

# Did Asset Complexity Trigger Ratings Bias?

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Most market observers attribute the recent credit crunch to a confluence of factors: excess leverage, opacity, improperly estimated correlation between bundled assets, lax screening by mortgage originators, and market-distorting regulations. It was the job of the credit rating agencies to create transparency, to provide the basis for risk-management regulation, and to discipline mortgage lenders and the creators of structured financial products by rating their assets. Understanding the origins of the crisis requires, at least in part, understanding the failures of the market for ratings.

## 1 Potential Sources of Ratings Bias

Proposed explanations for ratings bias have broadly fallen into three categories.

1. **It was an honest mistake.** New financial instruments were being traded and rating agencies had no historical return data for these instruments on which to base their risk assessments. These new instruments had a degree of complexity that even financial professionals acknowledged was “far above that of traditional bonds,”<sup>1</sup> or “dizzying.”<sup>2</sup> But complexity alone would generate independent errors in ratings, not ratings that were systematically upward biased and subsequently downgraded in 2008. For this story to make sense, it must be that many raters made the same mistake. For example, they underestimated the correlation of defaults, particularly in residential mortgage-backed securities. This led them to underestimate the risk of a geographically diverse pool of mortgages and to assign such assets inflated ratings.
2. **Agencies were beholden to asset issuers.** A host of recent papers explore the conflict of interest that arises when rating agencies’ fees are paid by asset issuers. Damiano, Li and Suen (2008), Bolton, Freixas and Shapiro (2008) Becker and Milbourn (2008), and Mathis, McAndrews and Rochet (2008) investigate the extent to which reputation effects can discipline rating agencies who may feel compelled to deliberately inflate their ratings, either to maximize their consulting fees or because the issuer could be shopping for the highest rating.

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<sup>1</sup>Adelson: Director of structured finance research at Nomura Securities. Testimony before the Committee on Financial Services, U.S. House of Representatives, September 27, 2007. On January 26, 2008, *The New York Times* quoted Moody’s CEO, saying “In hindsight, it is pretty clear that there was a failure in some key assumptions that were supporting our analytics and our models.” He said that one reason for the failure was that the information quality given to Moody’s, both the completeness and veracity, was deteriorating. See also page 10 of the Summary Report of Issues Identified in the Commission Staff’s Examinations of Select Credit-rating Agencies, United States Securities and Exchange Commission, July 8, 2008.

<sup>2</sup>Mark Zandi, “Financial Shock,” FT Press, July 2008.

3. **Asset issuers shopped for ratings.** Since, with few exceptions, an asset issuer decides which ratings will get published, he or she can publish only the most favorable one(s). An article in *The New York Times*, explains:<sup>3</sup> “The banks pay only if [the ratings agency] delivers the desired rating. . . If Moody’s and a client bank don’t see eye-to-eye, the bank can either tweak the numbers or try its luck with a competitor like S&P, a process known as ratings shopping.”

While all three of these explanations likely played some role in creating ratings bias, only the first explains why upward bias appeared recently. Asset issuers have been paying for credit ratings since the 1970’s<sup>4</sup> and until recently ratings upgrades were more common than downgrades. Does this mean that the conflict of interest and ratings shopping were not possible sources of the ratings inflation of the last few years and should therefore not be the subject of new regulation?

## 2 Our Explanation

Our work (Skreta and Veldkamp 2009) looks for a trigger that could explain why the incentive to shop for and bias ratings might have remained dormant until recently. The trigger we identify is an increase in asset complexity. As Mark Adelson testified before Congress,<sup>5</sup>

The complexity of a typical securitization is far above that of traditional bonds. It is above the level at which the creation of the methodology can rely solely on mathematical manipulations. Despite the outward simplicity of credit-ratings, the inherent complexity of credit risk in many securitizations means that reasonable professionals starting with the same facts can reasonably reach different conclusions.

However, the credit market crisis was not generated by independent ratings errors. Only systematic upward ratings would produce a widespread rise in the prices of credit products. This raises the question: Is it possible that more dispersion in ratings can translate into higher ratings on average?

We show that the combination of an increase in asset complexity and the ability of asset issuers to shop for ratings can produce ratings inflation, even if each rating agency produces an unbiased rating. The intuition behind our results is as follows: Each rating agency issues an unbiased forecast of an asset’s value. However, if the announced rating is the maximum of all realized

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<sup>3</sup>Quote from New York Times Magazine, “Triple-A-Failure,” April 27, 2008. Other articles making similar arguments include “Why Credit-rating Agencies Blew It: Mystery Solved,” available from <http://robertreich.blogspot.com/2007/10/they-mystery-of-why-credit-rating.html>, “Stopping the Subprime Crisis” New York Times, July 25, 2007, “When It Goes Wrong” The Economist, September 20, 2007, and “Credit and Blame” The Economist, September 6, 2007.

<sup>4</sup>The credit-rating industry switched from “the investor-pays” to “the issuer-pays” model in the early 1970s. This is believed to have happened due to the widespread availability of photocopier technology. See, for instance, White (2007).

<sup>5</sup>Adelson: Director of structured finance research at Nomura Securities. Testimony before the Committee on Financial Services, U.S. House of Representatives, September 27, 2007. On January 26, 2008, *The New York Times* quoted Moody’s CEO, saying “ In hindsight, it is pretty clear that there was a failure in some key assumptions that were supporting our analytics and our models.” He said that one reason for the failure was that the “information quality” given to Moody’s, “both the completeness and veracity, was deteriorating.” See also page 10 of the *Summary Report of Issues Identified in the Commission Staff’s Examinations of Select credit-rating Agencies*, United States Securities and Exchange Commission, July 8, 2008.

ratings, it will be a biased signal of the asset's true quality. The more ratings differ, the stronger are issuers' incentives to selectively disclose (shop for) ratings. For simple assets, agencies issue nearly identical forecasts. Asset issuers then disclose all ratings because more information reduces investors' uncertainty and increases the price they are willing to pay for the asset. For complex assets, ratings may differ, creating an incentive to shop for the best rating. There is a threshold level of asset complexity such that once this threshold is crossed, shopping becomes optimal and ratings inflation emerges. Furthermore, the link between asset complexity and ratings shopping can work in both directions. An issuer who shops for ratings might want to issue an even more complex asset, to get a broader menu of ratings to choose from. This, in turn, makes shopping even more valuable.

Biased ratings affect securities prices if investors are unaware of the bias. If past data led investors to believe that the complexity of assets was low, then they would rationally expect ratings to be unbiased. Once complexity increased, this belief would persist until the investors observe a sufficient amount of data to detect the bias.

A similar effect might have prompted a recent resurgence in asset issuers pressuring rating agencies to generate favorable ratings. If the guidelines for rating an asset are straightforward and all rating agencies must rate an asset the same way, then there is little pressure an issuer can exert. But if assets become more complex and there are now judgment calls to be made, the agency can legally come to many possible conclusions about what the rating should be. This creates the possibility for rating agency conflicts of interest that were not present, or not so severe, before. Thus, an increase in asset complexity could have prompted rating shopping by asset issuers and manipulation by ratings agencies.

Two types of evidence support this explanation. First, asset complexity increased. We do not argue that the complexity of any given asset increased. Rather, the composition of assets being sold changed so that the more complex type of asset, the structured financial products- particularly those that were mortgage-backed- became more prevalent. For example, while under \$10 billion in structured finance collateralized debt obligations (CDO's) were distributed in 2000, nearly \$200 billion were issued in 2006 (Hu 2007).

Second, the pattern of downgrades and defaults in the last few years confirms this relationship between asset complexity and over-optimistic ratings: Complex CDOs had significantly higher default rates than simple corporate bonds with identical ratings. Similarly, mortgage-backed securities whose underlying credit risk, correlation risk and pre-payment risk are notoriously difficult to assess, experienced more widespread downgrades than did assets based on other collateral types.<sup>6</sup>

### 3 Evaluating Policy Recommendations

**Issuer-Initiated Ratings** One possible solution to the problem of ratings bias is to replace issuer-initiated ratings with investor-initiated ratings. We show that even though some investors – those who, by law, can only hold highly-rated securities – would prefer biased ratings, they cannot shop for ratings. To make this argument, we use the well-known model of information acquisition formulated by Grossman and Stiglitz (1980). We then add to that framework a requirement that

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<sup>6</sup>The first non-mortgage securitization was equipment leases, followed by credit cards and auto loans, and, more recently, home equity, lease finance, manufactured housing, student loans, and synthetic structures. All of those types of collateral utilized tranching structures that were measurably simpler than those for RMBS. They had correspondingly lower default rates for similarly-rated assets. (Mason and Rosner 2007)

some investors buy “investment grade” assets with sufficiently high ratings, as well as a market price, rather than a fixed cost, for information. We see that investor-initiated ratings bias has limited price impact. This is because if the investors shop for ratings, it is in order to find a rating agency that gives the asset an investment-grade rating. But once the investor finds that the asset is in his feasible investment set, he does not ignore the other ratings he has observed. Rather, he uses all available information to value the asset. Thus, all observed ratings, not just the publicly-disclosed ones, affect the asset’s price. The only price effect of ratings shopping is to increase demand for some borderline assets that would not be investment grade, were it not for their inflated ratings.

The drawback of investor-initiated ratings is the potential for under-provision of information. Since information requires a fixed cost to discover and is free (or, at least, quite cheap) to replicate, efficiency dictates that a discovered piece of information should be distributed to every asset investor so that all investors benefit from lower asset payoff risk. Yet, when investors have to pay for ratings themselves, either no investors or too few investors may end up being informed.

**Increasing competition among rating agencies** Because market failures are often associated with a lack of free competition, policy makers have taken measures to increase competition. While this might cure some problems with ratings provision, it does not remedy ratings shopping. In fact, it worsens the problem. When the issuer shops for ratings, the more draws the issuer can observe before choosing a rating – i.e., the larger the number of rating agencies – the higher this bias will be. This result follows from the simple observation that the more rating agencies available, the greater the possibilities of ratings shopping. Of course, having more rating agencies does not ensure that an asset issuer will observe more ratings. If not, then the bias will stay constant. However, if some issuers prefer to obtain more ratings than what were previously available to them, increasing the number of agencies will increase the number of observed ratings and the bias from shopping for the best one. It is also possible that the price of ratings falls due to higher competition, encouraging asset issuers to sample more ratings, which would increase ratings bias even more.

**The design of risk-management legislation** Another target for criticism in the ratings scandal has been the design of risk-management rules and the emphasis they put on ratings. Many banks and pension funds can hold only assets that earn sufficiently high ratings from one of the nationally-recognized statistical ratings organizations. This rule puts an enormous amount of pressure on asset issuers to ensure that their assets achieve this rating. Without a high rating, the pool of potential investors is considerably smaller, and the asset’s prices will be considerably lower. By itself, revising this regulation, will not solve the problem of ratings shopping. As we argued before, bias in issuer-initiated ratings can arise, even in the absence of such regulation. However, it is likely that risk-management regulation further encouraged ratings shopping by increasing the payoff from acquiring a high rating.

**Mandatory disclosure laws** Perhaps an obvious suggestion is to mandate disclosure of all ratings. While, in theory, that is a cure, in practice, it is difficult to directly regulate the transmission of information. For example, the line between informal advice and a rating can be easily blurred. Prohibiting a discussion of how various assets might be rated if they were issued could easily be ruled an infringement on free speech. An additional problem is that when undesirable ratings are

proposed, the asset in question is frequently restructured. A tiny change in asset structure would make the previous rating no longer applicable and could effectively hide that rating.

## 4 Going Forward

What does the relationship between asset complexity and the incentives to bias ratings mean for future regulatory efforts? First, the incentive for rating agencies to inflate ratings and the ability of asset issuers to shop for the best rating can each independently produce ratings bias. Dealing with one of these problems without addressing the other is unlikely to solve the problem. Second, just because these effects did not produce upward bias in ratings in the 1980's and 90's does not mean that the problems in the rating market structure are harmless. There is good reason to think that such incentives were latent and only emerged when assets were sufficiently complex that regulation was no longer detailed enough to keep them in check. Finally, the ability of ratings manipulation and shopping to affect asset prices only exists when the buyers of assets are unaware of the games being played by the issuer and rating agency. While that was likely the case for some buyers two years ago, today major market participants must have some awareness of the perils of relying on selectively disclosed ratings. If investors mentally discount ratings, then this problem has corrected itself. However, if we forego this opportunity to rethink how ratings are provided, the next bout of financial innovation could trigger another round of ratings inflation and the financial market turmoil that ensues.

More broadly, our findings highlight the role that institutions, rules and market structure play in an industry that produces information. A central question in the mechanism-design literature is: Which institutions are most desirable when information is asymmetric or dispersed? The reverse question is equally important: What information do agents choose to observe or disclose in a given institution and market structure? As the recent crisis highlights, understanding the information provision is as important as understanding the institutions. When information production runs amok, large economic fluctuations can result.

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