

Credit Ratings and Derivatives

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- Credit ratings are not complete summaries of securities' riskiness.
- Structured securities change securities' cash flows and riskiness in nonobvious ways.
- The old-fashioned advice "If you don't understand it, don't buy it" seems to apply quite well here.

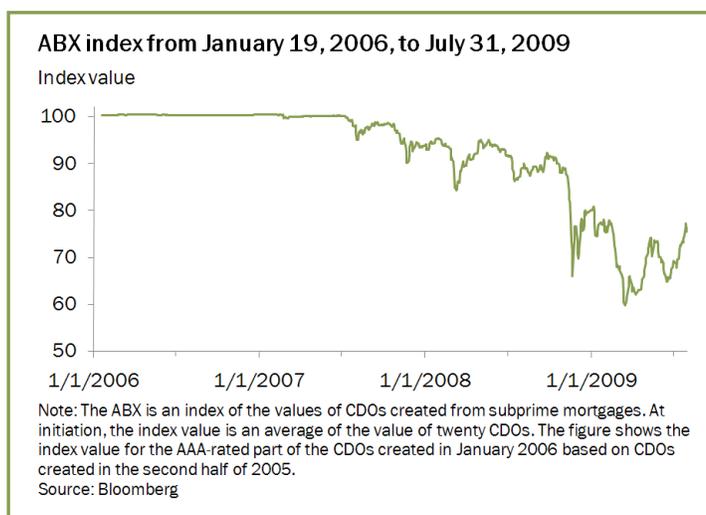
In the past year, it's almost impossible to go to a conference in the United States on the financial crisis without hearing someone slam credit rating agencies for doing an incompetent job—or worse. In some ways, it's easy to see why the agencies are criticized.

Credit rating agencies provide ratings on credit derivatives—collateralized debt obligations (CDOs) in particular—and many people who rely on these ratings have suffered large losses in the past two years. The figure shows a measure of the value of AAA-rated CDOs based on subprime mortgages issued in the last half of 2005. From initial values above 100 for all of 2006, the index fell as low as 60 on March 17, 2009.

AAA-rated securities are supposed to be safe and unlikely to suffer losses. But these CDOs lost 40 percent of their value in a little over two years. It seems that something must be wrong; losses this large rarely if ever happen with AAA-rated corporate bonds.

Corporate bonds and CDOs

Part of the reason for the surprising losses is a seemingly simple observation: CDOs based on subprime mortgages are not the same as individual corporate bonds. For one thing, the risk of default and characteristics of default are different for a subprime mortgage than for a corporate bond. For another, a CDO is based on a portfolio of bonds or loans, not a single security such as a AAA corporate bond. In fact, CDOs were created from portfolios of corporate bonds long before they were created from subprime mortgages.



Even CDOs based on corporate bonds are different than individual corporate bonds. A single bond from a particular corporation is affected by everything that affects that corporation. In contrast, a CDO's portfolio of bonds from many corporations is little affected by developments that affect any one corporation. The value of a CDO will be significantly affected, though, by developments that affect corporations in general, such as a recession.

A similar phenomenon affects CDOs based on subprime mortgages. The holder of a single mortgage from a particular borrower is affected by everything that affects that borrower's repayment.

Historically, mortgage defaults often follow divorces and job losses. The holder of a portfolio of mortgages—say, 100 mortgages from different borrowers—is little affected by one borrower’s divorce but can be noticeably affected by developments that affect many borrowers at the same time, such as a recession or housing price decline.

As a result, it is not surprising that CDOs based on subprime mortgages have been adversely affected by the decrease in housing prices in the United States and the subsequent increase in subprime mortgage defaults. Credit rating agencies did not predict the problems with subprime mortgages. They claim that there is little reason to think that they should have predicted the problems. Whether they should have been able to predict the defaults and the prediction should have been reflected in their ratings will be debated for quite some time.

Ratings, risk, and corporate bonds

Credit ratings agencies’ bread-and-butter job of rating the riskiness of corporate bonds is relatively straightforward. Credit ratings from Standard and Poor’s, for example, are based primarily on the probability of any loss over various time periods. For example, at the seven-year maturity, a bond is AAA rated if the probability of any loss is 0.3 percent or less (Griffin and Tang 2009). If a corporate bond has a probability of loss less than or equal to 0.3 percent over seven years, then Standard and Poor’s will give that bond a rating of AAA.

While a credit rating is an informative summary of a bond’s riskiness, that rating is not sufficient to completely characterize the riskiness of a security. Riskiness is related to other aspects of loss besides the probability of loss. Among other things, a rating such as Standard and Poor’s does not consider the size of the loss on default. Moody’s ratings do consider the size of the expected loss on default. Again, though, the expected loss on default does not completely characterize the security’s riskiness. The same expected loss can be associated with quite different distributions of losses. For example, is the security more likely to default in a recession, when other bonds are more likely to default and the holder of the bond might have a high demand for funds?

Corporate bonds’ ratings largely reflect the riskiness of a corporation’s underlying business activity. A corporation can change its financial structure and affect the riskiness of bonds, but this change is usually gradual. Corporations can even change lines of business because of risk, but this process generally is slow as well.

Structured finance, credit ratings, and risk

CDOs are “structured,” or manufactured, securities that are created to have certain ratings, unlike corporate bonds, which largely reflect a firm’s activities undertaken for reasons other than bonds’ credit ratings. The creator of a CDO acquires financial instruments to generate cash flow and then structures the cash flow from the underlying assets to generate the desired credit ratings for different parts of the CDO. A CDO often consists of pieces that are rated AAA, AA, A, BBB, BBB–, and non-investment-grade.

CDOs are structured to maximize the value of the CDO to the CDO’s creator, thereby maximizing the creator’s profits. Several studies, including Brennan, Hein, and Poon (2009) and Coval, Jurek, and Stafford (2009), highlight this point. This profit motive is not bad in and of itself, but it has implications for the information in the resulting credit rating.

If the creation of the structured security generates cash flows with risks that aren't reflected in the credit rating and buyers don't otherwise notice, then the security's creators can profit from creating the security. The creator need not be attempting to sneak the change in risk by buyers; all the seller has to notice is that creating the security is profitable.

The point of this argument is not to claim that CDOs had changes in their riskiness that were not reflected in the CDOs' ratings and prices. Research on this question is ongoing, and it will be some time before the issue is close to being settled. Brennan, Hein, and Poon (2009) and Coval, Jurek, and Stafford (2009) present related theoretical analyses, with the latter showing some evidence that buyers did not notice all of the changes in risk. Still, much more research is needed before the claim is more than an interesting hypothesis.

The bottom line

What is the lesson in the meantime?

A credit rating is not a complete summary of a security's riskiness, especially when comparing ratings for dissimilar securities such as corporate bonds and CDOs.

The buyer of a structured security should carefully examine the security's riskiness. The creation of the structured security may have altered the risk in subtle ways that the buyer does not appreciate before spending time working out the implications.

Among others, two state banks in Germany purchased AAA-rated CDOs and suffered substantial losses when the CDOs' values declined. It would be surprising if the managers of these banks were buying securities they fully understood.

The old-school advice "If you don't understand it, don't buy it" seems to apply quite well here.

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