

Economic Considerations in Litigation Against the Credit Rating Agencies

By Bin Zhou and Pavitra Kumar

Introduction

In the aftermath of the financial crisis of 2007 to 2008, the three major credit rating agencies — Fitch, Moody's, and Standard & Poor's (S&P) — have increasingly become a target of regulatory investigation, legislative reform, and civil litigation over their ratings of complex structured finance securities.¹ The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 called for tighter regulation and enhanced disclosure, and proposed to hold the rating agencies liable for their erroneous ratings.² Several congressional investigations have concluded that the rating agencies played a significant role in the financial crisis.³ Not surprisingly, the credit rating agencies have been sued by their own shareholders, individual and institutional investors in structured finance securities, state attorneys general, and potentially the U.S. Securities and Exchange Commission.⁴ The core allegation in these lawsuits is that fraudulently inflated ratings on structured finance products falsely conveyed that these investments were just as safe as securities with the same rating, concealing the risk that these investments could default.

Rating agencies have historically relied on the First Amendment rights to freedom of speech to protect themselves against civil liability for their ratings on corporate finance securities. Unlike ratings on corporate bonds, however, the ratings on structured finance securities were primarily disseminated to small groups of investors privately. Consequently, several courts in the last two and half years have ruled that these ratings did not constitute a matter of public concern, and the First Amendment defense is thus inapplicable.⁵ These decisions have dealt a major blow to the rating agencies, since the majority of the most complex structured finance products have been issued in private placements.

Investors, nonetheless, face formidable hurdles in order to prove the rating agencies' liability. To prevail in the courts, investors need to show, at a minimum, that the rating agencies knowingly issued misleading ratings, that investors reasonably relied on these ratings, and that the misleading ratings contributed to the litigating investors' losses. Undoubtedly, proving all of these arguments will require detailed analyses of the case-specific facts of the securities, the ratings assigned, and the investors involved. Economic studies of the rating agencies' actions and incentives, as well as investor behavior, will also be highly relevant.

This paper surveys the recent economic research germane to the legal issues in investor litigation over structured finance products. The results and methodologies adopted in these studies could also shed light on other types of litigations, such as investor suits against financial advisors and investment banks.

Section 1 STRUCTURED FINANCE PRODUCTS AND THEIR RATINGS

Credit ratings are independent assessments of the creditworthiness of debt securities and their issuers. The AAA rating is considered the safest credit rating; ratings between AAA (or Aaa according to the Moody's scale) and BBB (Baa in Moody's scale) are called investment grade, and ratings below BBB are termed non-investment grade or "junk" grade.

ECONOMICS OF STRUCTURED FINANCE PRODUCTS

The same ratings scale applies to structured finance products, which are derivatives created from underlying assets such as mortgages, bank loans, and credit card debt. Any asset can form the basis for a structured finance security, the largest sector currently being backed by residential mortgages; these are known as residential mortgage-backed securities (RMBS). Structured finance products are created via a two-step procedure involving pooling and tranching. In the first step (pooling), a large collection of credit-sensitive assets is assembled in a portfolio, which is typically referred to as a special purpose vehicle. In the second step (tranching), structured finance vehicles issue a capital structure of prioritized claims, known as "tranches," against the underlying collateral pool. The tranches are prioritized by how they absorb losses from the underlying portfolio. Senior tranches only absorb losses after the junior claims have been exhausted, which allows senior tranches to obtain credit ratings in excess of the average rating for the collateral pool as a whole. The degree of protection offered by the junior claims, or overcollateralization, thus plays a crucial role in determining the credit rating for a more senior tranche.

Economists argue that such a pooling and tranching process can increase the total value of the underlying assets.⁶ Intuitively, the pooling process, in diversifying away the asset-specific risks of the underlying collateral, yields diversification benefits to investors at a lower cost than that faced by investors in individual assets. Diversification benefits are maximized when the number of assets is large and their returns are not perfectly correlated. The tranching process, on the other hand, creates some securities that are safer and some that are riskier than the average asset in the collateral pool. Tranching thus caters to investors with different risk preferences. In addition, since issuers of structured finance products often have an informational advantage over the average investor, the total sales proceeds for the underlying assets can be maximized by carving out a large tranche of almost riskless assets, and creating a small portion of risky assets for the most adventurous information seekers. This results in a lower overall discount demanded by investors to compensate them for information asymmetry.

The process of pooling and tranching may, however, create top-rated securities that are loaded with default risk concentrated in the worst economic states. This is particularly true for structured finance securities created via repeated pooling and tranching, where the additional diversification benefit is limited or nonexistent, but the exposure to systematic risks (collapse in housing prices, high unemployment rate, recession, etc.) is high and concentrated. Since credit ratings only reflect expected payoffs instead of correlation with systematic risk, it is possible that structured and corporate securities with the same credit rating can command different yields or rate of returns.⁷ (See Section 3).

One common feature of the securitization process is the creation of a large amount of AAA-rated securities from lower quality collateral ("ratings arbitrage").⁸ This feature of securitization drove the rapid expansion of structured finance issuance in the years leading up to the credit crisis. On the supply side, there were

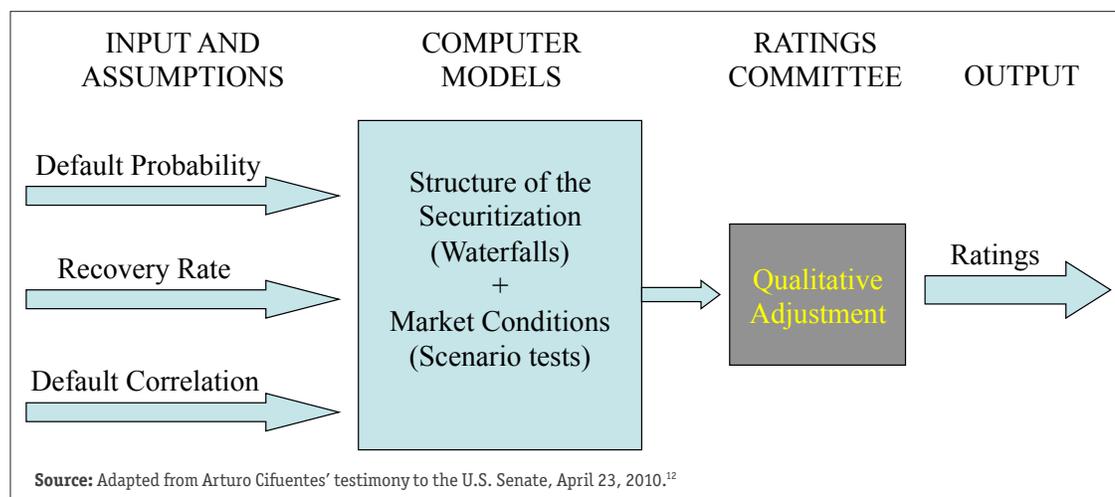
significant economic incentives for issuers to maximize ratings arbitrage. This is because the higher the degree of ratings arbitrage, the higher the spread between returns earned on the collateral asset pool (increased due to lower average collateral ratings), and the weighted average cost of placing securities with investors (lowered due to the large proportion of top rated tranches issued). Ratings arbitrage continued to flourish until the 2007-2008 financial crisis, when investors realized that the apparent spread in returns between collateral assets and tranches issued against the collateral was due to mispricing of AAA-rated tranches, and the mistaken belief that the collateral assets were diversified. Subsequently, AAA-rated investments were massively downgraded and are thus the subject of several investor litigations.

RATINGS PROCESS FOR STRUCTURED FINANCE PRODUCTS

In contrast to the more qualitative judgments about credit risk applied to corporate issuers, credit agencies rely primarily on statistical models in rating structured finance instruments.⁹ During the standard ratings process for a structured finance product, the underwriter initially provides detailed collateral information to the ratings committee for formal assessment. Because several tranches are issued against the same pool of underlying collateral, rating agencies first determine the distribution of expected losses on the collateral asset portfolio, and then model the cash flows to the tranching securities issued against the pool. Default for a particular tranche occurs when cash inflows cannot cover its payments on time. Rating agencies also subject their modeling of cash flows to various stress tests. In addition to statistical modeling, legal analysts usually conduct a qualitative analysis examining the structure's legal documentation and adjusting ratings for any risks associated with specific features of the product. In the end, the published rating assigned to any given tranche is set by a ratings committee, which considers both the qualitative and quantitative analyses. As a result, the published rating can differ from the modeled rating.¹⁰

In rating structured finance products, the agencies not only provide credit assessments of the underlying collateral pool, but they also take an active role in the design of the transaction structure. In particular, they may suggest or require alterations to the composition of the underlying collateral, sizes of tranches at the desired ratings, and necessary credit enhancements. Moreover, the methodologies and models used by the rating agencies are typically published on their websites. Critics of the rating agencies argue that the intimate role played by the agencies during the structuring process has given rise to heightened concerns about potential conflicts of interest.

Figure 1 illustrates the standard ratings process for a collateralized debt obligation (CDO), a type of structured finance instrument collateralized by debt obligations, including bonds, loans, and other mortgage-backed securities (MBS). Based on their models, the rating agencies run a large number of simulations to generate a probability distribution of losses on the underlying collateral pool. Three parameter estimates drive these simulations for CDO assets and credit ratings of the tranches: collateral default probabilities, recovery rates, and default correlations.¹¹ The lower the default correlation across the collateral pool, for example, the less probable it is that all collateral assets will default simultaneously, and therefore the greater the size of the most senior, or AAA-rated, tranche that can be issued against these assets. Conversely, as collateral defaults become more correlated, the underlying portfolio can support less of the AAA tranche. (See the Appendix for an illustration of this point.)

Figure 1 An Overview of the Structured Finance Ratings Process for CDOs

COMPARABILITY OF RATINGS

The rating agencies maintain that credit ratings are intended to be comparable across different categories of fixed income instruments. For instance, Moody's claims "[t]he comparability of these opinions holds regardless of the country of the issuer, its [sic] industry, asset class, or type of fixed-income debt."¹³ These claims of comparability of ratings across corporate finance and structured finance products have provided access to a large pool of potential buyers for what otherwise would be perceived as very complex and disparate derivative securities.

In reality, however, over the past 25 years or so, structured finance instruments with a given investment grade rating have proven to be far inferior in terms of credit quality than corporate finance securities with the same rating. Table 1 reports the actual differences in average frequencies of downgrades between structured finance products and corporate bonds from 1984 to 2009.

Table 1 Probability of Downgrade in One Year: 1984-2009

Initial Rating	Downgrade To	Structured Finance Securities	Corporate Finance Securities
AAA	A or below	6.38%	0.37%
AAA	BB or below	3.98%	0.04%
AA	BBB or below	12.41%	0.50%
AA	BB or below	10.07%	0.11%

Source: Adapted from Tung and Weill, "Structured Finance Rating Transitions: 1983-2009," *Moody's Investors Service* (March 2010); Figure 11. Moody's ratings are converted to the S&P ratings scale in the table above.¹⁴

Economic Considerations in Litigation Against the Credit Rating Agencies

During this time period, a AAA-rated structured finance security had a 6.38 percent probability of being downgraded to an A-rating or below in one year, and a 3.98 percent probability of being downgraded to a junk rating. By contrast, the corresponding probabilities of a AAA-rated corporate bond being downgraded to A or below and junk were only 0.37 percent and 0.04 percent respectively, substantially lower. These differences can be observed for lower rated securities as well. It is worth noting that these striking discrepancies in downgrade probabilities appear to be driven mostly by the crisis period between 2007 and 2009; the corresponding 12-month probabilities of downgrade were far more comparable on average between 1984 and 2007 for structured finance and corporate finance securities.¹⁵

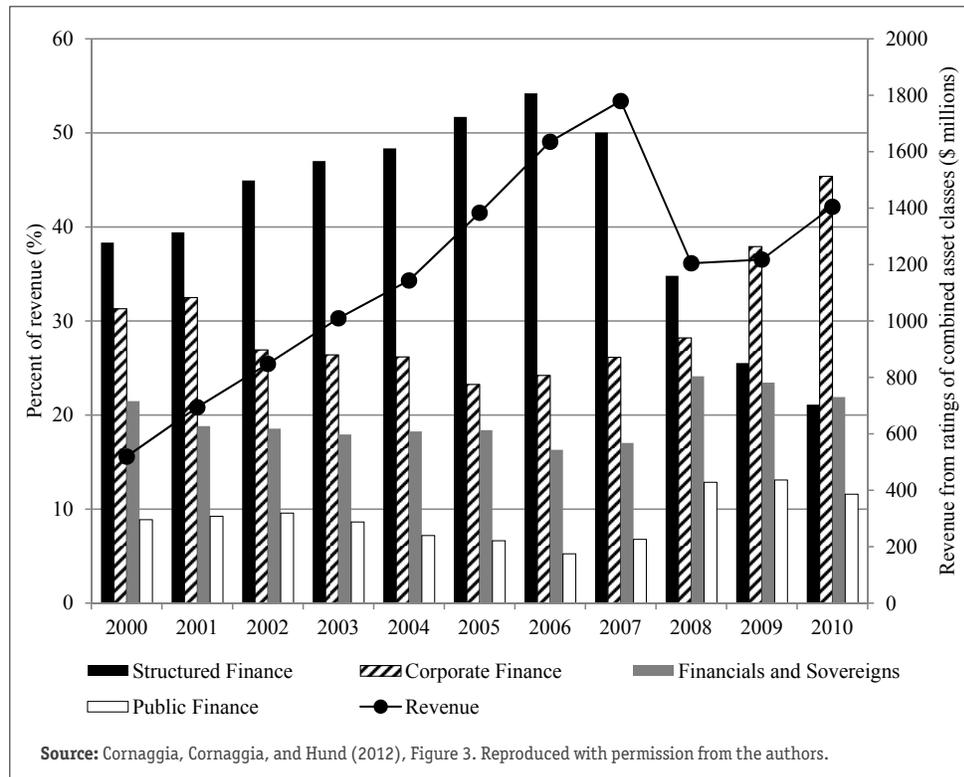
A recent paper by Cornaggia, Cornaggia, and Hund (2012)¹⁶ provides further evidence that differences exist across asset classes, both in credit ratings and in the distributions of their changes over time. Among other things, they show that, relative to standard corporate bonds, municipal and sovereign bonds have been rated more harshly over the 30-year sample period, and structured instruments have been rated more generously. They find a similar trend within the class of structured finance products themselves. For example, tranches of CDOs and RMBS instruments are found to have been rated most generously at issuance, while tranches issued against public finance collaterals were rated the least generously (Table 2).

Table 2 Default Percentages by Asset Class and Initial Credit Rating (1980-2010)

Initial Rating	Corporate	Municipal	Sovereign	Structured	Structured decomposed by deal type				
					ABS	CDO	CMBS	PF	RMBS
AAA	0.16%	0.05%	0.00%	3.64%	2.02%	20.52%	0.12%	0.00%	3.75%
AA	0.34%	0.00%	0.00%	20.21%	28.71%	26.76%	0.34%	0.00%	33.38%
A	0.51%	0.00%	0.00%	26.97%	29.02%	31.26%	2.70%	0.00%	44.76%

Source: Abridged version of Cornaggia, Cornaggia, and Hund (2012), Table III, provided with authors' approval. Moody's ratings have been converted to the S&P ratings scale.

Cornaggia, Cornaggia, and Hund (2012) also document that the rating agencies' revenues generated from structured finance products were significantly higher than those generated by issuances of corporate bonds during the years leading up to the crisis, which were in turn higher than revenues derived from sovereign issuers and municipalities (see Figure 2). This ranking is consistent with the ranking of ratings inflation displayed in Table 2. Structured finance business was more attractive to the rating agencies during these years for two reasons: there was dramatic growth in the volume of rated structured finance issuance between the early 2000s and 2006,¹⁷ and the agencies earned higher fees for rating structured finance products than corporate bonds, controlling for issue size.¹⁸

Figure 2 Moody's Revenues by Asset Class Through Time

Section 2 CONFLICTS OF INTEREST

A key question in litigation against the rating agencies is whether they knew, or should have known, that they assigned inflated ratings to structured finance products prior to the credit crisis. Ratings inflation can be caused by several non-mutually exclusive factors: conflicts of interest generated by the rating agencies' "issuer-pay" business model, errors made in ratings assumptions and processes, and/or mistaken belief by investors in the safety of AAA-rated securities. Plaintiffs in recent litigations have stressed the role of conflicts of interest in producing ratings inflation for structured finance securities. They have cited several internal documents and confidential testimony by former rating agency employees as evidence. The positive correlation between the degree of ratings inflation and the rating agencies' revenue generation by asset class provides further fodder for such allegations.

INFLATED RATINGS DUE TO CONFLICTS OF INTEREST

The market was aware of the potential for conflicts of interest well before the onset of the financial crisis. The existence of conflicts of interest alone is thus not sufficient to establish that the rating agencies knowingly inflated credit ratings, or that they should have known that ratings were inflated. The more relevant question is whether these potential conflicts of interest increased in strength during the years leading up to the credit

Economic Considerations in Litigation Against the Credit Rating Agencies

crisis. Whether or not the incentives inherent in the rating agencies' business model have caused a ratings bias can be tested empirically by examining the agencies' actions (namely, the actual ratings they have assigned to structured finance instruments as well as their modeling procedures). We present below some recent empirical tests of the hypothesis that the rating agencies' conflicts of interest contributed to inflated ratings.

Did the Boom Years Lead to Ratings Inflation?

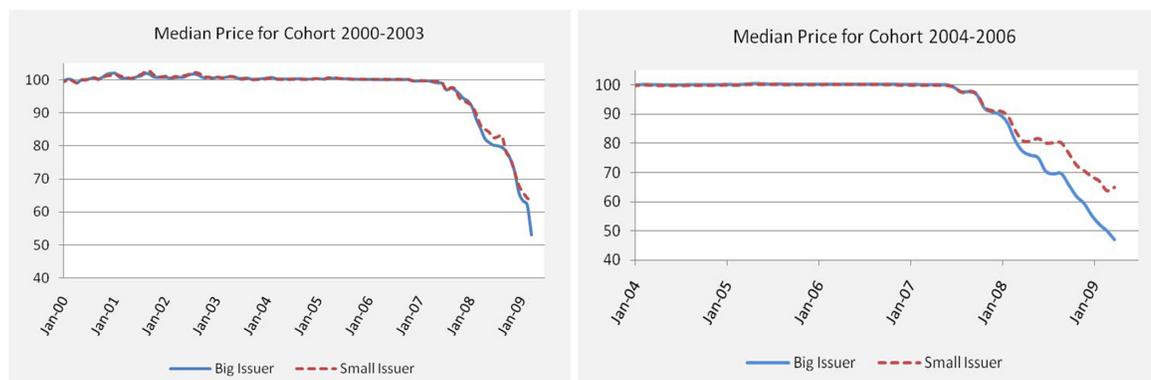
Under the "issuer-pay" business model, rating agencies are paid by issuers of securities rather than by investors. Therefore, given that issuers have an incentive to obtain the highest ratings for their products, rating agencies face pressure to inflate ratings in order to gain client business. This pressure may be countered by the rating agencies' desire to maintain a good reputation and to maintain their ratings business in the long run. However, in high-volume periods of structured finance issuance, one would expect the potential for increased revenues in the short run to outweigh long-term reputational concerns. Further, to the extent that information is less accessible and the models more complex for structured finance products, it may take longer for investors in these instruments to realize ratings errors. Thus, one testable hypothesis is that the rating agencies inflated assigned ratings during boom times for structured finance issuance.¹⁹

This theory matches the pattern of MBS downgrades that were issued between 2005 and 2007. For example, Ashcraft, Goldsmith-Pinkham, and Vickery (2010)²⁰ analyze ratings of subprime and Alt-A MBS issued between 2001 and 2007. They find that, after controlling for a number of mortgage risks such as loan-level characteristics (loan-to-value ratios, credit scores, etc.) and deal-level characteristics (presence of bond insurance, geographic concentration, etc.), MBS issuances between early 2005 and mid-2007 contained larger AAA-rated tranches than in other years. Ashcraft et al hence conclude that their findings are consistent with the theoretical prediction that the benefits of a fee-based revenue model and high rates of security issuance could swamp the reputational costs of erroneous ratings.

Did the Rating Agencies Favor Large Issuers?

As some complaints have alleged, the rating agencies' compensation depends on the achievement of desired ratings. In corporate finance, thousands of distinct issuers provide the demand for investment and commercial banking services, so losing any one of them would not cause serious harm to the agencies' profits. In structured finance, however, securities issuance is dominated by a small number of large issuers. These issuers may have substantial bargaining power over the rating agencies, since they can bring business and pay handsome fees, but can also take away business.

Therefore, another testable hypothesis is whether conflicts of interest are likely to be more prevalent in assigning favorable ratings to large structured finance issuers during boom times. He, Qian, and Strahan (2012)²¹ have conducted research on credit ratings assigned to thousands of MBS issued privately between 2000 and 2006, and they find evidence that the rating agencies indeed favored large MBS issuers prior to the financial crisis. They sort their database into a large-issuer (defined as any issuer in the top 10 percent of the market share distribution across issuers in a given year) and a small-issuer (all others) subsample. They then compare the subsequent price performance of tranches sold by each of these two issuer groups. Their basic findings are summarized in Figure 3.

Figure 3 Monthly Price Changes of Privately-Sold MBS: Large v. Small Issuers

Source: He, Qian, and Strahan (2012), Figures 2(a) and 2(b). Reproduced with permission from the authors.

The price drops for MBS issued from 2000 to 2003 during the financial crisis were fairly comparable between large and small issuers (left graph). On the other hand, for MBS issued during the peak years of 2004 to 2006 (right graph), tranches sold by large issuers performed significantly worse on average than tranches sold by small issuers. The authors find that the same trend holds after controlling for other factors such as collateral and issuer characteristics, deal structure variables, initial security ratings, and yield spreads at issuance. In particular, they find that increasing the market share of an issuer by 10 percent yields a 10 percent increase in the subsequent price drop for AAA-rated bonds issued during boom years, and an 11 percent increase for lower-rated tranches. These results are consistent with the hypothesis that conflicts of interest affected rating agencies' practices, especially during periods of high-volume issuance.

Were Credit Ratings on CDOs Inflated?

In an effort to provide transparency, the rating agencies publish their ratings methodologies for structured finance products. As described earlier, structured finance ratings have both a quantitative and qualitative component. The quantitative component can be verified, or at least replicated, by independent researchers. If the rating agencies are unbiased in their quantitative modeling, the difference between the published and the replicated ratings should be explained by qualitative factors.

This question has been explored in a recent study. Griffin and Tang (2012)²² have obtained a database of 916 CDOs originally issued between 1997 and 2007. This database contains comprehensive information used in the ratings process (including collateral asset information and default probability estimates) from one of the three major credit rating agencies. The authors compare the actual ratings of CDOs in their database with ratings derived from the credit rating agency's own risk model. They then define the AAA "adjustment" as the difference between the actual and model-implied proportion of a CDO rated AAA. They find that the actual size of the AAA tranche in each deal is on average more than 12 percent larger than the corresponding model-implied size.

Several factors such as the quality or experience of the collateral manager, structure of the cash-flow waterfall, and credit enhancements such as third-party insurance could explain these differences in the size of AAA-rated CDO tranches. However, the authors find that these factors explain only a small proportion of

Economic Considerations in Litigation Against the Credit Rating Agencies

the cross-sectional variation in AAA adjustments. Instead, over half of the variation in AAA size adjustments can be explained by, and is negatively related to, the AAA proportions assigned by the quantitative model. In other words, the lower the model-assigned size of AAA tranches, the higher the subsequent upward AAA adjustment. Furthermore, the amount of adjustment at the time of CDO issuance is found to be positively related to future downgrades through December 31, 2008. Thus, this evidence is consistent with the hypothesis that the rating agencies inflated the percentage of AAA ratings assigned to CDOs during this time period.²³

ALTERNATIVE REASONS FOR INFLATED RATINGS

Many commentators and investigators blame the rating agencies' "issuer-pay" business model for creating conflicts of interest. However, while this hypothesis can explain the inflated ratings prior to the financial crisis and massive downgrades once the housing bubble started to burst in 2007, this may not be the whole story.

An alternative explanation for the ratings inflation and subsequent collapse of the structured finance market is that rating agencies unintentionally used models and inputs that were erroneous or systematically biased. Since subprime lending is a relatively recent phenomenon and U.S. housing prices were on the rise in the decade before the financial crisis, historical data on defaults and delinquencies in this sector of the mortgage market is limited. Therefore, the potential for errors in estimating model input parameters during the run-up to the credit crisis was substantial.²⁴

In addition, there is now plenty of evidence to suggest that prior to the financial crisis the rating agencies relied on assumptions about continuing house price appreciation, probability of borrower defaults, and default correlation amongst underlying assets, that turned out to be unrealistically optimistic. For instance, as early as January 2003, industry experts expressed concerns about risk modeling for structured finance products, specifically complaining that default correlations, and especially exposure to macroeconomic shocks, were underestimated.²⁵ In March 2007, First Pacific Advisors discovered that Fitch had used a structured finance ratings model that assumed constantly appreciating home prices, and did not build in the possibility that these prices could fall.²⁶ In May 2008, Moody's acknowledged that it had inadvertently assigned AAA ratings to billions of dollars of structured finance products due to an error in one of its models.²⁷ Deven Sharma, the former president of S&P, has further acknowledged that "events have demonstrated that the historical data we used and the assumptions we made significantly underestimated the severity of what has actually occurred."²⁸

In corporate finance, a rating error on one firm is unlikely to be repeated in the analysis of other firms, as the analysis focuses on relatively qualitative judgments about the idiosyncratic risks of the individual business. As previously mentioned, however, credit agencies rely primarily on statistical models in rating structured finance instruments. These statistical models are applied to whole classes of issuances, and consequently a model error for any one pool of collateral assets will affect the ratings on a broad pool of securities. Moreover, while the sizing of senior tranches of a given CDO might be relatively insensitive to changes in underlying collateral assumptions, the effect of errors in estimates of model parameters is magnified when there are multiple rounds of structuring, or "second generation securitization."²⁹ An example of a second generation securitized product is a CDO², which issues claims against CDO tranches. This problem snowballed during the financial crisis in that neither investors, regulators, nor major investment banks appeared to recognize that small errors in rating individual securities — errors that would have no material effect in the single-name corporate bond market — would be significantly magnified in the tranches of a CDO or CDO².

Economic Considerations in Litigation Against the Credit Rating Agencies

Another theory that is consistent with ratings inflation, but which does not necessarily imply wrong-doing by the rating agencies, is that of “ratings shopping” by issuers. In particular, during the years leading up to the crisis, the desire to leverage up assets and obtain the highest credit rating possible may have led issuers to seek out rating agencies whose models assigned the highest ratings to their products, either intentionally (due to lax criteria), or unintentionally (due to modeling errors). One would expect the incentives for ratings shopping to be greatest for the most complex instruments, where the general opacity (or lack of information) surrounding the underlying assets might yield more dispersion in the assigned ratings. This would in turn provide more opportunity for issuers to “shop” for the most favorable rating. In this case, even if the agencies assigned their best, most accurate estimates of the true quality of the securities, issuer-shopping might still lead to inflated ratings on these instruments.

SYNOPSSES AND INTERPRETATIONS

While the papers summarized above mostly provide evidence consistent with the hypothesis of conflicts of interest, not all the findings are consistent with the alternative hypotheses of modeling errors or ratings shopping. For example, He, Qian and Strahan (2012) demonstrate that more favorable credit ratings were assigned to large issuers during boom periods. This trend is less likely to be correlated with modeling errors, and appears instead to be suggestive of larger issuers having relatively greater bargaining power over the rating agencies.

As another example, Griffin and Tang (2011)³¹ compare the assumptions used in the same CDO valuation model across two divisions within the same rating agency. These departments are the ratings division, which brings in business as well as assigning initial ratings, and the surveillance division, which monitors CDO performance after issuance. Since the ratings division is more likely to be affected by conflicts of interest, the authors test whether the assumptions used by this division (for instance, estimates of default correlation among underlying assets) are more aggressive in generating inflated ratings than those used by the surveillance team. This is indeed the case. The paper further shows that these differences in assumptions do not appear to be explained by other factors such as changes in collateral composition or the length of time between the initial ratings and surveillance reports. Since both departments use the same ratings model, the more aggressive assumptions made by the ratings division are therefore more consistent with the conflicts of interest rather than modeling errors hypothesis.

Finally, two recent papers provide evidence that is inconsistent with the ratings shopping hypothesis. Benmelech and Dlugosz (2010),³⁰ for example, analyze a sample of CDOs issued between 2005 and 2007, and find that tranches rated solely by one agency were both more likely to be downgraded and experience more severe downgrades by January 2008. However, the authors cannot infer that ratings shopping necessarily led to the ratings collapse in the structured finance market, since the majority of the tranches in their sample are rated by two or three agencies. Cornaggia, Cornaggia and Hund (2012) also reject the ratings shopping hypothesis. This is because municipals and sovereign issuers are typically more opaque and complex than corporations with audited financial statements, yet the authors find no evidence of ratings shopping among these products. They conclude that their results are thus more consistent with the conflicts of interest hypothesis.

Economic Considerations in Litigation Against the Credit Rating Agencies

The research on this topic is only beginning to examine the full story. In general, there must be an integration of fact-specific discovery and systematic empirical evidence on the particular securities, their ratings, and the underlying collateral in order to determine which hypothesis is more consistent with the evidence in any given record.

Section 3 INVESTORS' REASONABLE RELIANCE ON RATINGS

As mentioned in the Introduction, one common element of plaintiffs' recent arguments against the rating agencies is that investors in structured finance securities are usually only willing to invest in them because of their assigned high credit ratings. There are many reasons for such reliance on credit ratings. First, these investors allegedly have no other information about the credit quality of these products apart from their ratings. Consequently, the ratings are a critical component of the total mix of information available to investors and represent a substantial factor in the decision to invest (and remain invested) in structured finance instruments. Second, client mandates and regulatory policies can also induce investor reliance on ratings. For instance, most institutional investors have policies restricting their fixed-income investments to those that are rated investment grade and above. Third, for some institutional investors like insurance companies and broker-dealers, their regulatory capital determinations are dependent on credit ratings.³²

Rating agencies, on the other hand, have countered investors' claims of reliance on their ratings by referring to their standard disclaimer, which reads "[T]he ratings . . . are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell, or hold any securities."³³ Similarly, past legal decisions suggest that reliance on structured finance ratings by sophisticated investors (who had the capacity to perform their own due diligence) was unreasonable.³⁴

Therefore, there are two questions related to the issue of investor reliance. One is whether investors actually relied on the agencies' ratings in making their decisions to invest in the securities. This inquiry is mostly a factual one. According to the 2005 Bank for International Settlements (BIS) report,³⁵ the increasing importance of more sophisticated mark-to-market investors (e.g., hedge funds) relative to buy-and-hold investors has somewhat reduced the degree of investors' actual reliance on ratings. The second issue is whether investor reliance on structured finance ratings was prudent or "reasonable" in these cases. Whether or not investors can claim reasonable reliance on ratings in any particular case depends on the strictness of client mandates, availability of reasonable substitutes for ratings, the extent of any informational advantage of the rating agencies over a particular investor, the sophistication of the investor, and the extent of an investor's internal credit analysis and other due diligence that can be performed.

Before examining the existing evidence of reasonable reliance by investors on the ratings of structured finance securities, it is informative to compare the different roles of a AAA rating in assessing the risks of corporate bonds and complex instruments. For the latter, the opacity of the products involved implies that ordinary investors necessarily rely on the rating agencies as the experts in objectively assessing their risks. As a result, credit ratings, especially the top AAA rating, should play a much more important role in helping structured finance investors make decisions, as compared to the case of corporate bonds, where the degree of complexity is lower and independent research by investors is more feasible. The implication for corporate bonds is thus that their traded prices (or prices of credit default swaps written on these securities) should capture all information about their underlying credit quality, with negligible additional information revealed by their ratings. There is evidence in the academic literature to support this hypothesis.³⁶

Economic Considerations in Litigation Against the Credit Rating Agencies

The opposite trend is found to apply, however, to AAA-rated structured finance securities. For example, Adelino (2009)³⁷ finds that yield spreads of the highest rated RMBS securities display no statistically significant predictive power for future credit performance beyond what is captured by ratings. This suggests that investors in AAA-rated mortgage-backed products do rely on ratings. The author infers from this result that investors in these top-rated instruments were perhaps less informed about the quality of the securitized assets at the time of investment, and performed less due diligence than investors in riskier, more information-sensitive securities.

It is worth noting that prior to the financial crisis, there are examples of investment grade-rated CDOs that were issued with returns of up to 10 percent, almost 25 percent higher than the average yield on similarly rated corporate bonds, for instance.³⁸ This evidence indicates that investors did, to a certain extent, acknowledge and price in the additional systematic risks of top rated structured finance securities relative to comparably rated corporate bonds. The presence of such considerable yield spreads may weaken the investor reliance argument somewhat. However, there is also evidence to suggest that these observed attractive yields were still not sufficient to compensate structured finance investors for the entirety of their exposure to systematic risks.³⁹ This can be inferred from the results of Adelino (2009) on the lack of predictive power of AAA-rated RMBS yields, for example.

Overall, the empirical evidence on the informativeness of credit ratings remains inconclusive, though there is a plausible basis for assuming the complexity of these products makes ratings more relevant than not. The existing evidence highlights the importance of asset class, rating, and issuance year in determining whether investors can claim to have relied reasonably on ratings. Proving the reasonableness of investors' reliance on ratings requires both case-specific factual investigation and broader systematic evidence on investor behavior and the information availability for the securities at issue.

Conclusion

This paper presents economic evidence consistent with several key allegations against the major U.S. credit rating agencies. The strength of empirical evidence from the economic literature varies, but overall, there is evidence that supports the hypothesis that the business model of the rating agencies contains inherent conflicts of interest, which may have contributed to ratings inflation prior to the credit crisis. The existing literature also suggests that investors in top-rated structured finance tranches did not have sufficient information about the quality of the assets, and thus relied more on ratings than investors in riskier, lower-rated securities. It remains a challenge, however, to distinguish the individual role of rating agencies and the specific impact of ratings inflation and subsequent downgrades on investor losses, given the presence of several confounding macroeconomic factors relating to the state of the residential mortgage market.

Based upon the evidence summarized above, we suggest that there is an opportunity to make further headway in exploring some of these economic arguments for and against the rating agencies, relying upon a combination of case-specific facts, as well as more systematic evidence on the behavior of rating agencies and investors in general.

Appendix: The Creation of AAA Securities

A simple numerical example can best illustrate how higher credit quality securities can be created from lower quality underlying collateral assets, and demonstrates the importance of default correlation in sizing the AAA tranche. Consider a collateral portfolio of 100 identical \$1 million assets. Each of the assets has a probability of default (default rate) of 10%, and if they default they lose their entire value (equivalently, they have a 0% recovery rate). Figure 4 plots the expected loss distribution for this portfolio under three different assumptions for default correlation between the underlying assets: 0, 0.05, and 0.2.

We generate the corresponding portfolio loss rate frequency distributions using a Monte Carlo simulation with 10,000 simulated trials. As can be observed in Figure 4, as the default correlation of the underlying collateral assets increases, the frequency of both extremely low and extremely high portfolio loss rates increases.

Figure 4 Expected Portfolio Loss Distributions Under Different Correlation Assumptions

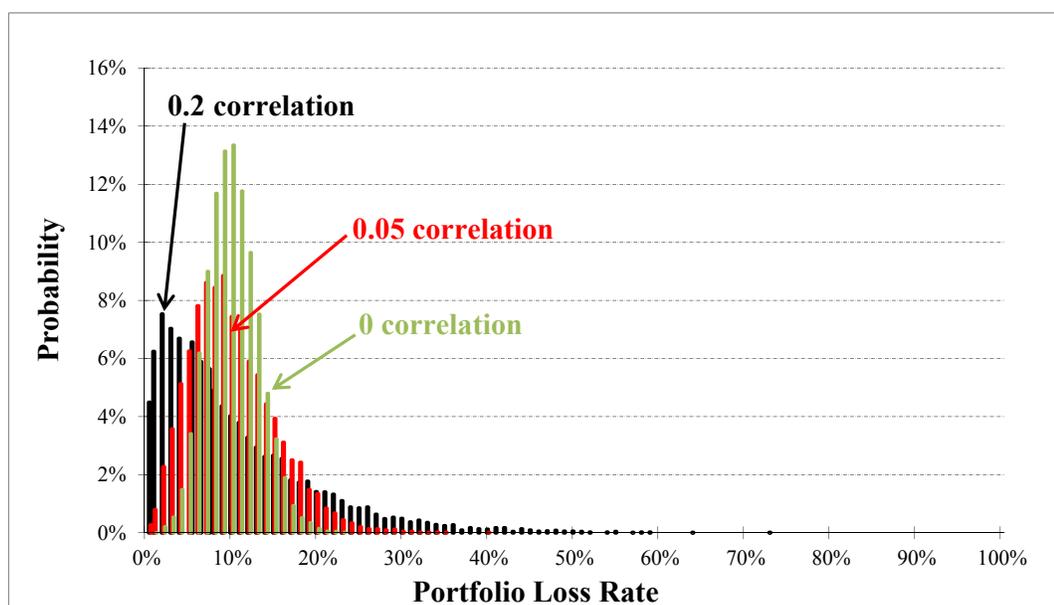


Figure 4 displays the loss distribution under the pooling step of the securitization process. The tranching step will next determine the size of the most senior, or AAA-rated, tranche that can be issued against this collateral pool. As an illustration, assume that investors in the AAA tranche would only allow a maximum 1% probability of default.

Figure 5 plots the cumulative probability distributions from Figure 4, under the same default correlation scenarios. Once again, we start with the 0 default correlation case. The point on the x-axis at the intersection of the black dotted line, labeled "99% cumulative probability," with the cumulative probability curve under 0 default correlation, is an 18% portfolio loss rate. In other words, there is a 99% probability that the portfolio loss rate will be less than or equal to 18%, under the assumption of 0 default correlation. Therefore, at

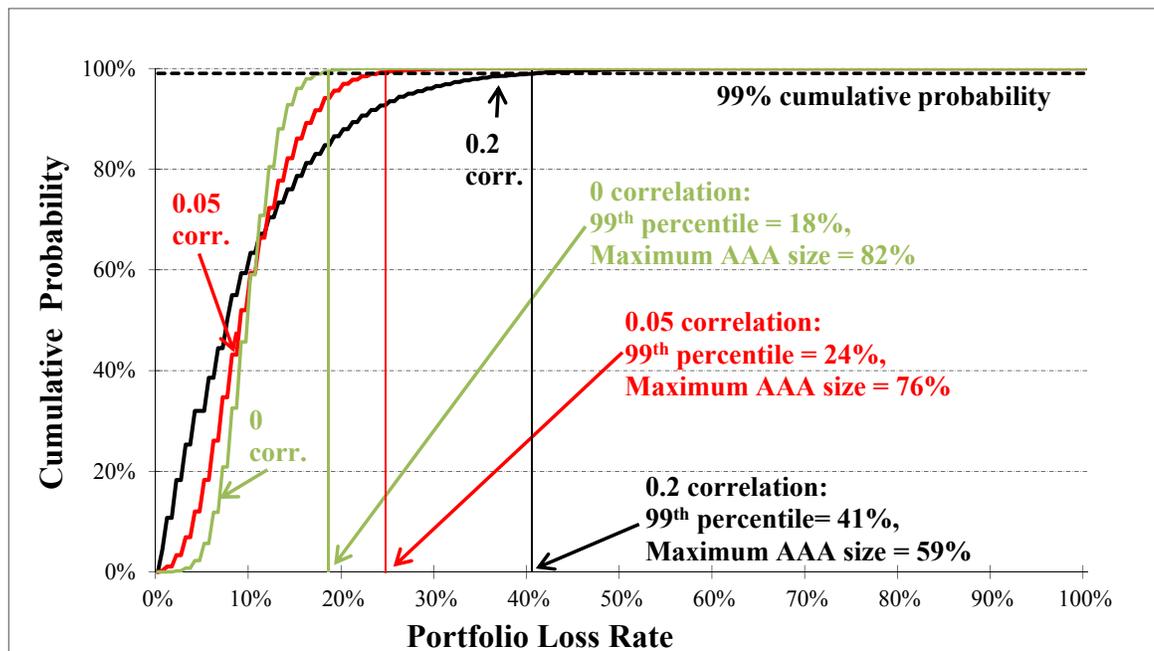
Economic Considerations in Litigation Against the Credit Rating Agencies

the assumed risk tolerance of 1% probability of default, the maximum size of the AAA tranche that can be supported is equal to 82% (100% - 18%) of the total portfolio.

If the default correlation is increased from 0 to 0.05, the maximum portfolio loss at the 99th percentile increases from 18% to 24%. As a result, the maximum allowable size of the AAA tranche decreases correspondingly from 82% (100% - 18%) to 76% (100% - 24%). By the same token, when the asset default correlation increases to 0.2, the maximum AAA tranche size is reduced further to 59%. This finding illustrates that as collateral asset defaults become more correlated, the most senior claims issued against these assets become less safe, and thus less of these claims can be supported.

These results highlight the importance of the accurate modeling of ratings inputs such as default correlations and probabilities. It can be inferred from the discussion above that an understatement of the default correlation across underlying collateral assets could lead to a drastic understatement of the risk of the senior tranches issued against those assets. Both recent legal complaints and academic studies have focused on poor estimates of these parameters.

Figure 5 Maximum Size of AAA Tranches Under Different Correlation Assumptions



Endnotes

- ¹ In this paper we use the term structured finance, as compared to corporate finance securities such as corporate bonds, to refer to securities issued via securitization.
- ² Pursuant to the Dodd-Frank Act, the U.S. federal bank regulatory agencies proposed rulemaking in December 2011 to remove all reliance on external credit ratings from risk-based capital requirements for banks. Proposed rule available at: <http://www.fdic.gov/news/news/financial/2011/fil11075.html>.
- ³ See Financial Crisis Inquiry Commission, *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States* (Washington: GPO, January 2011) and U.S. Senate Permanent Subcommittee on Investigations, Majority and Minority Staff Report, *Wall Street and the Financial Crisis: Anatomy of a Financial Collapse* (Washington: U.S. Senate, April 13, 2011).
- ⁴ See disclosure in McGraw-Hill's (parent of Standard & Poor's) and Moody's annual reports on shareholder and derivative lawsuits against the companies under Section 10(b) of the Securities Exchange Act of 1934; *King County, Washington v. IKB Deutsche Industriebank AG, et al.*, No. 09 Civ. 8387 (SAS) (S.D.N.Y. October 2, 2009), and *California Public Employees' Retirement System v. Moody's Corp., et al.*, No. CGC-09-490241, (Cal. App. Dep't Super. Ct., July 9, 2009), for investor lawsuits; *Ohio Police & Fire Pension Fund et al v. Standard & Poor's Financial Services, LLC et al.*, No. 09-CV-1054 (U.S. District Court, Southern District of Ohio, November 20, 2009); and SEC's potential civil suit against S&P, Joshua Gallu and Zeke Faux, "S&P May Face SEC Sanctions Over 2007 Rating of Subprime CDO," *Bloomberg* (September 26, 2011), <http://www.businessweek.com/news/2011-09-26/s-p-may-face-sec-sanctions-over-2007-rating-of-subprime-cdo.html>.
- ⁵ See *Abu Dhabi Commercial Bank et al v. Morgan Stanley & Co. Incorporated et al*, No. 08 Civ. 7508 (SAS) (S.D.N.Y. September 2, 2009); *California Public Employees' Retirement System v. Moody's Corp., et al.*, No. CGC-09-490241, (Cal. App. Dep't Super. Ct. May 24, 2010); and *Genesee County Employee's Retirement System, et al., v. Thornsbury Mortgage Securities Trust 2006-3, et al.*, No. CIV 09-0300 (U.S. District Court, District of New Mexico, November 12, 2011).
- ⁶ See Joshua Coval, Jakub Jurek, and Eric Stafford, "The Economics of Structured Finance," *Journal of Economic Perspectives* 23, no. 1 (Winter 2009): 3-25 and Efraim Benmelech and Jennifer Dlugosz, "The Alchemy of CDO Credit Ratings," *Journal of Monetary Economics* 56, no. 5 (July 2009): 617-634.
- ⁷ Coval, Jurek, and Stafford, "The Economics of Structured Finance," 2009.
- ⁸ See Figure 5 in Benmelech and Dlugosz, "The Alchemy of CDO Credit Ratings," 2009, which shows that while 70.7% of the dollar amount of CDOs in their sample was initially rated AAA, the collateral that supports these issues only had an average credit rating of B+.
- ⁹ For a more detailed discussion of the ratings process for structured finance securities, see the Financial Crisis Inquiry Commission, Preliminary Staff Report, *Credit Ratings and the Financial Crisis* (FCIC, June 2, 2010) at pages 14- 21.
- ¹⁰ John M. Griffin and Dragon Yongjun Tang, "Did Subjectivity Play a Role in CDO Credit Ratings?" *Journal of Finance*, forthcoming (2012), <http://ssrn.com/abstract=1364933>.
- ¹¹ There is, however, a significant difference between the model inputs for RMBS products and CDOs. For example, RMBS models incorporate a larger number of variables, including the loan-to-value ratios of the underlying mortgage assets, credit scores of the borrowers, debt-to-income ratios of the borrowers, loan seasoning, property types, whether the mortgages are adjustable- or fixed-rate loans, and geographic diversification of the underlying mortgages.
- ¹² Testimony of Arturo Cifuentes, Ph. D., Department of Industrial Engineering, University of Chile, Santiago, Chile, before the U.S. Senate, Washington, DC, April 23, 2010.
- ¹³ Frederic Drevon, "Introduction to Moody's Structured Finance Analysis and Modeling," Moody's Investor Services, 2004, as cited in Adam Ashcraft, Paul Goldsmith-Pinkham, and James Vickery, "MBS Ratings and the Mortgage Credit Boom," *Federal Reserve Bank of New York*, Staff Report No. 449 (New York: FRB, May 2010), http://www.newyorkfed.org/research/staff_reports/sr449.pdf, at page 8.
- ¹⁴ Julia Tung and Nicholas Weill, "Structured Finance Rating Transitions: 1983-2009," *Moody's Investors Service*, Special Comment (March 2010), Figure 11.
- ¹⁵ Julia Tung, Richard Cantor, Nicholas Weill, and David Rosa, "Structured Finance Rating Transitions: 1983-2007," *Moody's Investors Service*, Special Comment (February 2008), Figure 11.
- ¹⁶ Jess Cornaggia, Kimberly J. Cornaggia, and John E. Hund, "Credit Ratings across Asset Classes: A \equiv A?" *SSRN Working Paper Series* (March 1, 2012), <http://ssrn.com/abstract=1909091>.

Economic Considerations in Litigation Against the Credit Rating Agencies

- ¹⁷ For example, the total volume of originations of subprime mortgages rose from \$65 billion in the late 1990s to over \$600 billion in 2006. In the case of Moody's, profits are reported to have tripled between 2002 and 2006 (see Jie He, Jun Qian, and Philip E. Strahan, "Are All Ratings Created Equal? The Impact of Issuer Size on the Pricing of Mortgage-Backed Securities," *Journal of Finance*, forthcoming (2012), <http://ssrn.com/abstract=1512732>).
- ¹⁸ The fees earned by S&P for rating corporate debt issues were estimated at this time to be in the range of 3 to 4 basis points of the issue size, and typically ranged between \$30,000 and \$300,000. The fees earned for structured finance issues, however, could reach up to 10 basis points of issue size, and were even higher for more complex transactions. See Frank Partnoy, "How and Why Credit Rating Agencies are Not Like Other Gatekeepers," *San Diego Legal Studies*, Paper No. 07-46 (2006), <http://ssrn.com/abstract=900257>.
- ¹⁹ See Patrick Bolton, Xavier Freixas, and Joel Shapiro, "The Credit Ratings Game," *Journal of Finance* 67 no. 1 (2012): 85-112, for a theoretical model in which a rating agency trades off the value from inflating its client's rating against an expected reputation cost.
- ²⁰ Ashcraft, Goldsmith-Pinkham, and Vickery, "MBS Ratings," 2010.
- ²¹ He, Qian, and Strahan, "Are All Ratings Created Equal?" 2012.
- ²² Griffin and Tang, "Did Subjectivity Play a Role in CDO Credit Ratings?" 2012.
- ²³ Benmelech and Dlugosz, "The Alchemy of CDO Credit Ratings," 2009, provide additional evidence of potential ratings inflation for CDO products. They present anecdotal evidence that the S&P ratings model was often provided in advance to collateralized loan obligation (CLO) issuers (where CLOs are CDOs backed predominantly by loans). This enabled issuers to structure their CDOs to achieve the highest possible credit rating at the lowest possible cost.
- ²⁴ Coval, Jurek, and Stafford, "The Economics of Structured Finance," 2009. See also Dan Luo, Dragon Yongjun Tang, and Sarah Qian Wang, "A Little Knowledge Is A Dangerous Thing: Model Specification, Data History, and CDO (Mis)Pricing," *University of Hong Kong Working Paper* (June 16, 2009), which finds that CDO mis-pricing can be partly attributed to model mis-specifications, as well as limited availability of historical data on CDO collateral assets.
- ²⁵ Efraim Benmelech and Jennifer Dlugosz, "The Credit Rating Crisis," in *NBER Macroeconomics Annual 2009*, ed. Aron Acemoglu, Kenneth Rogoff, and Michael Woodford (Chicago: University of Chicago Press, 2010), 161-207.
- ²⁶ Coval, Jurek, and Stafford, "The Economics of Structured Finance," 2009.
- ²⁷ *Ibid.*
- ²⁸ Testimony of Deven Sharma, President, Standard & Poor's, before The Committee on Oversight and Government Reform, United States House of Representatives, October 22, 2008.
- ²⁹ Coval, Jurek, and Stafford, "The Economics of Structured Finance," 2009.
- ³⁰ Benmelech and Dlugosz, "The Credit Rating Crisis," 2010.
- ³¹ John M. Griffin and Dragon Yongjun Tang, "Did Credit Rating Agencies Make Unbiased Assumptions on CDOs?" *American Economic Review* 101, no. 3 (May 2011): 125-130.
- ³² FCIC Preliminary Staff Report, 2010, *op cit.*, at pages 5 to 8.
- ³³ FCIC Final Report, 2011, at page 120.
- ³⁴ See *Quinn v. McGraw-Hill Companies, Inc.*, 168 F.3d 331, 336 (7th Cir. 1999).
- ³⁵ Committee on the Global Financial System, *The Role of Ratings in Structured Finance: Issues and Implications* (Switzerland: Bank for International Settlements, January 2005).
- ³⁶ See John Hull, Mirela Predescu, and Alan White, "The relationship between credit default swap spreads, bond yields, and credit rating announcements," *Journal of Banking & Finance* 28, no. 11 (August 2004): 2789-2811, and Bo Becker and Todd Milbourn, "How did increased competition affect credit ratings?" *Harvard Business School Finance*, Working Paper No. 09-051 (September 21, 2010), <http://ssrn.com/abstract=1278150>.
- ³⁷ Manuel Adelino, "How Much Do Investors Rely on Ratings? The Case of Mortgage Backed Securities," *SSRN Working Paper Series* (June 22, 2009), <http://ssrn.com/abstract=1425216>.
- ³⁸ Richard Tomlinson and David Evans, "CDO Boom Masks Subprime Losses, Abetted by S&P, Moody's, Fitch," *Bloomberg* (May 31, 2007), http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ajs7BqG4_X8I.
- ³⁹ Also see Coval, Jurek, and Stafford, "The Economics of Structured Finance," 2009.

About the Authors



Bin Zhou
Senior Consultant

Phone: +1.617.864.7900
Email: Bin.Zhou@brattle.com

Dr. Zhou has over ten years of consulting experience in the finance (banking and insurance), energy, and utility industries. He specializes in the application of finance, accounting, and taxation principles in a variety of consulting and litigation settings. His recent experience also includes evaluating a failed hedge fund's investment management and hedging strategies, analysing economic substance of leasing transactions, and investigating the impact of a proposed tax on affiliate offshore reinsurance.

Dr. Zhou received his Ph.D. in International Economics from Brandeis University.



Pavitra Kumar
Associate

Phone: +1.617.864.7900
Email: Pavitra.Kumar@brattle.com

Dr. Kumar is an associate at *The Brattle Group* with an expertise in empirical finance, business valuation, damages analysis, and structured finance. In her recent work, she has evaluated structured investments in tax disputes, conducted financial statement and valuation analysis in bankruptcy litigation, quantified business damages, and provided expert advice to clients involved in securities litigation.

Dr. Kumar received her Ph.D. Financial Economics from MIT Sloan School of Management.

The Brattle Group

ECONOMIC AND FINANCIAL EXPERTS

CAMBRIDGE

SAN FRANCISCO

WASHINGTON

LONDON

MADRID

ROME

www.brattle.com