

The Financial System after the Crisis: Structured Finance and Credit Rating Agencies

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- The Federal Reserve Bank of Atlanta's 2010 Financial Markets Conference examined the financial system after the 2008 crisis, including structured finance and credit rating agencies.
- An important innovation associated with structured finance is the creation of differentiated securities, called tranches of securities, that receive payments based on a portfolio of assets. Such differentiated securities were the basis of some collateralized debt obligations (CDOs), which played a significant role in the financial crisis of 2008.
- Credit rating agencies were instrumental in creating CDOs, and that role spotlights problems with their current place in U.S. securities markets.

The Federal Reserve Bank of Atlanta's annual Financial Markets Conference, held May 11–12, 2010, examined the financial system after the recent financial crisis. This topic is much broader than a two-day conference can hope to cover in detail, so the conference focused on two of the most important issues: (1) structured finance and credit rating agencies and (2) policies to deal with systemic risk.

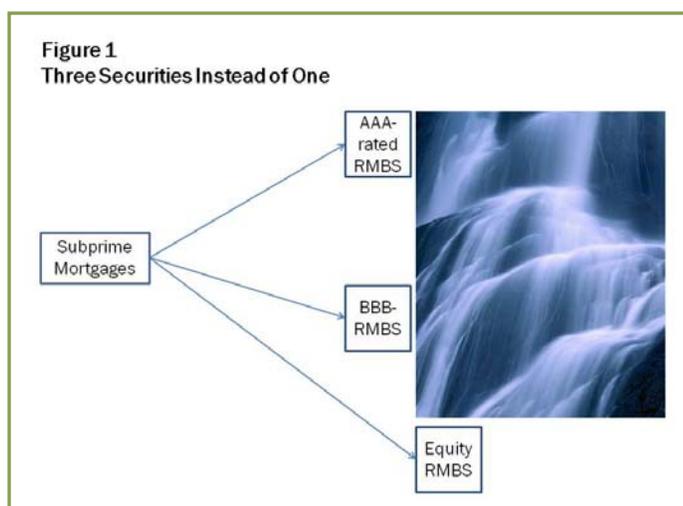
This issue of *Notes from the Vault* discusses the first of these topics—structured finance and credit rating agencies—and focuses on the issues raised by the relevant conference presentations. Next month's issue will cover the policy fallout.

Structured finance

Structured finance is a part of financial engineering concerned with structuring payments on securities for sale to customers. Such structured securities were an important way that financial difficulties were transmitted during the 2008 financial crisis, one of the points discussed by John Hull (2010) in his conference paper.

The major novelty in recent developments in structured finance is the creation of tranches of securities based on a portfolio of assets.

One of the simplest examples dates back to the 1980s: Portfolios of assets such as subprime mortgages or corporate bonds are used to create a set of securities with various credit ratings. A simplified picture of the tranches of an asset-backed security is presented on the left side of Figure 1, which shows a portfolio of subprime mortgages, all with ratings less than AAA, being used to create a set of securities with various ratings, including some with a higher rating than the underlying mortgages. If a set of identical debt securities were



created from the subprime mortgages instead, those securities would not be rated AAA. With identical securities, all holders of any created debt securities would share equally in losses.

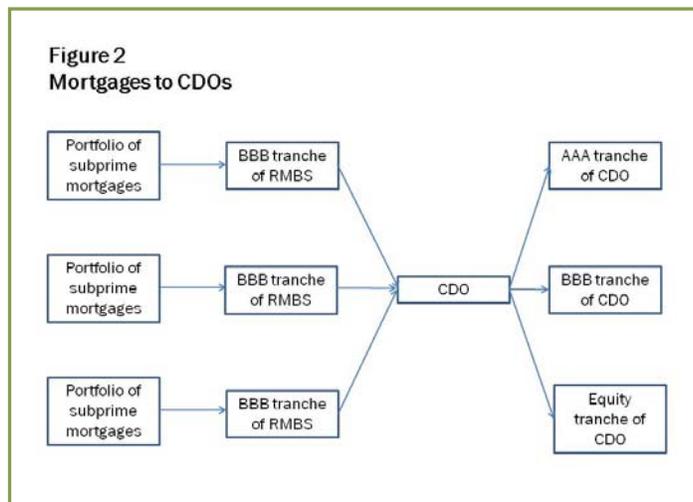
With tranching, one can create differentiated securities, with some securities bearing less risk and some bearing more. The waterfall of payments shown on the right-hand side of Figure 1 illustrates how this differentiation occurs. The flow of payments on the underlying portfolio of mortgages comes in at the top. The holders of the highest-rated tranche receive their promised payments first. If any funds remain, the holders of the next lower-rated tranche receive their promised payments. If any funds are left at this point, the holders of the equity tranche receive the remainder. Another name for the lowest-rated equity tranche is the “first-loss position,” which makes the point in the opposite direction. Losses are borne by the lowest-rated tranche first, then the next-lowest tranche, and so on. While the figure shows only three tranches, in practice there are tranches at most if not all possible ratings for the securities and often more than one AAA tranche.

It might seem odd that a portfolio of relatively risky assets such as subprime mortgages could generate AAA securities. Without the lower-rated tranches, the securities would not be AAA. With those lower-rated tranches, the higher-rated piece is not so surprising. The lower-rated tranches bear proportionally more risk. Also, the overall risk largely is borne by the lower-rated tranches, and the idiosyncratic risk of individual mortgages is lessened by pooling the risk. Most delinquencies and defaults on mortgages in the United States historically have been due to individual-specific developments such as job loss or divorce. While subprime mortgages have a higher potential to default, defaults had not been widespread across the nation from the Great Depression to 2007.

Collateralized debt obligations (CDOs) are securities created from the lower-rated tranches of the asset backed securities in Figure 1. A portfolio of numerous lower-rated tranches similar to the BBB tranche in Figure 1 is used to create a CDO.

Based on payments to this portfolio of BBB tranches, a second waterfall of payments is created similar to the waterfall illustrated in Figure 1.

The overall result is shown in Figure 2, which shows how the portfolios of subprime mortgages underlie the tranches of a CDO. This description, which may appear complicated at first glance, is quite a bit simpler than the actual securities.¹



When most people were paying on their subprime mortgages, valuing CDOs was not too difficult—they traded close to their original values. On the other hand, when some people started to become delinquent in 2007 and more delinquencies became probable, valuing the tranches of CDOs became extraordinarily difficult. The path from mortgage payments to a tranche of a CDO is convoluted at best.

¹ Hull (2010) and Smithson (2009) discuss some of the complications.

And this difficulty of valuing CDOs is part of the reason why subprime mortgages, which are a small part of financial markets, became central to the difficulties in financial markets in the United States (Dwyer and Tkac 2009).

Hull (2010, 16) concludes that the creation of CDOs from tranching asset-backed securities such as the residential mortgage-backed securities above is a “badly flawed idea.” Quite likely, many would agree with him.²

As Hull also notes, a credit rating is an imperfect measure of the risk of any security in any case, but especially CDOs. A AAA corporate bond has very different risk characteristics than a AAA tranche of a CDO. A AAA corporate bond reflects the business risk of a single firm. A AAA tranche reflects the risk of the underlying mortgages. AAA tranches of CDOs commonly were 80 percent or more of the overall value of the CDO deal, which means the AAA tranches were subject to substantial risk of large-scale delinquencies on mortgages. Investors do not seem to have taken adequate account of this fact before the financial crisis.

Credit rating agencies

Credit rating agencies play a big role in the creation of CDOs, as might be expected given the division into tranches with different credit ratings. Credit rating agencies set guidelines for ratings and thus determine the size of the tranches—for example, the fraction of the resulting securities rated AAA. Effectively, then, credit rating agencies profoundly affect the profitability of creating a CDO from a portfolio of tranches of asset-backed securities.

In their conference paper, John Griffin and Dragon Tang (2010) discuss the role of credit rating agencies. Griffin and Tang examine detailed data on the credit ratings used to construct collateralized debt obligations (CDOs). They find it difficult to square the actual credit ratings with the agencies’ stated criteria for rating the securities. More securities were rated AAA than agencies’ own models indicated. Griffin and Tang also find a surprising change in April 2007, as difficulties with subprime mortgages resulting from falling housing prices started to become evident, which made the ratings more consistent with the stated criteria. While Griffin and Tang do not have an explanation for the ratings or the change, the research raises questions about the consistency of the ratings and the stated criteria for ratings.

Chester Spatt’s paper (2010) at the conference focuses for the most part on the role of credit rating agencies in the market for financial information. Spatt notes that credit rating agencies now are in the cross hairs because of the financial crisis. As suggested above, credit ratings are not very informative about the risk of tranches of CDOs. Even so, many investors rely on these ratings. In fact, many regulations and laws create reliance on credit ratings as sufficient evidence for legal determinations of financial agents’ prudent behavior. In addition, these ratings affect capital requirements for many financial institutions, and they are crucial for determining assets that money market funds can hold.

Spatt points out that the importance of credit ratings probably has increased in recent years. Regulation Fair Disclosure implemented by the Securities and Exchange Commission in 2000 barred firms from selectively disclosing material information—with a notable exception. That exception is for disclosures of information selectively to credit rating agencies. The exception illustrates credit rating

² This conclusion does not mean that CDOs based on portfolios of assets such as non-AAA-rated corporate bonds are necessarily problematic.

agencies' special place in regulations, and some evidence suggests that this exception increased credit rating agencies' importance in valuing securities.

Spatt concludes that reduced reliance on the ratings would be good, but alternatives that regulators would prefer are not obvious. Regulators could attempt to determine the riskiness of assets themselves, but to do so they would have to be better than ratings agencies at rating securities. Even then, what many investors are looking for—a one-dimensional measure of risk—does not exist. Just comparing the criteria used by S&P and Fitch with Moody's raises the question of whether the probability of loss by itself or including the severity of loss given default is a better measure of risk. And other more subtle aspects of risk cannot be encompassed in a letter grade.³

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As Spatt notes, an inherent problem also exists with ratings and the way they are paid for. In the United States today, the issuer pays for the rating. Receiving payments from the issuer suggests that the credit rating agency might do the issuer's bidding rather than provide an objective assessment of risk. Still, it would be difficult to have anyone other than the issuer pay, at least for widely held securities traded in public capital markets. A security's price at issuance is affected by the rating because investors want to know the rating. Suppose that an investor made the payment instead. Once the rating decision is made for one investor, it would be hard if not impossible to exclude others from knowing the credit rating. If nothing else, others investors would attempt to infer the rating from prices in public capital markets. One solution would be to have someone other than the issuer choose the credit rating agency to rate a security issue. Even leaving aside the problem of deciding who should assume the role of picking the credit rating agency, a problem with this possible solution would be the reduction in competition between credit rating agencies.

This problematic relationship between securities issuers and the credit rating agencies is increased because of the difficulty of entering the market as a credit rating agency. This difficulty is partly due to the reputations earned by current credit rating agencies, but it also is partly due to regulatory barriers to entry.

Conclusion

While various conclusions from the discussion are possible, two conclusions seem quite reasonable. First, CDOs based on tranches of asset-backed securities likely were a bad idea. The market for new issues has died off, and a reasonable conclusion is that they won't be back. Second, credit rating agencies' role in the market for CDOs has raised serious questions about their role in securities markets more generally. While not many good things have emerged from the financial crisis, raising these questions is one.

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³ This issue is discussed in Dwyer (2009).

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