments within the first year. For these 45 loans, Fitch found indications of fraud or misrepresentation in almost every case. One of the more common items of fraud was that 66 percent had misrepresented their intention to occupy, meaning the borrowers stated that they intended to occupy the property but then did not. Occupancy is a very important factor in terms of the performance of a mortgage. Fitch also found that 44 percent of the loans had questionable stated income or questionable employment data that conflicted with information in credit reports. Clearly, evidence of poor underwriting exists.

In 2007, many subprime borrowers, particularly from the most recent vintage years of 2006 and 2007, stopped making their mortgage payments. As a result, delinquency rates took an alarming turn up, and home prices fell. Figure 2 illustrates this situation in two ways. The left side of the figure shows the S&P/Case–Shiller U.S. National Home Price Index from October 2006 to the end of 2008. During that time, home prices declined by approximately 25 percent. This decline in home prices led to a steep decline in the value of the securities backed by those loans, as indicated on the right side of the figure. For example, BBB RMBS securities, which went into mezzanine ABS CDOs, fell in value from par to today’s level of about 5 (the right side). AA rated RMBS, often found in high-grade ABS CDOs, fell from par to approximately 20. This decline led to unimaginable losses in the ABS CDO market.

The breadth of the devastation is visible in the amount of ABS CDO paper that is in default. Considering only the vintage years 2006 and 2007, Table 3 shows that approximately 71 percent (i.e., $233.6 billion of a total issue of $330.0 billion) have experienced an event of default (EOD). Of the $233.6 billion, $78 billion has been liquidated or is liquidating and another $77.6 billion of these ABS
CDOs is now in what is called “acceleration,” which means that all cash is dedicated to paying down the senior notes and the deal gradually unwinds. For those deals not experiencing an EOD, the only remaining value is in the super-senior tranches, which often trade for pennies on the dollar.

Who Is to Blame?
In a February 2009 article in the Wall Street Journal, Stanford University professor John Taylor argued that the financial crisis was created by the monetary excesses of the U.S. Federal Reserve. In particular, many believe that the Fed left interest rates too low for too long after the recession of 2001–2002 and that led to the dramatic rise in home prices. Not surprisingly, Alan Greenspan disagrees. In a follow-up Wall Street Journal article published on 11 March 2009, he states, “It is now very clear that the levels of complexity to which market practitioners at the height of their euphoria tried to push risk-management techniques and products were too much for even the most sophisticated market players to handle.
properly and prudently.” And I agree with Greenspan. In fact, I believe the ABS CDO market is largely responsible for feeding the housing bubble.

When investment banks put ABS CDOs together and when rating agencies rate them, many assumptions are made throughout the process. One of the most critical (and difficult) assumptions to make is the degree to which the various underlying pieces of the collateral are correlated.

In 2005, for example, Standard & Poor’s (S&P) assumed that the asset correlation between mortgages backing one subprime securitization and mortgages backing another was 0.3. Moody’s Investors Service used a somewhat different methodology and generated an asset correlation of 0.22, even lower than S&P’s. From today’s perspective, 30 percent seems far too low. But at the time, that was not clear. The fact that agencies were unable to correctly forecast the correlation, however, is not the issue. The bigger problem was that no sensitivity studies were published that discussed the effect of correlations being higher than 30 percent and how that would affect the capital structure of the resulting ABS CDO. The extent of the financial crisis has shown that the impact of high correlations is dramatic, and the models would have told us so—if we had only asked.

To understand the complexity of the problem, consider the Athos Funding deal, which closed in May 2005. As I mentioned earlier, it was not uncommon for a significant amount of the assets going into an ABS CDO to be other CDOs. Athos was a $1 billion deal that invested $5 million in Jupiter High Grade II. The Jupiter High Grade II deal, which closed in March 2005, invested, in turn, $10 million in Kent Funding. Kent Funding then took $4 million and invested in, you guessed it, Athos. The potential for problems is obvious. Furthermore, other cross investments took place as well. Admittedly, I chose to use this deal to illustrate the problems with the correlation assumptions because it is one of the most egregious examples; not all deals were done this way, but this type of activity was going on. The question is, How do the cross investments affect the situation? An investor in Athos needs to know how Jupiter is doing. To know how Jupiter is doing, the investor needs to know how Kent is doing, and Kent is dependent on the Athos investment. Obviously, cross investing complicates an already difficult process of determining the correlations among all these assets.

**ABS CDOs and the Housing Bubble**

Figure 3 shows the issuance of subprime loans as a percentage of total RMBS issuance from 1995 through 2007 (left scale). The right scale shows the corresponding federal funds rate. Although subprime issuance has historically been approximately 7.5 percent of total RMBS issuance, in 2004 it began to grow significantly. This growth coincides with the dramatic rise in ABS CDO issuance. In other words, I believe that incremental ABS CDO issuance facilitated an additional $880 billion of capital for the subprime market that, absent the ABS CDO market, would have gone elsewhere.

If the average mortgage was $225,000, then the additional capital translates to an additional 3.9 million units, or approximately 70 percent of the new single-family houses built at that time. If you include condominiums, the percentage drops to about 56 percent, which is still a big number. How much this additional housing demand drove price appreciation is hard to say, but I believe it was quite a bit.

**Figure 3. Subprime Issuance as a Percentage of Total RMBS Issuance, 1995–2007**

Source: UBS, U.S. Census Bureau, Babson Capital Management.
Current State of the Credit Derivatives Market

Recall the distinction I made earlier that the credit derivatives market could be divided between synthetic and cash products. Today, the only truly active markets are the synthetic markets. Some cash products may have active secondary markets but with no new issuance. Markets for other cash products are simply inactive and may never come back. I think the market for one cash product that still has an active secondary market, CLOs, presents some interesting opportunities for investors interested in the corporate credit market.

Figure 4 shows what I call the “CLO arbitrage.” The line represents the price differential between what the CLOs are trading at and what the underlying assets are trading at. Currently, the difference is dramatic—CLOs are 14 percent cheaper than the underlying assets. To understand where this number comes from, consider the information in Table 4. It lists the eight tranches in the capital structure of a CLO. In aggregate, about $400 million of debt and equity was issued at spreads to LIBOR, as indicated in the “Coupon” column. The “Discount Margin” (DM) column represents the current spreads to LIBOR and shows how dramatically they have increased since issuance. By using LIBOR, DM spread, and duration, a price can be estimated that is representative of the price these securities would trade at in the market today. Thus, the tranches have an estimated aggregate market value of $225.4 million with an average price of 56.3 percent of par. In contrast, the underlying collateral has an average price of 67.9 percent of par with a market value of $262.5 million. The net result is that the underlying loans that are backing these securities have a market value that is approximately $37 million higher than the CLO liabilities.

Conclusion

It would behoove investors who have an appetite for corporate risk to take a good look at the CLO market. For example, consider the recent experience of the Chelsea Park CLO. Its AA rated tranche can withstand a 25 percent loss of its collateral before it will start to take a loss. At the same time, it recently traded at 45 percent of par to yield 23 percent.

I think this example indicates that relative value exists in structured credit. I believe similar opportunities can be found in high-yield, below-investment-grade corporate credits as well.
**Table 4. Trading Prices of CLO Tranches and Underlying Assets**

<table>
<thead>
<tr>
<th>Tranches</th>
<th>Rating</th>
<th>Size</th>
<th>Coupon (bps)</th>
<th>Discount Margin (bps)</th>
<th>Duration (years)</th>
<th>Price</th>
<th>Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Aaa/AAA</td>
<td>$128,500,000</td>
<td>22.5</td>
<td>600</td>
<td>5.3</td>
<td>70.3%</td>
<td>$ 90,335,500</td>
</tr>
<tr>
<td>A2A</td>
<td>Aaa/AAA</td>
<td>155,000,000</td>
<td>21.5</td>
<td>500</td>
<td>5.9</td>
<td>77.2</td>
<td>119,660,000</td>
</tr>
<tr>
<td>A2B</td>
<td>Aa1/AAA</td>
<td>17,500,000</td>
<td>30.0</td>
<td>1,000</td>
<td>6.5</td>
<td>32.0</td>
<td>5,600,000</td>
</tr>
<tr>
<td>B</td>
<td>Aa2/AA</td>
<td>16,000,000</td>
<td>33.0</td>
<td>1,435</td>
<td>6.2</td>
<td>23.5</td>
<td>3,760,000</td>
</tr>
<tr>
<td>C</td>
<td>A2/A</td>
<td>21,000,000</td>
<td>65.0</td>
<td>2,858</td>
<td>5.0</td>
<td>14.0</td>
<td>2,940,000</td>
</tr>
<tr>
<td>D</td>
<td>Baa2/BBB</td>
<td>16,000,000</td>
<td>120.0</td>
<td>4,122</td>
<td>3.0</td>
<td>9.0</td>
<td>1,440,000</td>
</tr>
<tr>
<td>E</td>
<td>Ba2/BB</td>
<td>12,000,000</td>
<td>320.0</td>
<td>9,990</td>
<td>0.8</td>
<td>5.0</td>
<td>600,000</td>
</tr>
<tr>
<td>Equity</td>
<td>NR</td>
<td>34,000,000</td>
<td>0.0</td>
<td>3.0</td>
<td>5.5</td>
<td>56.3%</td>
<td>$225,355,500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assets</th>
<th>Rating</th>
<th>Notional</th>
<th>Coupon</th>
<th>DM</th>
<th>Duration</th>
<th>Price</th>
<th>Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loans</td>
<td>B1/B2</td>
<td>$383,262,134</td>
<td>242</td>
<td>1,051</td>
<td>4.0</td>
<td>67.7%</td>
<td>$259,276,833</td>
</tr>
<tr>
<td>Cash</td>
<td></td>
<td>3,198,551</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
<td>3,198,551</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$386,460,685</td>
<td>240</td>
<td>1,042</td>
<td>4.0</td>
<td>67.9%</td>
<td>$262,475,384</td>
</tr>
</tbody>
</table>

Arbitrage differential –$ 37,119,884

**Note:** Arbitrage differential represents the difference between total market value of the tranches and total market value of the assets.

**Disclosures**

This material contains the opinions of the author but not necessarily those of Babson Capital Management LLC, and such opinions are subject to change without notice. This material has been distributed for informational purposes only and should not be considered as investment advice or a recommendation of any particular security, strategy, or investment product. Information contained herein has been obtained from sources believed to be reliable but not guaranteed.

**References**


Question: Did any of the structured credit securities work as advertised, or was it just a uniformly bad deal-structuring process?

Prince: In this case, timing is everything. Some deals that retired prior to the subprime crisis did fine, returning all of the capital to the equity investors and providing fantastic returns for their investors. Unfortunately, all of the more recent bad news overshadowed the successes.

Question: Does securitization have a future and, if so, how will it be different from what we have seen?

Prince: Yes, I believe securitization has a future, and standardization of terms will be a main goal. It has already begun in the synthetic side of the market, and I think it will proceed in the cash side as well. In the past, these were all one-off securitizations, heavily negotiated between the rating agencies, the managers, and the investment banks. This variety led to a differentiation among deals in terms of how they worked. But in the future, I think standardization is necessary to move forward.

Whether securitization comes back for all markets is another question. For example, I think that the market for CLOs or the securitization of leveraged loans has a meaningful place in the capital markets, and the market for that type of security should come back. But other markets, such as the ABS CDO market, were securitization experiments that went awry, and I do not think they will come back.

Question: What is the status of the option adjustable-rate mortgage (ARM) segment of the Alt-A market, and is it another impending crisis?

Prince: This segment looks really grim. Option ARMs give the borrower the option of making a lower payment for a period of time, and the difference between what they would have paid and what they did pay is added to the principal of the mortgage. These loans, which have been concentrated in California, lead to a situation in which the balance of the mortgage is going up even as the value of the home falls. This scenario has the potential to become a serious problem.