

**Creditworthiness Standards under the Dodd-Frank Act:
A Roundtable Discussion**

November 10, 2010

Board of Governors of the Federal Reserve System
20th and C Streets, NW, Washington, DC
Board Room

Summary

Panelists/Participants: See Appendix A to this summary.

Executive summary: Staff and principals of the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency (the “agencies”) met with bankers, academics, asset managers, staff of the credit rating agencies, and others to discuss alternate measures of credit-worthiness for purposes of section 939A of the Dodd-Frank Wall Street Reform and Consumer Protection Act. A copy of the materials provided by participants is attached as Appendix B to this summary.

Introductory remarks: In the opening remarks from the agencies, panelists were asked to focus on seeking alternatives to credit ratings in the risk-based capital rules rather than discussing any potential disagreements panelists might have with the requirements of section 939A.

Part I: Alternative Credit Standards for Sovereigns, Municipal Debt, and Corporate Debt

The panelists began with a discussion of exposures that are of particular importance to community banks. A panelist indicated that (1) municipal bonds (“munis”) are the most important category of exposures for community banks; (2) that ratings play an important role in banks’ decision-making process to acquire munis; and (3) that such banks should be able to continue using ratings to make investment decisions. He believed that the rating agencies have a relatively good track record on rating munis and that if ratings were precluded as a means of making investment decisions, this would have the effect of limiting investment in such debt and increasing costs to banks.

Another panelist expressed a similar view that ratings have played a vital role for community banks and stressed that community banks do not have the resources to re-create the analysis that goes into a credit rating. He suggested three crucial characteristics for any alternative to credit ratings the agencies may develop in order for the alternative to be useful to community banks:

- (1) The alternative should be simple and easy to understand and apply;
- (2) It should provide a quantifiable result, with, for example, a binary “Yes/No” decision mechanism; and
- (3) It should enable an institution to make a rapid decision whether or not to purchase the credit.

One possibility for an alternative standard mentioned was to allow banks to purchase any debt security but to require a standard heightened risk weight (for example 125%). Banks could receive a reduced risk weight if they demonstrate to their supervisors their ability to evaluate the risk of an individual credit, or if the credit spread does not suggest high credit risk. The panelist also mentioned that with respect to munis, a bank's understanding of the individual states and their constitutions and legal frameworks for funding their obligations would be crucial for analyzing risk.

A panelist with financial expertise echoed other panelists in indicating that the rating agencies had a good record on new issuances and relatively straightforward bonds. However, over time, the rating agencies have not always been consistent in re-rating bonds and providing updates. Several panelists agreed that part of this problem is a lack of updated financial information from the issuers, particularly municipal issuers. The panelist suggested moving to a framework focused on bank estimates of probability of default rather than on the ratings.

Another panelist indicated that as a middle ground, banks could do the initial analysis themselves and then bring in a third party, such as a credit rating, to help evaluate the results.

One panelist similarly indicated that fundamental analysis should be the cornerstone to a bank's analysis of its credit risk. He expressed concern about using CDS spreads or membership in a "club" to rate sovereign risk. CDS spreads, he argued, introduce pro-cyclicality into capital measures, while a "club" approach would take us back to the Basel I risk-based capital requirements, which lack risk-sensitivity. Instead, he recommended a focus on economic risk and country risk. Using a country-specific analysis could provide a benchmark for rating exposures to corporate entities located in a particular country.

Another panelist discussed the historical challenges for analyzing the risk of sovereign exposures and suggested that the risk of a sovereign primarily should be based on a credit analysis of the publicly traded companies located in the sovereign.

A panelist representing banking interests expressed preference for a multi-factored approach for measuring credit risk, which could permit the consideration of credit ratings among other factors. Smaller institutions would be able to use a standardized version of this approach while larger institutions would be able to use internal models. Building on this suggestion, another panelist suggested that banks could pool the results of their analysis into a shared information network. These suggestions were consistent with the view of yet another panelist who indicated that the legislative history of section 939A suggests the agencies could include the use of credit ratings as part of any alternative standard so long as credit ratings were not the only criterion. Another panelist similarly suggested that a key to finding a solution would be to broaden the range of tools used to establish capital standards and that any alternative likely will have to involve a bifurcated approach.

Another panelist indicated that the fundamental problem is the asymmetry of information between issuers and investors and that credit ratings have been a convenient way of bridging that divide. However, he suggested that credit analysis is a difficult task that requires a range of tools (including credit ratings). He explained that a multi-faceted approach to credit analysis will be necessary because certain tools will not work well with all asset classes. For instance, it would be difficult to estimate a PD/LGD on a utility bond. This panelist also indicated that banks should only be investing in products that they understand.

One panelist stated that some internal ratings approaches could work; however, there will be potential difficulties, including resource and timeliness concerns, in assessing the new issue market. The panelist suggested that perhaps robust sector analysis could help to support such investment decisions.

Panelists discussed the process used by the National Association of Insurance Commissioners (“NAIC”) for translating rating formulations into NAIC designations. The NAIC has three “legs” to its review of ratings:

- (1) The exam process, to ensure insurance companies conduct sufficient due diligence when making investments and understand the risks associated with their investments;
- (2) The translation of credit ratings into NAIC risk weight designations; and
- (3) Valuation (insurance companies are required to report the fair market value of the securities that they hold and the NAIC reviews their valuations across the industry to determine if there are any extreme discrepancies).

Part II: Structured Finance

The second half of the roundtable discussion focused on potential alternatives to the use of credit ratings for treatment of securitization exposures in the risk-based capital rules. Panelists were asked to comment on the proposals included in the agencies’ ANPR and encouraged to put forth any alternatives not considered in the ANPR.

A panelist began the discussion by stating his belief that any alternative standard should (1) promote banking organizations’ understanding of their securitization exposures, (2) focus on actual performance of the collateral asset and the credit support available within the structure, (3) be proportional to changes in asset performance and risk profile of the exposure, and (4) allow relevant data to be publicly available for all market participants.

Many roundtable panelists favored the use of cash flow analysis, produced internally or provided by qualified third parties, to help determine risk-based capital requirements for securitization exposures. According to one panelist, the key components for conducting this analysis would include an understanding of securitization structure and underlying loan characteristics, as well as timely surveillance. One panelist favored a treatment for community

banks that relied on observable inputs, such as bond spreads, rather than cash flow analysis that might require modeling.

Panelists were asked to discuss potential implementation of a simplified supervisory formula approach, as discussed in the agencies' ANPR, for assessing capital requirements of securitization exposures. Panelists suggested that further dialogue with regulators would be necessary to determine how to meet the data requirements of the supervisory formula approach for various exposure categories. During the roundtable, panelists also discussed the NAIC's decision to retain PIMCO in 2009 to develop risk-based capital requirements for insurance company holdings of private label residential mortgage-backed securities (RMBS). In developing risk-based capital requirements for each RMBS, PIMCO, with input from NAIC, develops several macroeconomic forecasts using various stresses on GDP, home price appreciation, and unemployment rate. These forecasts are weighted inputs and along with information on underlying exposures in the securitization structure are used as inputs into PIMCO's econometric-based modeling engine to produce an expected value of the RMBS which is compared to carrying value (fair value versus amortized cost) for purposes of assigning a risk weight for RMBS held by insurance companies.

There was no time for question and answers from panelists.

APPENDIX A

Principals of the Agencies:

Daniel K. Tarullo
Governor
Board of Governors of the Federal Reserve System

Sheila C. Bair
Chairperson
Federal Deposit Insurance Corporation

John Walsh
Acting Comptroller of the Currency
Office of the Comptroller of the Currency

Staff of the Federal Reserve:

Thomas Boemio

Manjeet Kaur

Benjamin McDonough

Sviatlana Phelan

Christopher Powell

April Snyder

William Treacy

Staff of the FDIC:

Bob Bean

Ryan Billingsley

Jason Cave

Suzanne Clair

George French

Jack Frishberg

Daniel Harty

Staff of the OCC:

Kevin Bailey

Mike Drennan

Mark Ginsberg

Carl Kaminski

Kevin Korzeniewski

Staff of the OTS:

David Riley

Teresa Scott

Marvin Shaw

Michael Solomon

Panelists/Participants:

Edward I. Altman, PhD
Professor of Finance
New York University

Mark E. Almeida
President
Moody's Analytics

Charles D. Brown
General Counsel
Fitch Ratings

Richard Cantor
Chief Risk Officer
Moody's Investors Service

Luigi L. De Ghenghi
Partner
Davis Polk - Financial Institutions Group
(for Securities Industry and Financial Markets
Association)

Jayan Dhru
Head of Global Financial
Services Group
Standard & Poor's

Rod Dubitsky
Executive Vice President and
Global Structured Finance Specialist
PIMCO Advisory

Adam M. Gilbert
Managing Director
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Reginald H. Imamura
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(for American Securitization Forum)

Brendan J. Keane
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National Account Director
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Joseph R. Mason, PhD
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Jim Reber
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Thomas E. Sinnott
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Bank of Utica, Utica, NY

Edward L. Toy
Senior Financial Regulation and
Capital Markets Manager
National Association of Insurance
Commissioners

R. Christopher Whalen
Cofounder and Managing
Director
Institutional Risk Analytics

Sue Wharton
Associate Director
Enterprise Risk
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APPENDIX B

“Comments Re: ANPR OCC–2010–0016”, Christopher Whalen, Institutional Risk Analytics, Letter to the Office of the Comptroller of the Currency, November 10, 2010.

“Comments Submitted Pursuant to the Advance Notice of Proposed Rulemaking Regarding Alternatives to the Use of Credit Ratings in the Risk-Based Capital Guidelines of the Federal Banking Agencies,” Joseph R. Mason, November 9, 2010.

“Conflicts of Interest, Low-Quality Ratings, and Meaningful Reform of Credit and Corporate Governance Ratings,” Charles W. Calomiris and Joseph R. Mason, Columbia Business School, April 14, 2010.

"Regulation of Rating Agencies", Chapter 15 from "Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance", edited by V. Acharya and M. Richardson, (John Wiley & Sons, Hoboken NJ, 2010), submitted by Edward I. Altman, PhD.

"The Z-Metrics Methodology for Estimating Company Credit Ratings and Default Risk Probabilities", RiskMetrics Group (now part of MSCI, Inc.), 2010, submitted by Edward I. Altman, PhD.

Institutional Risk Analytics

www.institutionalriskanalytics.com

November 10, 2010

Comments Re: ANPR OCC–2010–0016
Office of the Comptroller of the Currency
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Washington, DC 20219

Dear Sirs:

As per the request of Suzanne L. Clair, Senior Capital Markets Specialist, Federal Deposit Insurance Corporation (“FDIC”) and preparatory to the “Credit-Worthiness Standards under the Dodd-Frank Act: A Roundtable Discussion” hosted by the Federal Reserve Board of Governors, the FDIC, and the Office of the Comptroller of the Currency at the Federal Reserve’s main building in Washington, DC, on November 10, 2010, below follow our comments on ANPR [OCC–2010–0016](#).

General Comments

- The most basic point to make is that the ratings regime adopted to replace the mandatory use of NRSROs should be dynamic, data driven and isolated from human and political manipulation. In terms of our perspective at IRA, we take a different approach to ratings than do many of the other organizations appearing at this roundtable. At IRA, our credit ratings are entirely mechanical and do not allow for human intervention in terms of the rating and/or the timing of the change in a rating. The inputs for our ratings are limited to the public disclosure of the obligor and do not include non-public information, contacts with management or other subjective inputs.
- In addition, our U.S. bank ratings are explicitly focused on safety and soundness as opposed to estimating probability of default (“P(D)”) or Loss Given Default (“LGD”). The business cases needs for the users of our consumer rating service, the IRA Bank Stress Index (“BSI”), range from asset allocation for large depositors to vendors assessing the likelihood of failure of an insured depository. The ratings histories of all depositories which have failed during the current credit cycle are available [on our web site](#). Our BSI ratings include factors for earnings, capital, credit defaults, exposure at default and efficiency, and thus cover both operational and financial risks (See Appendix A for examples of the most recent IRA BSI ratings sorted by bank units and total bank assets).

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- At the outset it needs to be stated that the mandates for change regarding credit rating agencies in the Dodd-Frank law are an outgrowth of the relatively recent involvement of some NRSROs in the *primary market* for creating complex RMBS and other types of structured securities. Many of these derivatives laced securities were sold as private placements and without SEC registration or other disclosure. These complex structured assets have been a significant source of loss to banking organizations, insurers and other investors.
- Generally speaking, the NRSROs and the broader ratings and analytics community have done a reasonably good job in assessing the credit risk of “plain vanilla,” SEC registered corporate, municipal and RMBS/CMBS securities in the *secondary market* going back more than a century. The top agencies have done a less robust job on sovereign and financial names, largely owing to political pressures not to downgrade troubled financial institutions during times of macro-economic stress. The examples of Citibank in 1991 and Enron a decade later illustrate the danger of political manipulation of the NRSROs.
- The task of rating a security/exposure is also one of valuation. The question of assessing value is a function of assessing credit, liquidity and other factors, task which are supposed to be intrinsic to the role of banking organizations. Much of the “problem” facing investors, ratings agencies, advisors and regulators when it comes to credit ratings for products and especially complex structured assets stems from (1) flaws in market structure and disclosure, and (2) the willingness of banking organizations to rely upon third-party ratings to make investment and underwriting decisions.
- The financial ghetto known as “over-the-counter” or OTC is the source of much of the current financial crisis and the political desire for change regarding the role of the NRSROs. The growth of the OTC market runs directly contrary to what was once a census among U.S. policy makers regarding public, multilateral markets. Today we see a marketplace that is fragmented into a series of proprietary, bilateral OTC ghettos maintained by single dealers, situations that are analogous to investors trading unregistered paper in the doorways of buildings in lower Manhattan a century ago.
- The dealer community calls the bilateral OTC market configuration a vehicle for “innovation.” The author Martin Mayer refers to the OTC derivatives market as a “bucket shop.” To our conversation, the OTC market seems deliberately constructed to avoid transparency and to violate all of the lessons we learned in the Great Depression. Today the OTC markets for complex structured assets is a closed, predatory environment where legal standards such as suitability and know your customer are almost entirely ignored and disclosure is minimal. Most telling is the fact that other dealers will not trade much less make markets in the complex OTC products originated by other banking organizations

- Whereas the NRSROs, and literally hundreds of private ratings, analytics and Buy Side practitioners, are able to track the performance and valuation of corporate debt and plain vanilla RMBS/CMBS securities, in the world of complex structured assets the liquidity of the security and access to information on the deal structures are deliberately limited by the originating dealers. Even for SEC-registered deals, the uncertainty with respect to access to data and the models used to create these complex structured assets limits the ability of the markets to value and thus rate complex securities. If other banks and dealers will not value these “unique” assets, how can any third party agency possibly provide a credit rating?
- Given the existence of the OTC market ghetto, is there any question as to why we have a problem with ratings for these “innovative” securities? In classical terms, the business of ratings involves assessing expected cash flows and the ability of an obligor to meet those finite commitments. But in the world of OTC derivatives and complex structured assets, the performance of the security depends upon unpublished proprietary models and multiple factors few participants can assess. These models are so speculative and the event horizons they suggest so volatile that assigning a rating is so speculative as to render the output meaningless. As Benjamin Graham & David Dodd wrote in Securities Analysis, the more speculative the inputs, the less the analysis matters.
- The fundamental problems of transparency and liquidity in the OTC market present profound challenges to regulators, both in terms of assessing ratings as part of constructing risk-weighted values for different exposures and assessing the overall stability and capital adequacy of banking organizations. As discussed further below, the impact of OTC market structure on the credit ratings world is relevant to the ANPR and especially in the context of calculating risk-weighted exposures for insured depository institutions.
- Moreover, the concurrent rule making processes by the FDIC and Securities and Exchange Commission (“SEC”) with respect to new rules for securitization should also be carefully assessed by the agencies responsible for this ANPR. The agencies also ought to explicitly take notice of the new rules being adopted in the EU (Rule 122a) whereby the purchaser of a security or complex structured asset will be penalized via higher capital charges for selecting any security where adequate disclosure is not present. In essence, the EU will penalize banks which cannot demonstrate that they know what they own.

Specific Comments

a. Creditworthiness Standards

Question 1: The agencies seek comment on the principles that should guide the formulation of creditworthiness standards. Do the principles provided above capture the appropriate elements of sound creditworthiness standards? How could the principles be strengthened?

The principles included in the ANPR are a good start. The agencies should consider strengthening them by creating a general stricture on the types of assets and/or exposures which an banking organization may purchase to those where (1) disclosure by the originator is sufficient for *the purchaser to replicate the valuation assumptions and scenarios employed by the issuer in selling the security* and (2) the banking organization, NRSROs and/or other agencies and advisors may thereby value/rate that security on an ongoing basis. We see no problem with banking organizations using third-party ratings to test and validate internal ratings, but consistent with Dodd-Frank, the internal ratings process must be the primary basis for making the investment decision.

Going back to the early proposals for Basle II, the banking organization ought to be required to demonstrate *to the satisfaction of supervisors*: (1) the ability to internally value and/or rate the security at the point of purchase and (2) to then use external ratings to test these results and validate the banking organization's internal forward ratings on an ongoing basis. Supervisors should, in turn, rate how well each banking organization is able to accurately rate the default experience of all of the bank's exposures.

Given adequate disclosure, standardization and centralized clearing, many of the ratings problems present today in the OTC ghetto will disappear and these securities will be followed and valued widely by the investor and analyst community. The agencies should consider the public good that accrues from compelling banking organizations (and also insurers, pensions and other systemically significant financial institutions) to invest only in assets and exposures where disclosure of all underlying data and models is required.

Once such a standard is in place and supported by the regulatory and ratings community, the origination behavior of issuers and Sell Side firms would change of necessity. Rather than trying to adapt classical ratings to illiquid and opaque OTC securities, we feel it is better to use a new internal ratings discipline for banking organizations to drive changes in market structure in terms of transparency, standardization and the simplicity of deals.

b. Possible Alternatives to Credit Ratings in the Risk-Based Capital Standards

Question 2: What are the advantages and disadvantages for each of these general approaches? What, if any, combination of the approaches would appropriately reflect exposure categories and the sophistication of individual banking organizations? What other approaches do commenters believe would meet the agencies' suggested criteria for a creditworthiness standard? If increasing reliance is placed on banking organizations to assign risk weights for credit exposures using the types of approaches described above, how would the agencies ensure consistency of capital treatment for similar exposures? How could the use of third-party providers be implemented to ensure quality, transparency, and consistency?

First, it seems obvious from reading the relevant portions of Dodd-Frank that the agencies and the banking organizations they supervise must develop their own methods of rating/valuing exposures independent of the ratings community. We support the elimination of all reference to NRSROs in current regulation and the substitution of a regime where banks would start with an assumption of 100% risk weighting for all exposures and then rebut that assumption using internal ratings criteria *established by regulators*. Once the banking organization has established its own internal rating for the exposure, it could then reference external ratings to test its results and follow the exposure forward in time.

Ironically, such a change would return the Basle framework back to a more robust approach focused on internal underwriting of credit risk as opposed to the reliance upon third parties to perform such work. In general, we believe that banking organizations and other financial institutions subject to prudential supervision have an affirmative duty under COSO, Sarbanes-Oxley and 12 CFR to be able to value/rate any exposure which they acquire or sell. We believe that the point of all of the changes mandated by Dodd-Frank is common sense, namely to shift the primary task of doing the work of valuation and rating back onto the banking organization.

In this regard, we would recommend that the agencies place strict limits on the ability of banking organizations and other financial institutions to contract with third-party service providers to obtain quantitative data, such as probabilities of default, as part of their process for making creditworthiness determinations and assigning risk weights. Allowing such services to support the bank's internal rating process defeats the point of requiring banking organizations to produce internal ratings and essentially allows the continued reliance by banking organizations upon NRSRO ratings under a different guise. Allowing such a loophole would be a direct violation of the terms of Dodd-Frank.

We believe that banking organization must have basic internal ratings competency in all of the products which they own and trade. Once that duty of preparing and maintaining internal ratings is performed, then the banking organization or other financial institution can test its work by using a range of ratings and external valuation advisors in the markets, not just the NRSROs. Some of the best valuation talent in the financial industry, the agencies should recall, resides with independent advisors and Buy Side funds.

Consistency of Capital Treatment

One of the key issues raised in this ANPR is how to achieve “consistency of capital treatment” in a world where banks are self-rating OTC exposures which are illiquid, entirely unique and deliberately not standardized. How indeed. One of the lessons that regulators need to take from the last several years is that the fact of the “innovative” OTC marketplace essentially renders capital adequacy regulation irrelevant for these products. By embracing instruments that are by design opaque and illiquid, valuation and thus risk rating becomes problematic, either from an investment or regulatory perspective. Simply stated, in times of market stress, the liquidity risk from OTC instruments trumps the underlying credit issues.

c. Exposure-Specific Options for Measuring Creditworthiness

Question 3: What are the advantages and disadvantages of these alternative methods? How can the agencies ensure consistent and transparent implementation? Should the agencies consider other international organizations? Which financial and economic indicators should the agencies consider? What are the implications or potential unintended consequences? Are there other methods for assessing risk-based capital requirements for sovereign exposures that would meet the principles described in section III? Commenters are asked to provide quantitative as well as qualitative support and/or analysis for proposed alternative methods.

i. Sovereign Exposures

Consistent with our comments above, we believe that any banking organization which cannot demonstrate the ability to model P(D) for sovereign obligors should be prohibited from investing in such exposures. We believe that the explicit intent of Dodd-Frank is to end the use of third-party ratings as the primary factor in asset allocation and/or credit decisions. This implies that the banking organization must be able to internally value and risk weight any asset that it chooses to put onto its balance sheet or sell.

The third option listed in the ANPR regarding risk weighting sovereign exposures is the only approach that makes any analytical sense. The first and second options are essentially the current system with some superficial changes. Is it really possible that personnel from the agencies wish to give all nations that are OECD members a free pass when it comes to risk-weighted assets? Frankly, membership in the OECD and/or the G-20 does not seem to be a very robust measure of credit risk. Some of the largest OECD members such as Japan and the U.S. are on paths to default on public sector obligations, yet the major rating agencies still treat the long-term obligations of both nations as investment grade.

Due to political pressures, the published credit ratings from the top-three rating agencies for many OECD countries seem to understate the likelihood of default. If you compare the average debt spreads of many G-20 nations with their ratings from the top-three agencies, the market indicators suggest much higher P(D) than the ratings suggest.

Our preference in terms of methodology for rating sovereign borrowers is a simple cash flow analysis for each obligor, revenue vs. expenses, and then classical debt coverage ratios. We do not suggest that banks should not use external ratings, simply that the internal analysis of the sovereign issuers conducted by the banking organization or other financial institution must be the primary driver of the investment decision. This represents a significant change from current practice, where the third-party ratings providers were often the sole data input used for both asset allocation and credit decisions.

We believe that the agencies, along with the SEC, should explicitly remove any language from regulations mandating the use of one type of rating agency by any financial institution. Instead, the banking or other organization should be required to demonstrate primary competence in valuation and risk weighting of its assets. Then it may employ third-party vendors to support the analytical framework it creates for asset allocation and/or credit decisions. Of note, the agencies may have an opportunity in guiding this self-rating process to impose sufficient standardization on OTC products to begin to create a rational framework for generating risk-weighting factors that support capital adequacy analysis.

Question 4: What are the advantages and disadvantages of these alternative methods for calculating risk-based capital requirements for PSE exposures? How can the agencies ensure consistent and transparent implementation? Which services and businesses, or financial and economic measures, should the agencies consider? What are the implications or potential for unintended consequences? Are there other methods for assessing risk-based capital for PSE exposures in a relatively risk sensitive manner that would meet the principles described in section III? Commenters are asked to provide

quantitative as well as qualitative support and/or analysis for proposed alternative methods.

Our view is that the ratings for Public Sector Entities (PSEs) must be a function of the financial condition of the sovereign sponsor. In the post-WWII era, the economic profession has supported the idea that government sponsored entities which issue their own debt and have dedicated revenue sources are somehow autonomous and deserve separate credit ratings. In the post-Lehman world, however, with most of the PSEs in the EU and US on some form or another of sovereign life support, it seems silly to argue that PSEs should have superior ratings to the host sovereign. Thus the only question seems to be whether the PSE has an equal rating to the host or is subordinate in some way.

As in the case of sovereign ratings, we believe that banking organizations should be required to generate their own internal ratings for PSEs and then use external ratings to test these forward estimates. Frankly, given the political pressures regarding ratings for PSEs, we would prefer that banking organizations used market indicators to support internal ratings tasks, indicators such as bond spreads and/or credit default swaps instead of third-party ratings. Over time, regulators will gather valuable data regarding the management competency and the internal systems of banking organizations based upon how well they estimate and manage future credit risk. This is yet another reason that internal ratings will be a very important tool for the agencies to enhance safety and soundness.

iii. Bank Exposures

Question 5: What are the advantages and disadvantages of these alternative methods for calculating risk-based capital requirements for bank exposures? How can the agencies ensure consistent and transparent implementation? Which financial and market indicators should the agencies consider? What are the implications or potential for unintended consequences? Are there other methods for assessing risk-based capital for bank exposures in a relatively risk sensitive manner that would meet the principles described in section III? Commenters are asked to provide quantitative as well as qualitative support and/or analysis for proposed alternative methods.

The current blanket rule for a 20% weight for bank exposures is archaic. There is no reason why banking organizations cannot generate an institution-specific rating for each institutional bank counterparty. While in the current environment it is probably necessary to give a large weight to the sovereign rating when assessing bank counterparty

and credit risks for institutions based in Ireland, Spain or the UK, it also seems highly speculative to suggest that sovereigns will always bail out the banks that operate in their jurisdictions. This is the implicit assumption in the current approach to risk weighting bank exposures. As above, we believe that each banking organization must be able to generate a rating for all significant bank counterparties as part of their internal systems and controls. Also, we would be much more inclined to see banks use market-based credit indicators to validate internal ratings as opposed to whether or not the bank is domiciled in an OECD country.

iv. Corporate Exposures

Question 6: What are the advantages and disadvantages of these alternative methods? What are the implications or potential for unintended consequences? If all banking organizations are allowed to calculate their own capital requirements for corporate exposures, how can the agencies ensure consistent and transparent implementation (for example, where there may be material differences in how financial statements are typically presented or differences in chosen financial ratios)? What different approaches or other financial or market criteria would commenters recommend? Are there other methods for assessing risk-based capital for corporate exposures in a relatively risk sensitive manner that would meet the principles described in section III? Commenters are asked to provide quantitative, as well as qualitative, support and/or analysis for proposed alternative methods.

As a general matter, assigning a 100% risk weight to corporate exposures while assigning a 20% risk weight to banks seems ridiculous. Anyone familiar with the relative financial condition of banks and non-financial enterprises in the OECD countries would know that banks are largely decapitalized. The corporates are liquid and awash in cash. In this day and age, why would you assign a 100% risk weight to exposure to ExxonMobil and 20% to Bank of America?

We believe that banking organizations should be compelled to internally rate corporate exposures. In terms of external validation, we support the use of a combination of third-party ratings and/or indicators such as debt spreads as a far more reasonable approach to risk weighting corporate exposures. To earlier comments about internal ratings, the agencies could allow banking organizations to generate internal ratings and assign risk weights based on balance sheet or cash flow ratios, such as current assets to current liabilities, debt to equity, or some form of debt service to cash flow ratio (for example, current interest and maturities to current cash flow from operations).

v. Securitization Exposures

Question 7: What are the advantages and disadvantages of these approaches for calculating risk-based capital requirements for securitization exposures? How can the agencies ensure consistent and transparent implementation? Which parameters or measures of subordination and structure should the agencies consider? What are the implications or potential for unintended consequences? How can the agencies ensure that an alternative approach meets the criteria for a creditworthiness standard? What other approaches or specific financial and structural parameters that would be appropriate standards of creditworthiness for securitization exposures? Commenters are asked to provide quantitative as well as qualitative support and/or analysis for proposed alternative methods.

See earlier general comments about OTC markets for complex structured assets. Banking organizations should only create and/or buy securitization exposures that afford disclosure of all data that is material to investors and that allow the banking organization to value the security internally. Of all of the alternatives, developing a risk weighting based upon a supervisory formula that is a function of the bank's ability to model and track such exposures seems to be the most promising alternative in the ANPR. As noted previously, if the agencies take the position that banks must be able to *demonstrate to their supervisors* the ability to rate any securitization exposures, then the "problem" of ratings for securitizations goes away.

vi. Guarantees and Collateral

Question 8: What are the advantages and disadvantages of the alternative approaches? What are the implications or potential for unintended consequences? Are there other approaches that would more appropriately capture the riskmitigating effects of collateral and/or guarantees without adding undue cost or burden? Commenters are asked to provide quantitative as well as qualitative supporting data and/or analysis for proposed alternative methods.

Please refer to sovereign comments above. The agencies should end the blanket risk weighting approach for guarantees issued by OECD governments with investment grade ratings and subject all guarantors to a stand-alone credit analysis and internal rating.

d. Burden

The agencies have received many comments about the “burden” of the changes that are required to current regulations by Dodd-Frank. To us, such arguments are disingenuous and misleading. Banks which argue that an internal rating of a given exposures is too burdensome or costly to produce and maintain should recall that these skills are part of the basic competency of owning and managing banks. Organizations that cannot perform these basic tasks efficiently and at a *lower cost* than purchasing such opinions from third-party vendors do not deserve to be allowed the privilege of working in this industry.

For too long the agencies have tolerated an environment where banks make asset allocation and investment decisions based upon ratings that they neither understand nor are able to replicate. Dodd-Frank now prohibits such reckless behavior and arguably makes any bank that cannot internally value and risk-weight all of its exposures liable for being accused of unsafe and unsound practices. In view of the losses to banking organizations and the FDIC deposit insurance fund caused by the mis-rating of RMBS and complex structured assets, we believe that regulators need to take a tough line on the issue of ratings in order to help banking organizations regain credibility with the public. The changes in the use of ratings required by Dodd-Frank are as much a challenge for regulators as for the banks they regulate.

We will be happy to answer any questions regarding these comments.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'C. Whalen', with a long horizontal flourish extending to the right.

Christopher Whalen
SVP & Managing Director

Appendix A

Bank Stress Ratings: Assets

(Billions of \$)

	A+	A	B	C	D	F
2010 06	\$2,164	\$2,837	\$4,942	\$1,337	\$465	\$1,458
2010 03	\$2,109	\$1,295	\$6,622	\$1,088	\$381	\$1,843
2009 12	\$1,457	\$1,826	\$3,072	\$1,839	\$295	\$4,601
2009 09	\$1,756	\$1,938	\$4,316	\$584	\$94	\$4,535
2009 06	\$2,005	\$2,097	\$4,132	\$518	\$68	\$4,458
2009 03	\$3,202	\$3,131	\$3,587	\$729	\$86	\$2,784
2008 12	\$2,366	\$5,398	\$403	\$694	\$46	\$4,033
2008 09	\$2,907	\$5,504	\$525	\$704	\$144	\$3,772
2008 06	\$2,897	\$5,256	\$400	\$695	\$51	\$3,983

Bank Stress Ratings: Banks

(FDIC Insured Units)

	A+	A	B	C	D	F
2010 06	3,551	1,575	480	463	77	1,632
2010 03	3,676	1,592	504	480	93	1,534
2009 12	2,978	1,539	480	432	85	2,441
2009 09	3,308	1,481	410	429	77	2,337
2009 06	3,518	1,449	417	421	72	2,256
2009 03	3,959	1,431	452	437	88	1,820
2008 12	3,918	1,448	376	390	98	2,003
2008 09	4,498	1,293	315	356	63	1,793
2008 06	4,884	1,323	329	326	66	1,458



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November 9, 2010

Comments Submitted Pursuant to the Advance Notice of Proposed Rulemaking Regarding Alternatives to the Use of Credit Ratings in the Risk-Based Capital Guidelines of the Federal Banking Agencies

Joseph R. Mason¹

Thank you for the opportunity to provide comments on the advance notice of proposed rulemaking (“ANPR”) of the federal banking agencies (“Agencies”) to modify their risk-based capital regulations to remove references to credit ratings and substitute other standards of creditworthiness, as mandated by Section 939A of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the “Dodd-Frank Act”) expressed in 75 Fed. Reg. 52283 (Aug. 25, 2010).

Still Considering all Ratings Equally

One problem that I see with the approach evidenced in the ANPR is that the associated regulatory agencies are still considering all ratings equally. There is no singular need for such an approach and, in my opinion; such an approach misses the regulatory arbitrage and ratings inflation that caused the crisis.

Moreover, such an approach will result in a substantial amount of “throwing the baby out with the bath water,” in that it dismisses the favorable record in the ratings industry toward evaluations of long-established products, which are still performing admirably through the cycle. While we have known since the research of Richard Cantor and Frank Packer (1996) that ratings on securitizations have been inflated, that did not generalize to other product categories. Hence, there is no need to penalize ratings on long-established products for the problems recently experienced with securitizations.

The chief obstacle to an approach recognizes the difference comes down to the need to distinguish between well-established ratings on plain-vanilla products and new ratings on innovative products. Once that is accomplished, however, it becomes a relatively simple matter

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to maintain ratings as an analytical tool, where appropriate, and then look more skeptically upon ratings on newly developed product categories.

In fact, it is not hard to derive a mechanism for recognizing the difference between the two and defending the well-established plain-vanilla realm from incursion by regulatory arbitrageurs. In mid-2008, working with Sean Mathis, and Julia Whitehead, I helped to describe the bases for such a regulatory process, which could be used to distinguish between sound and unsound ratings and maintain the benefits of ratings as a regulatory input, while minimizing the propensity for regulatory arbitrage and ratings inflation.

Mason, Mathis, and Whitehead (MMW) are of the opinion that the subprime/credit bubble could never have grown so big so fast without access to easy money raised through securitization. That securitization, in turn, was fueled by the unbridled readiness of credit rating agencies to award investment grade labels on deeply flawed structured finance instruments. We see the source of the problem being the regulatory construct that initially established the rating agency Nationally Recognized Statistical Rating Organization (NRSRO) framework.

The root of the problem lies in the concept of an NRSRO created in 1975 to identify large, national, established rating agencies whose ratings could be used to help the SEC set capital requirements for broker-dealers.

Fundamental to the establishment of this scheme was the SEC's belief that AAA meant safe and liquid, an understandable assumption since, at the time, ratings were primarily used for corporate, municipal and government securities and those carrying the AAA label generally exhibited such characteristics. Two parallel trends caused that construct to break down:

- First, during the three decades since the establishment of the NRSRO construct, innumerable domestic and global financial regulations, investment mandates, and statutory requirements piggybacked on the SEC's use of NRSROs to differentiate securities that were safe and liquid from those that were not. Soon after the SEC used NRSRO rating for broker-dealer capital requirements, ERISA laid special importance on NRSRO ratings for public pension fund investments, a practice followed shortly thereafter by most public pension plans nationwide. Then, bank regulators began relying on ratings to determine safe and sound investments, and plan to expand the use of ratings internationally in the Basel II round of banking supervision.
- Second, asset-backed securities emerged as a significant investment category. Moreover, the simply-structured, homogeneously-collateralized, and strongly-underwritten asset-backed securities of the 1980s and 1990s were easily absorbed into the NRSRO ratings scheme and, indeed, most of these securities performed as their ratings would have suggested. As we all now know, the asset-backed securities of the last few years were something very different - characterized by exceedingly complex structures, widely different new and exotic collateral, and untested models and assumptions, which presented a recipe for highly unreliable ratings.

The confluence of these trends was that fiduciaries and financial institutions that were supposed to remain safe and sound in the public interest poured money into instruments whose performance would prove disastrous. Hence, the impact of inflated credit ratings is vast,

extending from pension funds whose ability to meet obligations is deeply impaired to municipalities who struggle for cash to meet expenses to money market funds who proved to be less than a safe haven for investors' short term funds to bank balance sheets which have been dramatically weakened by losses and an inability to liquefy assets.

Of course, the main purpose of the ANPR before us is to constrain the use of ratings by those myriad agencies in a vast web of regulations and rules. But in acting in a broad-brush fashion, we are losing sight of the fact that the approach worked well for conventional corporate obligations, sovereigns, and other established debt sectors, even if it never effectively addressed the more complex surveillance demands of newer financial products.

It is important to note, however, that there is no evidence that the mere presence of a rating was ever intended to make *all* financial products eligible for ratings acceptable under those myriad regulations. In fact, there is evidence that such treatment was not intended. Even in the most recent legislation, the Credit Improvement Act of 2006, a multitude of synthetic structures were purposefully omitted from NRSRO rating because it was felt that they were too new to be rated (even though bank regulators were already allowing those products to be used to lower bank capital requirements).

It is important to note that NRSRO credit ratings were not supposed to be applied to ANY AND ALL financial instruments. Most recently, the Credit Rating Agency Reform Act of 2006 requires NRSRO applicants to register for defined categories of issuances and the definition of asset-backed securities referenced in CFR 17, section 224, para 1101(c), plainly excludes synthetic CDOs and ABS. However, while 1101(c) clearly demonstrates a regulatory sensitivity to the risks of newer asset-backed classes, it failed to prevent the current crisis for two reasons: first, synthetic asset-backed classes which were awarded ratings by credit rating agencies who were registered as NRSROs may have been treated, for all intents and purposes, as NRSRO securities by investors and institutions required to rely on NRSRO pronouncements and notwithstanding the 1101(c) exclusion. Second, the 1101(c) definition was developed before it became clear that innovations within asset-backed collateral asset classes, such as mortgages, could cause just as much unpredictability as entirely new types of asset-backed securities, such as synthetics. Hence, new iterations of subprime and alt-a mortgages that had no performance history on which ratings could be reliably issued were able to creep in under the umbrella established by 1101(c).

Had the SEC anticipated the problems created by other asset-backed securities, in particular those characterized by exceedingly complex structures, widely different new and exotic collateral, and untested models and assumptions, which presented a recipe for highly unreliable ratings, it is reasonable to believe that the SEC would have excluded those, as well.

Recognizing that the use of NRSRO ratings is deeply embedded at all levels of the international financial system, discontinuing their regulatory use is not practical. However, if ratings are to be used for regulatory purposes, they must meet the test of reliability, which means that the instruments to which they are applied must also demonstrate adequate predictability. Clearly, then, new financial products need to demonstrate a history of performance before they can be deemed acceptable for NRSRO ratings. The proposed approach requires a regulatory agency to clarify the limitations on the types of investments for which ratings are meaningful, most

specifically with respect to asset-backed securities, and set out a process by which new innovative financial products can eventually, after exhibiting a reasonable record of historical performance, achieve similar status.

It should be noted that nothing should prevent ratings agencies from privately assigning ratings to non-approved financial products and such activity should be encouraged to foster financial innovation. Those ratings can be awarded on whatever basis and whatever scales the ratings agencies deem prudent and the market finds acceptable. However, those ratings should and will not in any way be confused with NRSRO ratings, which are the only ratings assigned meaning and importance in the laws and regulations of the United States of America.

In summary, first and foremost, regulatory policy needs to regulate the meaning of acceptable credit ratings that the government uses for its own regulations and legislation. That can be achieved by preventing untested asset-backed securities from being confused with stable, predictable, mainstream investments. If such regulation had been in place five years ago, the subprime bubble would likely never have occurred, since NRSRO-constrained investors would not have been able to buy the subprime securities that have caused the credit crisis.

Second, such a regulatory policy can stabilize asset-backed securities markets by providing a meaningful benchmark for the vast majority of asset-backed securities that have reliable performance. A substantial reason that credit markets are currently faltering is that lenders can no longer securitize loans as they did previously -- nor should they. But standard mortgages, credit cards, auto loans, and student loans were not the problem. Those markets are shut largely because the meaning of AAA and other bond ratings applied to structured finance securities have been so perverted that investors thinking of buying those securities have little idea to what loss level they would be exposing themselves. When investors regain confidence in the underlying bond ratings, markets for consumer finance will again open for business, public pension funds can invest with confidence, and citizens can once again be confident in the values of their homes and their pension funds.

Third, such a policy can provide a stable path for financial innovation, by allowing instruments to become NRSRO-eligible after they exhibit some degree of appropriate performance predictability. Only after that product "maturity" has been attained will the investment be able to be used to fund crucial consumer debt in safe and sound consumer banks. Providing that stable path for innovation, however, will also require acknowledging that markets have recently strayed from that path in recent years. Clearly, there may be a need to allow investors to hold what will now be considered "ineligible" securities already in existence until losses can be properly accounted for of the securities can be disposed on in an orderly fashion. Neither such provisions, nor the clarifications introduced by this bill, change the complexion of the ineligible securities; rather they merely acknowledge that such instruments were never what they were represented to be in the first place.

In summary, a sound regulatory approach toward distinguishing different types of ratings can allow investors to focus their concerns on their investments that fall outside of the new eligibility definition rather than the rest of the asset-backed securities market, which can then operate on a stable foundation of meaningful and reliable ratings. Such an approach will preserve community

banks' use of ratings where they are investing in relatively established product categories, while focusing on the problem of new risky applications elsewhere in financial markets.

Know and Use the most Sophisticated Risk Measurement Tools in the Marketplace

Of course, even the above approach does not deal with the problem of evaluating non-rated credit exposures or establishing reasonable risk-weights on a sensible basis. One key problem with any such approach is data. In my opinion, the regulatory agencies, themselves, are not ready to pay and provide training for the technical databases that can help make such sensible determinations.

Take, for example, securitization data on Intex. Adequate data and capabilities exist on the system to determine the first-loss point in any securitization, which could be used to calibrate sensible regulatory risk weighting. Moreover, such a calibration method would recognize, for instance, when a subordinate bond turbo-amortized, to investors' advantage, or credit enhancement stepped down, to investors' disadvantage. Both would affect risk weights in a dynamic fashion and the system exists to calibrate the approach. The problem is that the entry fee for the basic load starts at around \$300,000.

Previously, I proposed that great economies could be achieved by requiring producers of data resources on products affecting regulated financial institutions to give the regulators a single free subscription. The marginal (additional) cost to the data providers would be slight, and the regulatory gains from doing so huge. Even just allowing the regulatory agencies to contract with a single subscription, rather than fifteen (for the Federal Reserve Banks, the Board, the FDIC, and the OCC) would yield an astonishing cost savings.

Still, no one is discussing such an approach. Instead, we seem to be considering developing another ad hoc static approach that will only be adjusted in response to the next crisis, rather than properly evolving as financial markets inexorably develop. The sound approach is expensive, but regulation with second-rate models and surveillance is bound to be ineffective. You cannot expect to alleviate regulatory capital arbitrage unless you stay on top of industry developments.

Adequately Capture Dynamic Adjustments to Risk and Capitalize them Through the Cycle

Even a sound process of risk weighting and initial capitalization will miss movements in credit risk through business cycles. With all the discussion of preemptive capitalization, it makes sense therefore to revise risk weights periodically to accommodate slower-moving developments in financial markets and the economy (faster moving developments need to be addressed through more flexible and finer means, like discount window policy, generally).

Even more fundamentally, securitizations are designed specifically to evolve their structures through their lifetime, stepping down credit enhancement and defeasing on schedules created at the initiation of the structure. My research with Eric Higgins and Adi Mordel is showing that throughout the history of securitization markets, credit enhancement stepdowns are a key risk factor that should be captured in regulatory approaches. Obversely, subordinate securities may turbo amortize, at which time the move from the bottom of the waterfall to the top, requiring less

risk weighting. It is not hard to capitalize those dynamics appropriately, however, as they are coded in INTEX and freely available to users of that product.

Corporates evolve similarly as issues season, and as equity betas converge to one across the long term. RiskMetrics can be used, therefore, to similarly calibrate risk weights for seasoned corporates through their lifetime.

Sovereigns and other types of loans and bonds evolve similarly. For many of those products, single name and issuer CDS prices can be used to calibrate the decrease in risk weights that can benefit stable issuers moving toward maturity.

Of course, CDS have been vilified in the recent crisis as somehow “causing” overshooting in risk pricing. In fact, it is the lack of information endemic in today’s markets that is the chief culprit. But that hasn’t stopped many policymakers from blaming the messenger. We have to resist that temptation going forward and look hard at what the market is trying to tell us, even if we don’t like what it is saying.

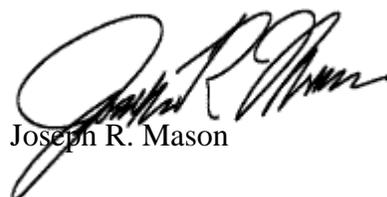
It is not Clear that Conflicts of Interest in Ratings are Solely or Primarily the Result of the “Issuer Pays” Model

While many researchers less familiar with credit ratings are tempted to blame issuer pays” conflicts of interest for the ratings inflation associated with the crisis, it is important to remember that the ultimate investor NEVER pays. As my attached paper with Charles Calomiris points out, it is conflicts of interest in a multi-layer relationship that create inflated and bad ratings when intermediary investors (institutional investors or pension funds) use ratings as a plausible deniability mechanism.

Until we address that fundamental problem that intermediate investors are just as – or even more – conflicted as issuers, we will not address the real problems in credit ratings and will create new problems in corporate governance ratings.

Hence, the effort before us needs to be viewed as a means of forcing those intermediaries to justify not only credit choices, but also as a parallel evolving issue corporate governance ratings, through more than inflated (credit) rating and even more problematic, bad (corporate governance) rating models. Regulatory rules that allow ratings to play a partial, rather than a complete, justification for investments can help preserve the historical benefits that ratings have contributed to markets while forestalling inflation and other perverse effects that have contributed to the downturn.

Respectfully Submitted,



Joseph R. Mason

Conflicts of Interest, Low-Quality Ratings, and Meaningful Reform of Credit and Corporate Governance Ratings

by

Charles W. Calomiris and Joseph R. Mason¹

April 14, 2010

Corporate governance ratings have become an important component of proxy voting and shareholder control. Corporate governance ratings, however, are different from other ratings in that they measure relatively intangible components of corporate performance and are not easily modeled. Furthermore, existing empirical work has not been able to identify robust linkages between corporate governance ratings and value creation within firms; there is little evidence that corporate governance ratings create significant shareholder value or increase the quality of corporate governance practices. We develop a new interpretation of corporate governance ratings that sees ratings as a means of expanding or redistributing the aggregate economic rents that accrue to incentive-conflicted management, institutional investors, and rating agencies, and we argue that this could explain the popularity of corporate governance ratings among institutional investors and managers. If important conflicts of interest lie between institutional investors and their clients, the ultimate investors, then institutional investors may demand meaningless ratings as a means of increasing their rents and avoiding accountability. Because of the market power that can be exercised within the existing manager-rating agency-institutional investor alliances fuelled by those rents, competitive pressures alone will not be sufficient to overturn these bad equilibria. Hence, without appropriate regulatory interventions, the perverse incentives that encourage rent-seeking via low-quality corporate governance ratings will persist.

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I. Introduction

Policymakers and academic critics have identified “conflicts of interest” in the rating industry that have led to poor ratings quality, harming investors who purchase over- or mis-rated investments. We address the question of whether conflicts of interest can arise in the ratings industry without the monopoly benefit conferred by regulatory licenses like those given credit rating agencies that operate as Nationally Recognized Statistical Ratings Organizations (NRSRO). We show that incentive conflicts are apparent in the corporate governance rating industry, despite the lack of a formal regulatory role for the agencies.

Entrenched corporate governance rating agencies that earn large fees for providing low-quality ratings are able to take advantage of the fact that the users of ratings (institutional investors) are conflicted. Ultimately, for the market to reward high-quality ratings, the demand side of the market must care about ratings quality. Otherwise, competition will be muted and low-quality ratings will be tolerated or encouraged. Institutional investors investing on behalf of their clients face imperfect discipline from clients for failing to buy the most useful governance ratings, and may have reasons for preferring low-quality ratings. In that case, conflicts of interest lead institutional investors to demand corporate governance ratings that benefit themselves at the expense of ultimate investors, which can sustain dominant but low-quality rating agencies, and insulate them from competition from new entrants producing better ratings.

Why would institutional investors demand low-quality corporate governance ratings? Institutional investors enjoy private benefits from doing so, which accrue to them rather than to their clients, the ultimate investors. Those private benefits include: (1) avoiding legal liability for their decision making processes when selecting portfolio firms, (2) avoiding accountability to their investors for poor firm performance, and (3) other potential private benefits that institutional investors gain at the expense of stockholders through their alliances with rating agencies.

When institutional investors are more concerned about these private gains that they are about the returns earned by their clients, they will form mutually advantageous implicit alliances with established corporate governance rating firms that pursue rent-seeking strategies and produce noisy (low-quality) governance ratings. Those alliances will undermine competition among governance rating agencies and give artificial market power to dominant rent-seeking rating agencies that produce low-quality ratings, effectively protecting those rating agencies from competition that they would otherwise face from new entrants with better governance rating models.

Given their protected status in such alliances, governance rating agencies will, in turn, be able to exact more rents from the firms they rate (e.g., in the form of requiring those firms to pay for superfluous consulting services about proper corporate governance practices). They also may use their market power to influence decision making at the behest of institutional investors (e.g., by encouraging corporations to meet the demands of those investors that are not value maximizing for stockholders; this is a particular concern in the case of pension funds that represent workers).

The results of this “bad equilibrium” are low-quality corporate governance ratings, rent extraction through rating agency “shakedowns” of public firms, reduced market discipline on public firms’ performance, and reduced market discipline on the behavior of institutional investors. This equilibrium serves the interests of institutional investors and governance rating agencies at the expense of ultimate investors.

Without appropriate regulatory interventions the perverse incentives that allow entrenched credit rating agencies and corporate governance rating agencies to dominate their respective industries will persist. Because of the market power in existing industry alliances, competitive pressures alone will not be sufficient to overturn these bad equilibria.

In Section II, we review theoretical arguments about the sources of low-quality ratings, placing corporate governance ratings and credit ratings within the broader context of the literature

on ratings quality problems and “conflicts of interest” in the production of ratings. In Section III, we describe empirical evidence on the corporate governance rating industry. Section IV considers appropriate regulatory interventions that could help to restore good equilibria in credit ratings and corporate governance ratings.

II. Incentive Conflicts that Produce Ratings Inflation or Low-Quality Ratings

Over-rating (or ratings “inflation”) in the ratings of securitized subprime mortgage-related debts is commonly cited as a cause of the recent financial crisis. But the discussion about ratings problems sometimes confuses the phenomenon of ratings inflation (changing the scaling of ratings to exaggerate credit quality – for example, by giving a AAA rating to debts that used to receive a AA rating) from the production of low-quality ratings (the employment of ratings methodologies that are based on fundamentally false assumptions about measuring risk, which therefore, have little information content).

The credit crisis occurred *both* because the fundamental methodologies used to measure the risk of the asset or asset pool of the issuer was flawed (the production of “low-quality” ratings) and because rating agencies inflated debt ratings. In fact, while rating inflation has been acknowledged in the industry since at least the mid-1990s,² the extreme low-quality ratings methodologies of subprime mortgage-related securitizations did not arise until recently.

The reason ratings inflation could persist without causing significant problems is that inflation may be beneficial to the buy side of the market (institutional investors buying the debts, including banks, insurance companies, pension funds and mutual funds) because rating inflation is a means of regulatory arbitrage. Rating inflation relaxes prudential regulations on buy-side institutional investors in three ways: (1) Inflation allows banks and insurance companies to maintain lower

² “The Credit Rating Industry,” *Federal Reserve Bank of New York Quarterly Review* 19 (Summer 1994), 1-26.

required equity ratios against the purchased debts. (2) Inflation may fool unsophisticated clients of institutional investors by making it appear that their portfolios are earning higher than normal returns relative to risk. (3) Inflation increases flexibility in portfolio management by removing potential constraints that might restrict the purchase or force the sale of lower-rated debts.

If the methodology for measuring the risk of an asset pool against which rated debts are issued is sound, then inflated ratings on the debts backed by that asset pool can be “adjusted” to recover the correct rating. Hence, rating inflation need not be particularly pernicious.³

Low-quality ratings, in contrast, are *never* helpful to investors, since bad methodologies for measuring risk – whether credit risk or corporate governance risk – cannot be “adjusted” by institutional investors to recover the true estimates. Moreover, as the recent credit crisis has demonstrated, when methodological flaws are revealed market confusion over the measurement of risk can result in extreme illiquidity in both primary and secondary markets.

Low-quality ratings, therefore, should not be observed in a world in which agents (that is, institutional investors) are willing and able to establish procedures that perfectly align the incentives of rating agencies with the interests of principals (the ultimate investors). But low-quality ratings do exist. Evidence from the subprime debacle suggests that rating agencies provided low-quality ratings, not just inflated ones. Moreover, as we will show, there is evidence that corporate governance rating agencies also provide low-quality ratings, despite the lack of market protection offered by NRSRO licensing in the corporate governance rating industry.

Low-quality ratings can result from one of two alternative “principal-agent” problems involving three distinct parties: (1) a conflict of interest between “*rating agencies*” and institutional “*intermediaries*” (usually institutional investors, banks, and insurance companies), or (2) a conflict of

³ It can be argued that credit rating inflation may even benefit ultimate clients (pensioners, stockholders in mutual funds, banks, and insurance companies) in boom states of economy if relaxing regulatory limits improves the performance of the portfolio managed by the institutional investors. Of course, given the risk-adjusted nature of debt yields, investors pay for greater returns in the economic boom with greater losses in the ensuing economic bust.

interest between institutional intermediaries and their clients, the “*ultimate investors*” (pensioners, or stockholders in mutual funds, banks and insurance companies).

We argue that principal-agent problems arising from conflicts of interest on the buy side of the market, between intermediaries and ultimate investors, offer the best explanation for persistent, prevalent low-quality ratings. If institutional investors’ incentives were perfectly aligned with the interests of their clients, they would penalize debts that were issued with low-quality ratings by refusing to buy them, or by buying them at a significant discount. Evidence of a “race to the bottom” in ratings shopping in the credit ratings industry shows that institutional investors do not provide such penalties. If they did, the sell side of the market would respond to those competitive pressures by selecting high-quality rating agencies with good methodologies to rate their debts.⁴

In the case of corporate governance ratings, the argument favoring the conflict of interest between institutional investors and their clients as the primary source of low-quality ratings is even stronger. Without investor conflicts, competition would be stronger in the corporate governance rating industry, since competition there is not weakened by the establishment of NRSRO licensing.

The fact that competition appears to be very weak in the corporate governance rating industry, despite the absence of licensing or any strong natural monopoly in corporate governance ratings, therefore, suggests that conflicts of interest between institutional investors and their clients are at the heart of the tolerance for low-quality ratings. As noted before, institutional investors enjoy private benefits from low-quality (noisy) ratings (which consist of protection from legal risk, the reduced risk of losing clients for poor performance, and the potential to share in rents extracted from rated firms by the governance rating agencies), all of which accrue to institutional investors at the expense of their clients, the ultimate investors.

⁴ Charles Calomiris, “The Debasement of Ratings: What’s Wrong and How We Can Fix It,” *Economics21.org*, October 26, 2009.

The pursuit of private benefits by institutional investors weakens competition among corporate governance rating agencies and leads to entrenchment among established providers of low-quality ratings in at least three ways: (1) Avoiding *legal liability* for not having pursued an appropriate decision making process when selecting portfolio firms is one private benefit that can drive institutional investors' demands for governance ratings. That consideration will favor entrenched rating firms with dominant market positions, since age and dominance may be valuable characteristics for institutional investors seeking to show due care in relying on experienced and widely used agencies. (2) Institutional investors that seek to *avoid accountability* to ultimate investors for poor performance of their investment choices will favor entrenched agencies for the same reason. (3) Potential *private benefits* that some institutional investors hope to gain at the expense of stockholders will tend to be larger when they form alliances with entrenched rating agencies, since those agencies have more leverage over the firms that they rate. Conflicted institutional investors, therefore, will not tend to reward new entrants with better ratings methodologies, even if employing those new methodologies would result in more accurate ratings of corporate governance.

The central role of investor conflicts to the tolerance for low-quality ratings, however, should not be misconstrued as suggesting that governance rating agencies are passive or unwitting participants in the production of low-quality ratings. Corporate governance rating agencies use their protected status (which results from a lack of buy-side discipline) to actively pursue rent-seeking strategies that maximize the resources that they can extract from the firms they rate (e.g., requiring that firms grant them lucrative consulting contracts in exchange for providing favorable ratings). In turn, the rating agencies can use those rents to further entrench their positions with the buy side by offering additional benefits to institutional investors who ally with them. For example, in addition to “shaking down” rated firms by demanding consulting contracts in exchange for providing favorable

ratings, rating agencies may extract non-cash concessions from firms to serve the interests of institutional investors (e.g., employee pension funds).

So far, our discussion of corporate governance ratings has argued that to the extent that there is evidence of persistent, low-quality ratings, it likely reflects a “bad equilibrium” characterized by entrenched rating agencies protected by a lack of effective competition due to the absence of sufficient demand for good ratings by incentive-conflicted institutional investors. We now turn to an overview of the evidence regarding the low quality of corporate governance ratings.

III. The Low Quality of Corporate Governance Ratings

After WorldCom, Enron, and the other turn-of-the-millennium financial scandals, the loose structure of federal/state/exchange and self-regulation of corporate governance that had evolved up to that point was regarded by many as inadequate in limiting the costs of principal-agent conflicts between stockholders and management within U.S. firms. The Sarbanes-Oxley Act of 2002 was one response to this perceived failure, and has since been the subject of considerable academic interest.

Another response, which has received relatively little attention, has been the increasing role of the “corporate governance rating industry.” The corporate governance rating industry – composed of governance advisers, governance rating firms, and proxy advisers, sometimes operating as business units of a single company – plays a major role in corporate governance policymaking, and, because of the widespread use of its analysis by institutional investors, effectively acts as a *de facto* corporate governance regulator.⁵

The corporate governance rating industry influences firms through two major channels: reactions by shareholders to voting recommendations and reactions by markets to changes in

⁵ See, for instance, Paul Rose, *The Corporate Governance Industry*, 32 J. CORP. L. 101-141 (2007), 105.; and Robert Daines, Ian Gow, and David Larcker, “Rating the Ratings: How Good are Commercial Governance Ratings?,” Electronic copy available at: <http://ssrn.com/abstract=1152093>.

corporate governance ratings. In practice, the two are related: the proxy firms recommend voting positions in shareholder elections justified by their own corporate governance rating models.

Just as credit rating agencies helped shape structured financial products in the recent credit boom, corporate governance rating agency models are furtively shaping U.S. shareholder voting and corporate governance structures. And just as the depth and duration of today's financial crisis and recession is in large part a result of the need to re-value and re-structure financial instruments based on a new credit rating agency model of credit performance, the need to recalibrate measures of corporate governance quality could be similarly disruptive to management practices and corporate structures.

Corporate governance ratings appear to exhibit persistently low quality. Despite the boom in corporate governance research, there is no convincing evidence of the ability of corporate governance ratings to successfully distinguish firms that perform poorly from those that perform well. Indeed, recent academic literature has questioned whether corporate governance ratings are of any value.

The first academic research in the field suggested that some corporate governance ratings could possibly predict firm performance. For example, Spellman and Watson (2009) found that GovernanceMetrics International's GMI rating was correlated with past firm performance and had the ability to predict future firm performance with some degree of accuracy.⁶ Similarly, Gompers, Ishii, and Metrick (2003) found that the ratings of ISS (the rating agency with a dominant market share) were correlated with firm and shareholder performance.⁷ Brown and Caylor (2004)

⁶ G. Kevin Spellman & Robert Watson, *GMI Ratings and Corporate Performance: 2003 to 2008*, Working Paper, Jan. 2009, at 9.

⁷ Paul Gompers, Joy Ishii, & Andrew Metrick, *Corporate Governance and Equity Prices*, 118 Q. J. ECON. 107-155 (2003), 144.

corroborated that result in a separate analysis.⁸ Brown and Caylor (2004), also found that high ISS CGQ scores are associated with higher current stock returns, higher accounting returns, lower volatility, and higher dividends. Brown and Caylor (2006) also suggest there exists a favorable relationship between Tobin's Q and an index created from 51 governance variables collected by ISS (and identified as important elements of ISS ratings).⁹

While some of that research was independent, some (e.g., Brown and Caylor 2004) was sponsored by corporate governance rating agencies, and thus, must be greeted with some healthy skepticism. GovernanceMetrics International has also sponsored research to show the relevance of its ratings methodology.

Recent independent research contradicts many of the findings of prior studies. For example, Daines, Gow, and Larcker (2008) conduct statistical analyses of four ratings: ISS's CGQ, GovernanceMetrics's GMI, The Corporate Library's TCL, and Audit Integrity's Accounting and Governance Risk (AGR) metric. Daines et al. find that, with the possible exception of the AGR, "governance ratings have either limited or no success in predicting firm performance or other outcomes of interest to shareholders."¹⁰ They also find little correlation among the ratings, a result they suggest indicates either that the ratings measure different corporate governance metrics or that there is significant measurement error in the metrics.¹¹

Additional research indicates that the inability of corporate ratings to consistently predict performance is rooted in the design of the ratings metrics themselves. Koehn and Ueng (2005) find the poor performance of ISS corporate governance ratings in predicting earnings quality

⁸. See Lawrence D. Brown & Marcus L. Caylor, Corporate Governance and Firm Performance, White Paper, Dec. 7, 2004.

⁹. Id.; Brown, L. D., Caylor M. L., 2006. Corporate governance and firm valuation. *Journal of Accounting and Public Policy* 25, 409–434.

¹⁰. Robert Daines, Ian Gow, & David Larcker, Rating the Ratings: How Good Are Commercial Governance Ratings?, Working Paper, June 26, 2008, at 29.

¹¹. Id., at 4.

unsurprising. ISS board governance metrics include, amongst other factors, director independence, board size, board attendance, board diversity, etc.; Koehn and Ueng conclude that, “with so many factors incorporated into a single governance score, the corporate board rating contains a lot of statistical noise. As a result, statistically significant factors may be cancelled out by less relevant statistically insignificant but inversely correlated factors.”¹² Moreover, Koehn and Ueng suggest that ISS’s individual governance metrics may be grossly misspecified. For example, though prior research has demonstrated that age restrictions on board members are largely irrelevant to performance, “ISS simply opts to ignore this possibility when it forces the model to include a positive relationship between governance and director age limits.”¹³

Gillan, Hartzell and Starks (2003) take the notion of flawed governance metrics a step further, and demonstrate that industry-wide factors, including competitive environment, information environment, investment opportunities, and product uniqueness have a greater impact on governance structures than the traditional inputs to rating agencies’ corporate governance metrics.¹⁴ Industry characteristics and common economic factors across firms better explain governance structures *and* firm choices than indices focused on board composition, charter provisions, bylaws, and other traditional corporate governance rating inputs. Gillan, Hartzell and Starks conclude that “industry factors contribute most of the explainable variation in overall governance structure and appear to dominate time effects and firm effects.”¹⁵ In summary, Gillan, Hartzell and Starks’ research suggests that there is no one optimal governance structure and that a vast multitude of factors – most of them fundamental to the business opportunities facing the firm and others

¹². Daryl Koehn and Joe Ueng. Evaluating the Evaluators: Should Investors Trust Corporate Governance Metrics Ratings? *Journal of Management and Governance* (2005), 125.

¹³. *Id.*, at 121.

¹⁴. Stuart L. Gillan, Jay C. Hartzell, and Laura T. Starks. Explaining Corporate Governance: Board, Bylaws, and Charter Provisions. Working Paper Series, WP 2003-03, John L. Weinberg Center for Corporate Governance, University of Delaware (2003), 28.

¹⁵. *Id.* at 2.

completely idiosyncratic to management personality – determine firm performance. Hence, the lack of predictive power associated with corporate governance ratings is rooted in the base inputs to the metrics themselves: the models are just not very good and they produce low-quality ratings, as a result.

Bhagat, Bolton, and Romano (2007) similarly conclude that existing corporate governance ratings do not accurately predict performance, showing that there is no single best measure of performance that is adequate to make informed decisions regarding firm quality.¹⁶ In fact, they find that one variable – outside directors’ stock ownership – by itself outperforms leading academic indices.¹⁷ But they go further, criticizing what they see as commercial misuse of academic methodologies.¹⁸

Other authors similarly suggest that, rather than simply being ineffective, corporate governance ratings may even have *adverse* effects on firm performance. Rose (2007) argues that one-size-fits all governance ratings that are often unproven can have adverse impacts on significant shareholder decisions.¹⁹

Even worse, Koehn and Ueng (2005) state that firms are often pressured to obtain corporate governance ratings from high-profile firms such as ISS and GovernanceMetrics International, even though the governance rating metrics championed by these firms are “not good indicators of either the quality of a firm’s earnings or of its ethics,”²⁰ and may in fact be *negatively* correlated with annual

¹⁶ Sanjai Bhagat, Brian Bolton, & Roberta Romano, *The Promise and Peril of Corporate Governance Indices*, Yale Law School Working Paper No. 89/2007, Oct. 2007, at 67.

¹⁷ *Id.*

¹⁸ *Id.*, at 4.

¹⁹ Paul Rose, *The Corporate Governance Industry*, 32 J. CORP. L. 101-141 (2007), 105.

²⁰ Daryl Koehn and Joe Ueng, *Evaluating the Evaluators: Should Investors Trust Corporate GovernanceMetrics Ratings?* *Journal of Management and Governance* (2005), 111.

stock appreciation and ethics scores.²¹ In this regard, corporate governance ratings could be harming both the firms pressured to obtain them and the investors who rely on them.

Why would institutional investors or other intermediaries purchase noisy and unreliable ratings that are harmful to corporate performance?²² As we pointed out before, institutional shareholders (investors) may purchase the ratings as protection against future legal claims that they have invested or voted unwisely and thereby breached their fiduciary duties to their clients, or as protection against departures by dissatisfied investors. Institutional investors may prefer noisy low-quality ratings because low-quality ratings make it harder to hold them accountable for poor decision making or poor outcomes associated with those investment decisions. Institutional investors can point to the fact that investments that turned out ex post to have bad returns had high corporate governance scores beforehand, thus absolving themselves from blame (which is analogous to the “plausible deniability” equilibrium for credit ratings described in Calomiris 2009).²³

In the case of corporate governance ratings another potential contributing influence on low-quality ratings is the rent-seeking behavior of entrenched rating agencies, who may be using their protected status to “shake down” firms that receive ratings. As we noted, this can also attract institutional investors to the rating agency, further insulating the rating agency from competition,

²¹ Id., at 124.

²² Not everyone is convinced by the evidence of low-quality corporate governance ratings. Daines, Gow, & Larcker (2008), contend that the apparent weakness of corporate governance ratings may reflect the fact that outside researchers do not have the “right” model for estimating the impact of firm governance or the “right” measure of firm performance. Ratings firms object that, given the right model specification (which they, of course, possess), their ratings are significant and informative. We do not find that a very convincing argument. If ratings firms really had unique knowledge of the right model, then they could demonstrate (through the economic value of investment decisions made on the basis of their model’s forecasts) the value of their model by showing its value as an investment tool, just as stock market analysts can be judged on the basis of the profitability of following their investment advice.

²³ There is another potential explanation for the facts that ratings are demanded by institutional investors despite their lack of value. There may be legitimate reasons for institutional investors to purchase rating agency products other than the desire to access the ratings. Among the popular explanations that have yet to be tested is the hypothesis that investors buy the ratings simply to obtain the underlying data. The data on firm takeover defenses, CEO compensation, or board membership can be costly to collect for a large sample of firms and the commercial rating firms might be a cost-effective source for these data.

especially if those rents can be shared with institutional investors, for instance through lower prices for their ratings.

A 2008 policy briefing sponsored by the Millstein Center for Corporate Governance and Performance at the Yale School of Management suggested that firms such as the RiskMetrics Group, which provide voting advice to institutional investors while also providing structural governance advice to the firms, allow companies purchasing governance guidance through the corporate governance rating agency's consulting arms "to 'game' the system, whereby less potentially disruptive voting recommendations are given to investors if the company of interest is also a client of the corporate governance rating agency's consulting services."²⁴ Alarming, even institutional investors and proxy voting advisors involved in the Millstein Center's research roundtable admitted "that they believed various corporations assume that signing up for RiskMetrics' consulting provides an advantage in how the firm assesses their governance."²⁵

As a result, some policymakers have already raised concerns over those potential conflicts of interest, especially with respect to firms that exhibit *per se* evidence of conflicts of interest or those whose proxy advice and governance ratings have proved unreliable.²⁶ In 2006, former Rep. Baker argued that "conflicts of interest and a lack of competition in the industry could lead firms to provide biased advice."²⁷ A 2007 study undertaken by the Government Accountability Office confirmed the potential for important conflicts of interest in the industry.²⁸

²⁴. "Policy Briefing No.3: Voting Integrity-Practices for Investors and the Global Proxy Advisory Industry." Millstein Center for Corporate Governance and Performance, Yale School of Management, 2009, 9.

²⁵. *Id.*

²⁶. See Kaja Whitehouse, *U.S. Legislator Seeks Report on Corporate Vote Consultants*, DOW JONES NEWSWIRES, Oct. 5, 2006, <http://www.djnewswires.com>.

²⁷. *Id.*

²⁸. United States Government Accountability Office, Report to Congressional Requesters: CORPORATE SHAREHOLDER MEETINGS, Issues Relating to Firms That Advise Institutional Investors on Proxy Voting, GAO-07-765, June 2007.

The GAO study and other commentators also noted that the conflicts of interest that affect such a powerful influence over corporate governance structures is wielded by a handful of firms that currently dominate the corporate governance ratings industry. There are, in total, about six firms that comprise the corporate governance industry, including RiskMetrics Group's Institutional Shareholder Services division (ISS); GovernanceMetrics International; The Corporate Library; Glass, Lewis & Co.; Proxy Governance, Inc.; and Morningstar, Egan-Jones and S&P.

Of those firms, ISS is by far the industry leader. ISS alone is said to control a third or more of the shareholder votes in the U.S.²⁹ ISS has over 1,700 institutional clients, with assets under management exceeding \$25 trillion, relying on its ratings.³⁰ ISS claims to advise "24 of the top 25" and "81 of the top 100" mutual funds, all "25 of the top 25" asset managers, and "17 of the top 25" public pension funds.³¹

Since most of the firms dominating the industry are privately held or parts of much larger firms, financial evidence of conflicts of interest is difficult to disentangle. While the RiskMetrics Group, the only public corporate governance rating firm, provides some information that information suggests a significant potential for important conflicts of interest.³²

Partially reflecting the results of the 2007 GAO study which identified conflicts of interest in the industry and that study's reliance on the RiskMetrics Group for information on the industry, the RiskMetrics Group formally admitted that a potential conflict of interest arises from the fact that it sells consulting services to corporate clients and ratings services to institutions.³³ As a result, ISS

²⁹. Dean Starkman, A Proxy Adviser's Two Sides: Some Question Work of ISS for Companies It Scrutinizes, WASH. POST, Jan. 23, 2006, at D1 (citing a statement by Susan E. Wolf, vice president at Schering-Plough Corp. and chairman of the Soc'y of Corporate Sec'ys and Governance Prof'ls).

³⁰. See INST. S'HOLDER SERVS., THE BUSINESS OF CORPORATE GOVERNANCE IS GLOBAL, <http://www.issproxy.com/pdf/Locations.pdf>

³¹. Id.

³². Whether that information is representative of other firms is uncertain.

³³ The Corporate Library states that it does not provide advisory services to a firm that it currently rates (although that could just mean it only rates firms that have previously retained it for consulting and already conformed to its requests

created a separate subsidiary, ISS Corporate Services, which manages most corporate governance advisement and consulting. The RiskMetrics Group also writes into its contracts with ISS Corporate Services that the purchasing of services from ISS Corporate Services will not influence either corporate ratings or proxy recommendations.³⁴ Still, some 14.2 percent of ISS's \$119.2 million annual revenues in 2007 and 11.1 percent of their \$141.8 million annual revenues in 2008 (about \$13.2 million and \$20.1 million, respectively) came from *non*-recurring business, which is the category reported by ISS Business Services.³⁵ Of course, more revenues may come from services classified under other categories not reported to the public, but we cannot know for sure.

Revenue and operating information for other ratings firms is even less accessible.³⁶ GovernanceMetrics International is a privately held firm and does not report financial or operational information publicly.

In summary, empirical research indicates that corporate governance rating firms' models are noisy and may be useless. Corporate governance rating agencies seem to be earning fees for offering no meaningful guidance in their proxy advisory service.³⁷ The fact that institutional investors willingly demand corporate governance ratings suggests that low-quality ratings are a consequence

for restructuring). United States Government Accountability Office, Report to Congressional Requesters: CORPORATE SHAREHOLDER MEETINGS, Issues Relating to Firms That Advise Institutional Investors on Proxy Voting, GAO-07-765, June 2007.

³⁴ RISKMETRICS GROUP, ANNUAL REPORT 2008 (2008), at 16.

³⁵ *Id.*, at 37.

³⁶ As noted above, the GAO report focuses almost exclusively on ISS/RiskMetrics, the only firm for which there exists sufficient information with which to make even the most rudimentary assertions about the industry and potential conflicts.

³⁷ Two caveats, however, are in order. First, there may be legitimate reasons for institutional investors to purchase rating agency products other than the desire to access the ratings. Among the popular explanations that have yet to be tested is the hypothesis that investors buy the ratings simply to obtain the underlying data. The data on firm takeover defenses, CEO compensation, or board membership can be costly to collect for a large sample of firms and the commercial rating firms might be a cost-effective source for these data. Second, Daines, Gow, & Larcker (2008), contend that the apparent weakness of corporate governance ratings reflects the fact that outside researchers do not have the "right" model for estimating the impact of firm governance or the "right" measure of firm performance. Ratings firms object that, given the right model specification (which they, of course, possess), their ratings are significant and informative. That is not a very convincing argument. If ratings firms really had unique knowledge of the right model, then they could demonstrate (through the economic value of investment decisions made on the basis of their model's forecasts) the value of their model by showing its value as an investment tool, just as stock market analysts can be judged on the basis of the profitability of following their investment advice.

either of the incentive conflict between rating agencies and investors (where, in theory, low quality could be driven by hard-to-observe ratings quality and monopoly power by rating agencies), or of the incentive conflict between investors and clients (where low-quality ratings are used by institutional investors to avoid accountability or to share in the rents extracted by rating agencies).

In our view, the principal-agent conflict between institutional investors and clients is more likely to be important. The alternative conflict story (which revolves around rating agency “shirking”), depends upon two assumptions: (1) the difficulty in assessing ratings quality, and (2) an exogenously conferred monopoly over the ratings process. Neither of those assumptions is plausible in the case of corporate governance ratings. First, empirical evidence has done a reasonably good job showing that ratings quality is low, suggesting that, in fact, we can observe the ex ante low quality of ratings. Second, unlike NRSRO credit rating agencies, corporate governance rating agencies enjoy only very limited monopoly privileges. Market power does not flow from either a government license or a natural monopoly over information; rather, to maintain their market power, corporate governance rating agencies depend on the low demand for high-quality ratings from institutional investors, which they can magnify by offering private benefits to institutional investors, supported by the rent extracted via consulting contracts and other holdup schemes.

IV. Meaningful Reform

Our review of debt ratings and corporate governance ratings suggests that the primary source of the problems of low-quality ratings and ratings inflation is the principal-agent problem between institutional investors and their clients. Market forces left to their own devices will not solve these problems; absent some intervention to shift incentives, institutional investors will continue to demand such ratings, and rating agencies will continue to produce them willingly at high profit.

What interventions could improve the performance of credit and corporate governance ratings? It is useful to consider potential policy interventions in the two ratings industries separately.

Proposed credit rating agency reforms that would try to empower institutional investors more (by having them pay rating agency fees, or by having them participate in rating agencies' corporate governance or modeling) would be counterproductive and unlikely to eliminate ratings inflation or improve ratings quality. Increasing the number of NRSROs is laudable, but if the conflict between investors and clients is the problem, increased competition will have no effect. Furthermore, proposals to eliminate NRSRO status entirely are problematic. First, this is unrealistic as a short-term reform, given the extreme dependence of regulation (e.g., the Basel II standards) on NRSRO credit ratings). Furthermore, the elimination of NRSRO status in and of itself likely would not solve the problem of low-quality and inflated credit ratings. The apparent entrenchment of corporate governance ratings shows that eliminating the use of credit ratings for regulatory purposes would not overcome the problem of low-quality ratings, although it likely would remove much of the incentive for ratings inflation.

Ratings reform of all types *must make it profitable for rating agencies to issue high-quality, non-inflated ratings*, notwithstanding the demand for low-quality or inflated ratings by institutional investors. This can only be accomplished through the following two regulatory interventions: (1) objectification of the meaning of ratings, and (2) linking the fees earned (or penalties paid) by rating agencies to objective measures of their performance.

The objectification of credit ratings could be achieved by requiring all NRSROs to formally and transparently link letter grades to specific numerical estimates of the probability of default and the expected loss given default. Once they have done so, then regulators can specify regulatory limits and capital requirements that are linked to estimated probabilities of default and losses given default (which have concrete meaning), rather than vaguely defined letter grades. Then, for example, if an

NRSRO's ratings for a particular product (say, CDOs) were found to be persistently inflated over a sufficiently long period of time then that NRSRO would face a penalty, like a "clawback" of the fees the agency has already earned on that product or losing its NRSRO status for a brief period of time.

In the case of corporate governance ratings, the pernicious demand for low-quality ratings does not lead to ratings inflation, but rather to noisy signals that avoid identifying either strong or weak companies. Thus, the penalty function to properly incentivize corporate governance rating agencies would focus on penalizing ratings *inaccuracy*, not just ratings inflation.

While, in theory, the idea of objectifying and penalizing low-quality corporate governance ratings has appeal, in practice, there are significant obstacles to developing a means of doing so. First, the academic literature on corporate governance is far from achieving consensus on a feasible approach for measuring accuracy. Thus, a penalty structure that would reward good ratings and punish bad ones seems not to be immediately feasible. Unlike credit ratings (which measure the objective fact of default and loss), corporate governance translates into long-term performance, which is difficult to measure. Furthermore, the literature on predictors of default has been an active area of research for decades, while corporate governance quality is a relatively new field.

Second, since corporate governance rating agencies are not acting as NRSROs and have no formal regulatory function in the financial system, the corporate governance rating industry is not obliged to meet *any* degree of accuracy under current law. Thus, before we could consider penalizing corporate governance rating agencies we would have to license them.

In our view, to the extent that the Securities and Exchange Commission relies increasingly on corporate governance ratings as a means by which institutional investors can meet their fiduciary duties to vote shares in a manner reflecting the best interests of the ultimate investors (the individual claimants behind the pension and mutual funds, as well as insurance companies and banks), the corporate governance rating agencies that sell information to meet those fiduciary duties should

have a regulatory obligation that requires them to maintain some degree of accuracy. Hence, to the extent that the industry's role as a corporate governance regulator becomes formalized, appropriate penalty structures – such as the objectively applied clawback provisions envisioned above – should be developed. If in the fullness of time the industry cannot demonstrate a convincing value relationship between corporate governance and firm performance, the ultimate penalty function – preventing meaningless corporate governance rating-based proxy advice from being used to meet institutional investor fiduciary duties – may have to be imposed.

It cannot be denied that corporate governance rating agencies play a significant role in proxy recommendations. Those powers give corporate governance rating agencies significant ability to extract rents from the firms that they rate, and currently governance rating agencies are not subject to any disclosure requirements or business practice standards regarding these conflicts of interest. Thus, under current laws and regulations, abuses of power by corporate governance rating agencies due to conflicts of interest are not observed, defined, or prevented. While such holdup games exerted against large companies are well-known (like ACORN's infamous actions to extract money from merging banks in exchange for agreeing not to oppose their mergers) historically these sorts of activities have largely escaped regulatory or legal interventions and when intervention has been attempted (for instance, the sunshine provisions for community activist organizations proposed under Gramm-Leach-Bliley), entrenched institutions (such as ACORN) fight hard to suppress reform.

At a *minimum*, therefore, the SEC should immediately require disclosure of all potential conflicts, and should develop standards that would prohibit egregious conflicts of interest between rating agencies and the firms that they rate. Furthermore, in the interest of mitigating rent seeking behavior, institutional investors should have to disclose all of their points of contact or alliance with the rating agencies, and these conflicts of interest should also be the subject of SEC standards.

In summary, real meaningful policy alternatives to the seeming conundrums of ratings industry conflicts of interest do exist. Those alternatives, however, require seeing properly what gives rise to the conflicts of interest among all the industry participants, including ratings agencies, institutional investor intermediaries, and the ultimate investors, and structuring incentive compatible industry arrangements to lead to the desired policy objectives.

CHAPTER 15

Regulation of Rating Agencies

**Edward I. Altman, T. Sabri Öncü, Matthew Richardson,
Anjolein Schmeits, and Lawrence J. White***

15.1 OVERVIEW

Credit rating agencies (CRAs) are firms that offer judgments about the creditworthiness—specifically, the likelihood of default—of debt instruments that are issued by various kinds of entities, such as corporations, governments, and, most recently, securitizers of mortgages and other debt obligations. It has been widely argued that the rating agencies played a central role as enablers in the financial crisis of 2007 to 2009, due to the following two key features of the ratings process.

First, beginning in the 1930s, financial regulation has mandated that rating agencies be the central source of information about the creditworthiness of bonds in U.S. financial markets. More recently, other countries have adopted similar regulations; for example, Japan's Ministry of Finance imposed a requirement in the mid-1980s that only investment-grade companies (i.e., firms rated BBB or higher) could issue corporate bonds. Reinforcing this centrality was the U.S. Securities and Exchange Commission (SEC)'s creation of the Nationally Recognized Statistical Rating Organization (NRSRO) designation in 1975 and its subsequent protective entry barrier around the incumbent NRSROs. The fact that regulators used ratings as their primary source for measuring risk gave a powerful status to NRSROs; see, for example, White (2010).

*We are grateful to Thomas Cooley for helpful comments and suggestions. We would like to especially thank Laura Veldkamp and Ingo Walter, members of the Stern Working Group on rating agencies, for their input and suggestions.

Second, the prevalent business model of the major rating agencies is the “issuer pays” model. That is, the issuer of a security both chooses and pays the rating agency for rating the security. This leads to a potential conflict of interest because the rating agency has a financial incentive to pander to issuers in order to be chosen as the rater. Of course, this creates tension with the rating agencies’ mission of providing an objective analysis of credit risk of the security. This tug-of-war between the rating agencies’ reputations for objectivity and their incentives to get business, coupled with their special NRSRO status in regulation, was at the heart of the financial crisis.

In addition, and partly related to the conflict of interest, issues with respect to ratings quality and flaws in the methodology used by rating agencies to rate mortgage-backed securities (MBSs) and structured products were important factors in the crisis.

The Dodd-Frank Act attempts to address these issues comprehensively and contains some significant conceptual improvements to the ratings process by putting in place various measures to improve internal controls and rating accuracy, and by removing regulatory reliance on ratings. The latter is a small step toward shifting the burden of information collection to the users and may improve competitiveness, ratings quality, and innovation in the industry. However, the Act is less forceful in dealing with the problem of incentive misalignment in the “issuer pays” model and in assessing the optimal business model for rating agencies. Furthermore, the legislation appears to substitute heavy oversight and rule making by the SEC for market solutions, which may have some adverse effects. In this chapter, we examine the problematic role of CRAs in the crisis, evaluate the proposals in the Act, and provide suggestions for additional improvements in the ratings process.

15.2 THE CRISIS

The three largest U.S.-based credit rating agencies—Moody’s Investors Service, Standard & Poor’s (S&P), and Fitch Ratings—were clearly central players in the subprime residential mortgage debacle of 2007 to 2008. Their initially favorable ratings were crucial for the successful sale of bonds that were securitized from subprime residential mortgages and similar debt obligations. The sale of these bonds, in turn, was an important underpinning for the U.S. housing boom and bubble of 1998 to 2006. When house prices plateaued in mid-2006 and then began to fall, default rates on the underlying mortgages rose sharply, and the initial ratings proved to be wildly overoptimistic. The prices of mortgage bonds cratered, and massive downgrades of the initially inflated ratings wreaked havoc throughout the U.S. financial system and damaged the financial systems of many other countries as well.

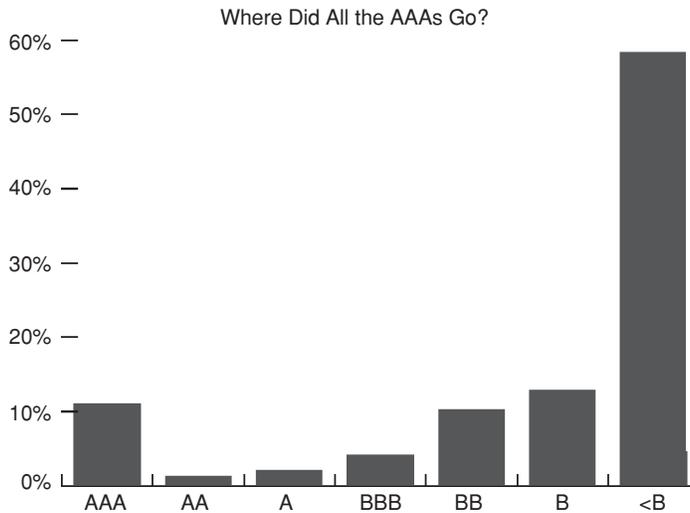


FIGURE 15.1 Ratings Distribution as of June 30, 2009, of Newly Issued AAA-Rated Asset-Backed Securities from 2005 to 2007

Note: S&P rating distribution of 2005 to 2007 issued U.S. AAA-rated ABS CDOs.

Source: International Monetary Fund, *Global Financial Stability Report*, chap. 2, “Restarting Securitization Markets: Policy Proposals and Pitfalls” (October 2009), 93. Web link: www.imf.org/external/pubs/ft/gfsr/2009/02/pdf/text.pdf. (Data source: Standard & Poor’s.)

Figure 15.1 illustrates the extent of the downgrades that were suffered by securities that were tied to the residential mortgage-backed security (RMBS) market. The chart shows that, of all the senior-most asset-backed security (ABS) and collateralized debt obligation (CDO) tranches that were issued between 2005 and 2007 and were originally rated AAA, only about 10 percent were still rated AAA by S&P by the end of June 2009. Meanwhile, almost 60 percent were rated below B, among the lowest rating levels and well below investment grade. Straight private-label residential MBSs (not shown) experienced a similar ratings decline, with 63 percent of AAA-rated securities issued between 2005 and 2007 being downgraded by August 2009 (and 52 percent downgraded to BB or lower).

A key question, therefore, for regulators of rating agencies and also for prudential regulators of financial institutions is whether evidence like that presented in Figure 15.1 shows an inherent flaw in the ratings process or simply reflects an unexpected macroeconomic shock (i.e., bad luck on the part of the credit rating agencies).

There is a plethora of recent academic research, both theoretical and empirical, that sheds light on this question. In the next few subsections, we discuss the literature and focus on three problem areas:

1. The regulatory dependence on ratings and the role of rating requirements in existing regulation.
2. The conflicts of interest that are associated with the business model of the rating agencies.
3. The quality of ratings independent of this conflict of interest.

Regulatory Dependence on Ratings

The consequences of the errors of the major rating agencies' in rating mortgage-backed securities have been so severe because the rating agencies play a central role in the bond markets—a centrality that has been greatly reinforced by the regulatory requirements imposed upon the major institutional investors in these markets. Since the 1930s, prudential regulation has required that banks, insurance companies, pension funds, money market mutual funds, and securities firms must follow the ratings of the major rating agencies in making decisions as to what bonds should be held in their portfolios.

This special role of the rating agencies was crystallized in 1975 when the SEC created a special designation (NRSRO) and immediately ushered the three large rating agencies (Moody's, S&P, and Fitch) into this category. The SEC subsequently became an opaque barrier to entry into the ratings industry, allowing only four more firms to attain the NRSRO designation during the following 25 years. Mergers among the four late entrants and subsequently with Fitch, however, caused the number of NRSROs to shrink back to the original three by year-end 2000. Thus, as the subprime residential mortgage securitization process was gathering steam in the early part of the decade of 2000 to 2009, only three rating firms could provide the ratings—especially the highly valued AAA and AA ratings—that could allow mortgage securitizers' bonds to be held in the portfolios of the prudentially regulated financial institutions.

Sy (2009) provides a good discussion of the Basel Committee on Banking Supervision's analysis of the regulatory uses of credit ratings. This analysis aggregated 17 surveys from a total of 26 separate agencies across 12 different countries, and concludes that credit ratings are an essential part of the regulatory process for identifying assets that are eligible for investment purposes, for determining capital requirements, and for providing an evaluation of credit risk. Key examples include the use of NRSRO ratings in the United States to decide capital charges for broker-dealers and to set credit risk weights for banks under the Basel II Accord.

With respect to the current crisis, this dependence on ratings encouraged prudentially regulated financial institutions to engage in regulatory arbitrage. Specifically, these institutions were encouraged to reach for yield by investing in bonds that were rated as appropriate for the institution but that carried yields that were higher than usual for the bonds in that rating class; the higher yields indicated that the bond markets understood that these bonds were riskier than the rating suggested. Financial institutions could thus take on excessive risk while appearing to abide by the prudential regulatory restrictions. See, for example, the detailed discussion in Calomiris (2009).

Furthermore, since AAA-rated securities were given special status with respect to capital requirements, financial institutions with artificially low costs of funding due to mispriced government guarantees—such as the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac, too-big-to-fail institutions, and Federal Deposit Insurance Corporation (FDIC)-insured depository institutions—had a particular incentive to take carry trades and lever up on these AAA-rated securities. Acharya, Cooley, Richardson, and Walter (2010) argue that this manufacturing of tail risk on certain mortgage-backed securities was central to the financial crisis. While there are numerous examples of regulatory arbitrage by financial institutions during the financial crisis, the following four examples are particularly illuminating:

1. On page 122 of American International Group (AIG)'s 2007 annual report, it was reported that \$379 billion of its \$527 billion credit default swap (CDS) exposure on AAA-rated asset-backed securities sold by AIG's now-infamous Financial Products group was written not for hedging purposes, but to facilitate regulatory capital relief for financial institutions. Regulatory rules had zero capital requirement if an AAA-rated insurance company provided credit enhancement for AAA-rated securities.
2. While the focus of the collapse of AIG has been on its Financial Products division, which lost \$40.8 billion in 2008, it has been much less reported that AIG's Life Insurance and Retirement Services division had similar losses of \$37.5 billion in the same year. These losses stemmed from the Life Insurance and Retirement Services division's failed securities-lending businesses, aggressive variable annuity death benefit provisions, and investment losses on its over \$500 billion asset portfolio. Securities lending is normally considered a low-risk activity because the collateral is invested in safe short-term assets. In this crisis, however, AIG exploited the AAA rating of certain mortgage-backed securities and invested almost two-thirds of its cash collateral in longer maturities ranging from three years to 10 years. This exposed AIG to a maturity mismatch and

consequently large losses if the borrowers of AIG's securities did not roll over their loans (as turned out to be the case in some critical instances, such as Lehman Brothers).

3. Another example of regulatory arbitrage witnessed in the run-up to the crisis was based on exploiting ratings for the purpose of satisfying capital adequacy requirements. Acharya, Schnabl, and Suarez (2010) show that commercial banks established conduits to securitize assets while simultaneously insuring these newly securitized assets using credit guarantees. These credit guarantees were structured to reduce bank capital requirements via the conduits' AAA rating. As we now know, many of the commercial banks involved in this activity became seriously impaired in the crisis. For example, the two largest players, Citigroup and ABN Amro, financed \$93 billion and \$69 billion, respectively, of AAA-rated securities off balance sheet through so-called special purpose vehicles, and both effectively failed.
4. Similarly, in the 18-month period prior to July 2007 (the beginning of the crisis), UBS increased its holdings of AAA-rated nonprime mortgage-backed securities from \$5 billion to more than \$50 billion. Merrill Lynch did likewise. But these numbers were actually small compared with the accumulations of Fannie Mae, Freddie Mac, and the Federal Home Loan Bank System (the other housing GSE). The GSEs held almost \$300 billion of these securities, according to an April 2008 Lehman Brothers report. In fact, as per this report, of the \$1.64 trillion of these securities outstanding, an astonishing 48 percent was held by banks, broker-dealers, and the GSEs.

Conflicts of Interest in the "Issuer Pays" Model

The conflict of interest that is associated with the "issuer pays" model adopted by the major rating agencies in the early 1970s had largely been kept in check by the rating agencies' reputational concerns (see, e.g., Covitz and Harrison 2003). Rating agencies were helped by the fact that there were thousands of issuers of corporate and government debt that they rated, so the threat by any one issuer to take its business elsewhere was not potent. Moreover, the plain-vanilla debt that was being rated was quite transparent, so that errors (accidental or otherwise) would be quickly spotted.

For the mortgage-related structured bonds, however, the conflict of interest was exacerbated, since the volumes of rated bonds were large, the profit margins wide, and issuers far fewer; thus, an issuer's threat to take its business to a different rating agency was far more compelling. For example, Figure 15.2 shows the growing importance of structured products to Moody's during the period from 2002 to 2007. Specifically, the figure

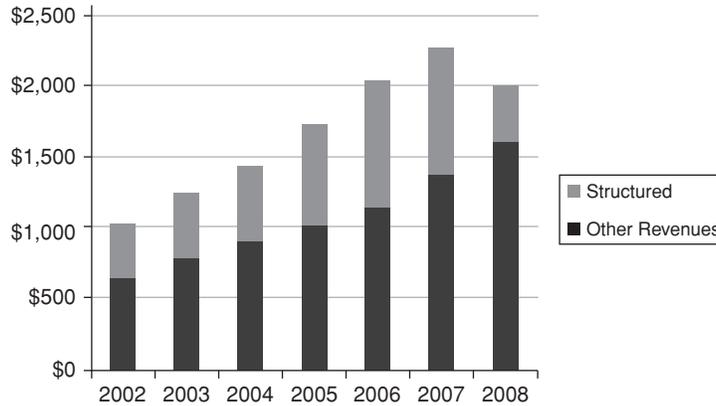


FIGURE 15.2 Moody's Revenues in \$ Millions
Source: Moody's Annual Reports 2002 to 2008.

graphs the breakdown of revenues between structured finance products and the rest of Moody's business.

In addition, the rated securities were far more complex and opaque than plain-vanilla bonds, so that errors were less likely to be spotted quickly. The issuers also figured out how to game the ratings criteria and were perceived to receive debt structuring advice from the rating agencies themselves (see International Monetary Fund 2009).

Most financial market analysts would agree that the current business model of the major CRAs can lead to severe conflicts of interest, which tend to reduce the quality of ratings and the accountability of the rating agencies. The conflicts of interest stem not only from who pays for the rating, but also from the fact that the rating agencies provide other revenue-generating services to the rated companies.

Recent papers—such as Bolton, Freixas, and Shapiro (2008); Mathis, McAndrews, and Rochet (2009); Sangiorgi, Sokobin, and Spatt (2009); and Skreta and Veldkamp (2009), among others—provide a theoretical justification for regulation based on the conflict-of-interest argument. The conflicts of interest that are addressed in these papers include ratings inflation due to the fact that the rating agencies are paid by the issuers, as well as the practice of so-called ratings shopping, whereby the issuer can troll the NRSROs for the best rating. Regulatory suggestions that are provided in these papers with respect to the future of the business model of CRAs are discussed at the end of this chapter.

Given the compelling nature of the conflict-of-interest argument, researchers have developed tests of implications of these theories. In particular,

Ashcraft, Goldsmith-Pinkham, and Vickery (2009) provide a detailed analysis of subprime and Alt-A MBS issuance between 2001 and 2007. While they find that credit ratings on MBSs contain useful information, their overall evidence is fairly damning. Specifically, consistent with Bolton, Freixas, and Shapiro (2008) and Mathis, McAndrews, and Rochet (2009), who argue that ratings inflation is more likely to occur during high-volume periods, Ashcraft et al. (2009) show that during the 2005 to mid-2007 period ratings became increasingly inflated even after adjusting for credit risk and deal characteristics.

The authors also report that for a given credit rating, more opaque MBSs, such as those based on loans with less documentation, perform much worse than other MBSs. This result is consistent with the conclusions of Sangiorgi, Sokobin, and Spatt (2009) and Skreta and Veldkamp (2009), who highlight the importance of transparency. Equally telling evidence on the conflict of interest related to ratings shopping is provided by Benmelech and Dlugosz (2009). They find that tranches that are rated by just one agency, a characteristic that is consistent with ratings shopping, are more likely to be downgraded, and more severely at that.

While the aforementioned papers document issues with the ratings of structured products of residential mortgage-backed securities, these issues also appear relevant for other securities, such as commercial mortgage-backed securities (CMBSs). For example, Stanton and Wallace (2010) analyze the performance of CMBSs before and during the financial crisis. They show that loan underwriting standards did not significantly deteriorate in the period leading up to the crisis, but instead that most of the failure in the CMBS market can be attributed to growing ratings inflation of the higher tranches of CMBSs.

To this point, according to an August 2009 Goldman Sachs report, the evolution of the capital structure of CMBS had changed dramatically during the decade leading up to the crisis. In particular, the report gives the breakdown of the percentage of commercial mortgage pools that are tranced as AAA, AA, A, BBB, BB, and equity. The report provides evidence that the mezzanine subordination level, and therefore credit enhancement, consistently decreased in the decade prior to the crisis. For example, between 1995 and 2007, the range of the pool that was AA-rated went from (26.8%, 21.2%) to (9.5%, 7.2%).

The empirical evidence suggests that conflicts of interest played an important role in the financial crisis. This evidence is supplemented by testimony of employees of the rating agencies to congressional and other regulatory committees. While some of the testimony may be taken with a grain of salt due to different interpretations of events and the fact that some employees may have been disgruntled, the overwhelming part of the

testimony strongly supports the conflict-of-interest story with respect to structured products. According to the testimony, the profit margins that were associated with rating these products took center stage over the firms' providing adequate resources given the growth in this market, and rating quality was generally less emphasized. In fact, some testimony went as far as to claim that ratings methodologies were changed in response to losses in market share.¹

Ratings Quality

Apart from the conflict-of-interest problem, there is another strong argument that can be made against both the quality and the accuracy of the ratings. This was especially the case for structured products, where the CRAs did not seem to fully understand the products that they rated and did not take default correlations into account. Flawed methodologies and data inputs were often used to assign ratings, and investors who relied on these ratings did not always have sufficient information to assess their quality. The methodologies and inputs that were used to rate nonprime residential MBSs (and CDOs backed by RMBSs) were particularly flawed, overestimating the quality of the underlying loans and underestimating the correlation of their performance.

As an example, Hull and White (2009) analyze ex post the risk of MBSs and MBS CDOs that were issued between 2000 and 2007. Using criteria similar to those used by the rating agencies, they look at the variation in AAA tranches under different modeling assumptions, such as loan correlations and recovery rates. They find that, while the AAA ratings assigned to the senior tranches of MBSs were in line with the theoretical models, the AAA ratings assigned to tranches of the mezzanine portion of the MBS CDOs could not be justified. Similar findings are documented by Coval, Jurek, and Stafford (2009) and Griffin and Tang (2009).

Another aspect of ratings quality is the timeliness and accuracy of rating changes. A considerable focus of the regulatory investigation of rating agencies' role in the crisis has been the widespread view that rating agencies were slow to react to the housing collapse in their analysis of structured products. While some see the rigidity of ratings by CRAs in the crisis as evidence of malfeasance, there is a history of CRAs' preference for stable ratings (see, e.g., Altman and Rijken 2004, 2010). CRAs argue that short-term credit quality shifts may lead to rating reversals in the future, and have even cited surveys that show that issuers strongly prefer stability over frequent changes, especially with respect to downgrades. In addition, since there are transaction costs that are associated with changes in portfolio holdings, an institutional investor that is subject to regulatory mandates that are linked

to ratings would prefer to avoid the alterations in portfolios that could be driven by a cyclical down-and-up pattern of ratings fluctuation.²

15.3 PUBLIC INTEREST OBJECTIVES OF RATING REGULATION

If a credit rating is inflated or of low quality, there is little accountability and, in general, almost no incentive for the rating agencies to compete on quality. In fact, competition may actually lower quality as rating agencies compete under the specter of the conflict of interest; see, for example, Bolton, Freixas, and Shapiro (2008) for a theoretical analysis that makes this point.³ As an illustration of the effect of competition on rating agencies, Becker and Milbourn (2008) examine the impact of the increase in Fitch's market share on corporate bond ratings that were provided by Moody's and S&P. They document a decrease in ratings quality with competition. Many researchers have argued that the ratings process for structured products is even more vulnerable to this problem.

Even if the business model of rating agencies were switched to an "investor pays" model and the free-rider problem of investors could be solved, there is still potential for a race to the bottom; that is, prudentially regulated institutions will shop around for the lowest rating that will still satisfy regulatory standards and seek the highest yield subject to that constraint (reaching for yield). This will often entail investing in securities that the market (and perhaps the investor) believes are more risky than the (mistaken) rating indicates. As described earlier, during the crisis many institutional investors, especially large, complex financial institutions (LCFIs), used ratings not only to measure risk internally but also to engage in regulatory arbitrage.

The conflict-of-interest argument and the poor quality of initial ratings of RMBSs have encouraged the development of alternative models and products from firms that estimate ratings and default probabilities that are less subject to these issues.⁴ However, given the fact that ratings by NRSROs are an important part of the regulatory process and a crucial determinant of investment strategies, there is still need for reform.

Any regulation of the rating industry should have a number of important public interest objectives:

- To completely remove or significantly reduce the power and influence that the incumbent CRAs have on the functioning of global capital markets.
- To provide meaningful and accurate information to investors, issuers, regulators, and other major market participants on the probability of

default and loss given default of debt securities issued by firms, financial institutions, and sovereigns and on the derivative instruments that are related to these primary securities, and, by doing so, restore confidence in CRAs and financial markets.

- To remove or reduce the potential conflicts of interest that are inherent in the current business model of CRAs, in particular with respect to the “issuer pays” model.

15.4 THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT (2010)

The severe recent criticism of the rating agencies comes after prior rating debacles involving the Asian crisis of the late 1990s and many fraud-related, but fairly transparent, cases like Enron and WorldCom of the early 2000s. The criticisms in those instances involved the rating agencies’ tardiness in downward rating adjustments. In the case of the mortgage securities ratings, however, the major criticism is aimed at the rating agencies’ *initial*, overly optimistic ratings. It is therefore no surprise that financial regulatory reform has included specific provisions for regulating the credit rating agencies.

Title IX, Subtitle C, “Improvements to the Regulation of Credit Rating Agencies,” proposes legislation to strengthen the regulation of rating agencies and to restore investor confidence in the rating process.

Role of Government

The Dodd-Frank Act (2010) stresses the systemic importance of credit ratings and the public interest nature of the activities and performance of rating agencies as rationales for regulation. A key premise of the Dodd-Frank Act is that conflicts of interest, particularly in the advising of arrangers of structured financial products, as well as the inaccuracy in the rating of such structured financial products, should be addressed.⁵

The Act presents new rules for internal control and governance, independence, transparency, and liability standards. It establishes an Office of Credit Ratings at the SEC to “administer the rules of the Commission (i) with respect to the practices of NRSROs in determining ratings, for the protection of users of credit ratings, and in the public interest; (ii) to promote accuracy in credit ratings issued by NRSROs; and (iii) to ensure that such ratings are not unduly influenced by conflicts of interest.”⁶

The Act requires an internal control structure and annual ratings review process, which gives the SEC the right to suspend or revoke the registration of an NRSRO with respect to a particular class or subclass of securities

if the NRSRO “has failed over a sustained period of time, as determined by the Commission, to produce ratings that are accurate for that class or subclass of securities . . . or does not have adequate financial and managerial resources to consistently produce credit ratings with integrity,” or if rules regarding the separation of ratings and sales and marketing were violated.⁷

The Act further requires that each NRSRO should “publicly disclose information on the initial credit ratings determined by the NRSRO for each type of obligor, security, and money market instrument, and any subsequent changes to such credit ratings, for the purpose of allowing users of credit ratings to evaluate the accuracy of ratings and compare the performance of ratings by different NRSROs.”⁸ In addition, to enhance transparency in rating performance and methodologies, the Act requires that each NRSRO provide comprehensive disclosures on the information, procedures, and methodologies that are used in estimating and changing credit ratings, and stress the potential limitations of the ratings and the types of risks that are not included in the rating (such as liquidity, market, correlation, and other risks). Moreover, the Act requires the rating agencies to provide an explanation or measure of potential volatility for the credit rating, any factors that may lead to a change in the rating, and the sensitivity of the rating to those factors.

Finally, the Act contains various other provisions, the most notable of which removes credit rating agencies and the firms that issue securities from exemption from the SEC’s fair disclosure (FD) rule.⁹

With respect to the role of NRSROs, the legislation is a clear attempt to hold the rating agencies accountable and to open up the system to higher-quality information with respect to the risks of securities. Specifically, we favor the following aspects of the proposals:

- Some regulatory oversight, since regulators are among the largest consumers of ratings through determining capital requirements of financial institutions and prudent rules for investors.
- The periodic audit of ratings that are provided by NRSROs and the ability of the SEC to rescind the NRSRO status based on its findings (at least with respect to a particular class or subclass of securities).

We have concerns, however, about the legislation with respect to the granting and maintenance of NRSRO status. While oversight of NRSROs is needed, some of the provisions are quite onerous in terms of compliance, yet would appear to yield only small benefits. In practice, given their fixed-cost nature, this will impose a relatively heavier burden on innovative start-up NRSROs, thereby strengthening the dominance of the larger rating agencies. Over time, one would hope that the amount of oversight would be

streamlined. In addition, the success of the legislation depends on the ability of the SEC to implement effective oversight—an area in which it has not been particularly successful in the past. One suggestion in this respect would be to explore the creation of the equivalent of the Public Company Accounting Oversight Board (PCAOB) for rating agencies. It is unclear how this would substitute for or complement the Office of Credit Ratings at the SEC, but it seems worthy of consideration.

As a final note, the Act's removal of the FD exemption for rating agencies will clearly reduce the market power of the NRSROs, but may also lead to unintended consequences. Empirical evidence suggests that the removal of the exemption from Regulation FD will reduce the information content of rating changes, and thus may negatively impact the efficiency of financial markets (see Jorion, Liu, and Shi 2005).

Reliance on NRSRO Ratings

With respect to the reliance on NRSRO ratings, the Dodd-Frank Act explicitly calls for the removal of statutory references to credit ratings in federal and state law on financial regulation. In particular, the Act mandates replacement of the language “investment grade” and “non-investment grade”; it especially mandates replacement of the latter by “that does not meet standards of credit-worthiness.” In addition, the Act proposes that federal agencies undertake a review of their reliance on credit ratings, develop different standards of creditworthiness, and amend their regulations to reflect these different standards.¹⁰

We strongly support the removal of specific language that requires regulatory agencies to rely on credit ratings. This is quite important, as ratings are not sufficient to measure the risk of fixed-income securities, as we describe in the next section. Furthermore, we endorse the idea that rating agencies should provide more than a single-point estimate of risk by adding potential stressed outcomes. For example, in addition to a single estimate of default risk, there should be a specification of a reasonable distribution of different outcome scenarios.

But the regulator should also look to other sources for risk measurement. Beyond the default risk estimated by rating agencies, both the regulator and investor need to consider model/misspecification error, liquidity/funding risk, and market risk. The specification of a reasonable distribution of outcome scenarios would have been extremely useful in the subprime mortgage structured finance debacle that led to the crisis. For example, estimates of rating migration under different scenarios of real estate price declines might have highlighted the default risk more clearly and alerted investors more effectively than did a single rating designation.

15.5 DODD-FRANK AND CONFLICTS OF INTEREST

In order to incentivize the rating agencies to do their job effectively, the Dodd-Frank Act defines liability standards for failing to investigate or obtain analysis from independent sources. For example, investors can now bring suit against rating agencies for a knowing or reckless failure to conduct a reasonable investigation of the rated security. Rating agencies are now subject to so-called expert liability; in other words, they are no longer exempt on First Amendment grounds from private rights of action.¹¹ In this respect, the Act proposes that since credit rating agencies effectively play a gatekeeper role in the debt markets and perform commercial evaluative and analytical services on behalf of their clients, they should be subject to the same standards of accountability and liability as are security analysts, investment bankers, and auditors.¹²

As for the independence of rating agencies, the potential conflicts of interest associated with the “issuer pays” model, and the provision of non-rating-related services by rating agencies, the Act prohibits “the sales and marketing considerations of an NRSRO from influencing the production of ratings by the NRSRO.” The Act does not allow compliance officers to work on ratings or sales, and installs a one-year look-back review when an employee of an NRSRO goes to work for an underwriter of a security that is subject to an NRSRO rating.¹³

Most important, however, is the Act’s provision that calls for a two-year study of the credit-rating process for structured finance products and the conflicts of interest that are associated with the “issuer pays” and the “investor pays” models. In particular, the study is to determine the “feasibility of establishing a system in which a public or private utility or a self-regulatory organization assigns Nationally Recognized Statistical Rating Organizations to determine the credit ratings of structured finance products.”¹⁴ The review should include an analysis of mechanisms for determining fees for the NRSROs, metrics for determining the accuracy of credit ratings, and alternative methodologies of creating incentives for the NRSROs to report accurate credit ratings.

While studies are always met with some skepticism, the Act goes further by calling for “a system for the assignment of NRSROs to determine the initial credit ratings of structured finance products, in a manner that prevents the issuer, sponsor, or underwriter of the structured finance product from selecting the NRSRO that will determine the initial credit ratings and monitor such credit ratings. In issuing any rule . . . the Commission shall give thorough consideration to the provisions of . . . section 939D of H.R. 4173 (111th Congress), as passed by the Senate on May 20, 2010, and shall implement the system described in such section 939D unless the Commission

determines that an alternative system would better serve the public interest and the protection of investors.”¹⁵

Section 939D calls for a Ratings Board to be housed in the Office of Credit Ratings at the SEC. The majority of the Ratings Board would be composed of investors in structured finance products, and its purpose would be to assign a rating agency to the issuer for the initial rating of a structured security. That is, the Office of Credit Ratings would install a centralized clearing platform for rating agencies. It would work in three steps:

1. A company that wants its structured debt to be rated would go to the Ratings Board. Depending on the attributes of the security, a flat fee would be assessed.
2. From a sample of approved rating agencies, the Ratings Board would choose, most likely via lottery, the rating agency that rates the security. While this choice could be random, a more palatable lottery design could be based on some degree of excellence, such as the quality of the ratings methodology, the rating agency’s experience at rating this type of debt, some historical perspective on how well the rating agency has rated this type of debt relative to other rating agencies, past audits of the rating agency’s quality, and so forth.
3. For a fee, the rating agency would then proceed to rate the debt. The issuer would be allowed to gather additional ratings, but the initial rating would have to go through this process, which no longer allows the issuer to choose the rater.

Section 939D of HR 4173 was proposed by Senator Al Franken, became known as the “Franken Amendment,” and was passed by a supermajority of the Senate but watered down in conference in trying to reconcile the House and Senate versions of the financial reform bill. The Congress could not agree on how to allocate rating mandates across the various NRSROs; consequently, in a typical congressional compromise, they simply mandated that the SEC conduct a study to determine how to do that.

The legislation addresses the conflict of interest that is associated with the “issuer pays” model to some extent via Section 939D. This reform reduces the scope for ratings shopping and more generally the incentive to inflate ratings without compromising credit rating agencies’ willingness to voice a diversity of opinions. This is because, by construction, removing issuers’ choice of rating agency diminishes the scope for ratings shopping and removes the incentive for rating agencies to attract business by offering favorable ratings. If the Ratings Board uses expertise as a criterion, this reform will also more likely spur competition among rating agencies to produce a higher-quality product. That is, to maintain a strong weight in the

lottery, the rating agency will have incentives to invest resources, innovate, and perform high-quality work. Right now, there is no incentive for the rating agencies to produce quality ratings, because they are not rewarded for doing so. In fact, since issuers pay the raters, one could argue the reverse, leading to a race to the bottom.

Of course, the issue in the end will come down to the outcome of the study and whether regulators will decide to honor the spirit of the Dodd-Frank Act and implement Section 939D of HR 4173 if no better alternative is found. On the one hand, the Act written this way makes sense. There are a number of implementation issues, not the least of which is the payment scheme and the SEC's ability to execute and administer a system of this type. Moreover, one concern about Section 939D of HR 4173 is that it might lead to unintended consequences, such as enshrining the ratings and the raters that are chosen by the lottery as officially sanctioned ratings and again be the only component of risk assessment. On the other hand, the Act might give the SEC too much leeway to implement a meaningless reform that does not adequately address a major cause of the financial crisis: the breakdown in the ratings process due to the combination of the conflict of interest and regulatory reliance on ratings.

This is especially true because the other reforms that are written in the Dodd-Frank Act do not seem sufficient. For example, while the proposal to force more disclosure of preliminary ratings sounds like a step in the right direction, it is easily circumvented. Investment banks are well aware of the methodologies that raters use and can figure out which agency is likely to offer the highest rating. Imposing more uniformity on ratings—by penalizing rating agencies that perform worse than their peers or by dictating ratings methodologies—may reduce the variance of ratings. However, by making ratings more similar, these measures also diminish the additional information content of multiple ratings, which may leave investors—and, more importantly, regulators—less well-informed.

As a final comment, holding the NRSROs accountable for their errors introduces the notion of legal liability. While expanded legal liability will clearly increase their accountability and thus improve their behavior, it may impose considerable costs on the system. By construction, almost any *ex ante* credit rating is wrong *ex post* upon default of the issuer. This could lead to frivolous and unfair lawsuits and may result in a bias toward overestimating the probability of default in published ratings. We therefore prefer to let the market penalize credit rating agencies for inaccurate ratings, which is more along the lines of implementing a business judgment rule and is more consistent with enhanced competition.

In regard to other jurisdictions, given that rating agencies command a special status in terms of regulatory reliance on their product outside the United States, it should not be surprising that rating agencies are also

a prominent part of the regulatory agenda worldwide. Specifically, international proposals by the Group of Twenty (G-20), Britain's Financial Services Authority (FSA), the Financial Stability Board (FSB), the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), and the European Commission of the European Union (EU) all call for stronger (and internationally coordinated) regulatory oversight of registered rating agencies in order to ensure good governance and manage conflicts of interest, and also require an increase in transparency and quality of the rating process. The G-20, the FSA, and the EU proposals recommend the introduction of differentiated ratings for structured products. The OECD proposal focuses on increasing the competitiveness of the rating industry by lowering barriers to entry through simpler registration requirements and by encouraging unsolicited ratings to stimulate the expansion of small credit rating agencies with new business models. The EU and OECD proposals appear to be more explicit in recommending changes in the business model of rating agencies (e.g., the EU proposal suggests an internationally coordinated switch from the "issuer pays" to the "investor pays" model) and a reduction in the use of NRSRO ratings in financial regulation. As described in our analysis of the Dodd-Frank Act, however, increased competition will not necessarily lead to higher-quality ratings; and a switch to the "investor pays" model does not solve the conflict-of-interest problem as long as investors have an incentive to use ratings to exploit capital regulatory requirements.

More recently (on June 2, 2010), the European Commission proposed amendments to the supervisory framework for CRAs, adopted in April 2009, to improve the international coordination of regulatory oversight at the EU level. Under the Commission's current proposal, a new European supervisory authority, the European Security Markets Authority (ESMA), with direct supervisory powers over CRAs, will be established. The ESMA will be responsible for the registration, supervision, and day-to-day monitoring of CRAs, as well as for taking appropriate supervisory measures that range from the issuance of a public notice to the withdrawal of the registration in the event that a CRA is determined to be in breach of the regulation. Although this proposal transfers all supervisory powers to the ESMA, it allows for the possibility that the ESMA may delegate powers back to national authorities, where appropriate, such as on-site inspections for day-to-day monitoring. Furthermore, the proposal allows for the possibility that national authorities may request the ESMA to examine whether the conditions for the withdrawal of a CRA's registration are met or whether the use of credit ratings issued by a CRA should be suspended based on its assessment of a serious and persistent breach of the regulation. However, the responsibility will remain with the ESMA.¹⁶ While we agree with the European Commission's claim that a single central regulator at the EU level may allow the CRAs to operate in a simpler regulatory environment, we

remain concerned about the tremendous faith put in the ability of a central regulator to monitor and evaluate the performance of the rating agencies.

Another aspect of the amendments is that the European Commission requires the issuers of structured finance instruments to provide information not only to the CRA that they choose, but also to all other interested CRAs. This aspect of the amendments appears to be intended to reinforce competition among CRAs, avoiding possible conflicts of interest under the “issuer pays” model, and enhancing transparency and the quality of ratings. We believe that this requirement is a step in the right direction for avoiding possible conflicts of interest and reinforcing competition, and may even form a basis for a hybrid business model in which some of the CRAs disclose their ratings publicly, while others may choose to keep the ratings private and try to sell them to interested investors.

Last, in its June 3, 2010, press release regarding the amendments, the European Commission reiterated its concerns about the lack of competition in the global rating industry and acknowledged its intent to examine further structural solutions, including the establishment of a European CRA or other independent public entities with a stronger role in the issuing of ratings. This acknowledgment confirms our belief that rating agencies will remain present at the top of the regulatory agenda worldwide for quite a while.

15.6 LOOKING FORWARD

In the typical view of the role of ratings in the financial crisis, investors were asleep at the wheel because of the government’s seal of approval of rating agencies. But our analysis shows that ultimately it was not investors who were deceived here but instead it was taxpayers who were deceived. This is how it worked: Because the issuer pays the agency that rates the security, there is a huge conflict of interest to shop the security around until the issuer gets the desired rating, leading to inflated ratings. Thanks to several academic studies and recent testimony by rating agency officials, we now know that this took place. And because the government sets its regulatory structure around these ratings, investors like AIG, Citigroup, ABN Amro, UBS, Fannie Mae, Freddie Mac, and, for that matter, Merrill Lynch and Lehman Brothers, among others, were able to engage in risky activities without having to hold a sufficient capital buffer due to the inflated ratings. Rating agencies acquiesced in this unholy alliance between investors and issuers. The crisis, and the taxpayer-funded bailouts that followed, could not have transpired the way it did without rating agencies planted in the center of the financial system.

The Dodd-Frank Act represents a major change in the way that credit rating agencies would be regulated. The legislation addresses the two core

problems: first, the central role of NRSRO ratings in financial regulation and the dominance of a few rating agencies in the industry; and second, the conflict of interest in the “issuer pays” model and how some investors use these ratings.

Among the largest consumers of rating agencies are the prudential regulators. But their very reliance, coupled with the existing conflicts of interest and possibility for regulatory arbitrage, has made the system less stable. It seems clear that, going forward, the rating agency model needs to be quite different. While the legislation is a major step in the right direction, one would hope that the Dodd-Frank Act would lead to major changes through its commissioned studies. Next, we address the regulatory reliance and conflict of interest issues.

Regulatory Reliance on Ratings

Ratings are not sufficient to measure the risks of fixed-income securities and therefore the risk profiles of financial institutions. There are generally three risk components that need to be evaluated, and although the following comments hold generally for all securities, we illustrate the ideas using structured securities as an example.

Default Risk and Model Risk We do not know enough yet about the process by which the rating agencies evaluated the default probability and expected losses of structured securities. Was their analysis *ex ante* poor quality or are we simply judging them in hindsight? Clearly, the conditions were ripe for abuse—the economics involved with rating structured products, the involvement of the rating agencies in also structuring the products, the aforementioned conflicts of interest, and so on. But we will leave this issue of process aside.

Instead, we want to focus on whether structured products can really be rated in a comparable manner to, for example, corporate bonds. We believe that the answer is no, and regulators need to build this into the way that they treat structured products as possible investments for the finance industry. Structured securities are securities that are backed by a portfolio of loans/bonds/mortgages that are issued on a prioritized basis, known as tranches. Mathematically, the payoffs on these structured securities resemble those of option combinations on the underlying portfolio. If one were to further structure the tranches, such as the so-called CDO-squared formulations, then the payoffs resemble options on options, defined as compound options in the academic and practitioner literature.

Understanding this connection to options is very useful. There is an extensive literature that shows that valuation is highly sensitive to the volatility of the underlying asset for option combinations, and to the volatility

of volatility for compound options. So, for structured products, unless the analysts have near certainty about the volatility and correlations of the underlying loans in the portfolio that they will have to input into their ratings model, the output from their model will be highly unreliable. In fact, both Hull and White (2009) and Coval, Jurek, and Stafford (2009) simulate the sensitivity of the ratings of structured products to assumptions about default correlations and default probabilities and make this very point of unreliability of the model.¹⁷

A rating is an estimate of the likelihood of default and the losses that are associated with default. Estimates can be precise or imprecise, and this degree of precision needs to be incorporated into the regulator's perspective on risk. The point here is that there is no way around this issue. Even in a world where the analyst has modeled the structured product perfectly, small changes in the underlying assumptions can have dramatic effects. As such, these securities have fundamentally different properties than do the plain-vanilla corporate and municipal bonds, which are the traditional securities rated by the NRSROs.

Liquidity/Funding Risk Securities with fundamentally the same risk can offer different rates of return due to different levels of liquidity. A well-known example is provided by off-the-run versus on-the-run Treasury securities.¹⁸ Liquidity is priced because there are times, such as during a crisis, when investors need to convert the securities into cash, and some securities trade in markets where this is difficult to do. Structured products definitely fit into this class, and help explain why some of the so-called supersenior and AAA tranches offered higher yields than were available on plain-vanilla AAA-rated individual securities. Historically, some finance companies may have been holders of illiquid securities because their funding sources (i.e., policyholder premiums, deposits, etc.) were relatively sticky and their overall investment portfolio risk was low. This is not necessarily true anymore. For example, as life insurers have become subject to runs due to the possibility of policyholders' cashing in and increased risk of their investment portfolios due to holdings of variable annuities, a concentration of fixed-income portfolios in illiquid securities may be problematic. Therefore, the regulator should put a higher degree of emphasis on corporate liquidity into portfolio requirements.

Market Risk Even if securities have the same probability of default and expected loss, and have the same liquidity, these securities can offer different rates of return due to their level of market risk. Market risk is especially damaging to insurance companies because the companies get hit both by their fixed-income securities' falling in value along with their other

investments, and because their funding sources begin to dry up as consumers and businesses try to conserve cash. Structured products, especially the safer AA and AAA tranches, are particularly vulnerable in this respect. Almost all of the risk of these securities is market risk, as individual risks of the individual loans/bonds/mortgages have been diversified away (see, for example, Coval, Jurek, and Stafford 2009; Longstaff and Myers 2009). Only in a rare event in which there are widespread defaults will the securities bear losses, but this is when the company can least afford it. Therefore, a corporate bond with the same default probability and expected loss as a structured security should be considered less risky, as much of the former's risk is diversifiable.



Understanding risk is not just about an estimate of expected losses, but also about when those losses occur (i.e., involving both credit and market risk); when the portfolio may become impaired (i.e., liquidity); and how accurately we measure those losses *ex ante*. The regulator needs multidimensional inputs to judge the prudence of the finance company's investment portfolio. This leads to the following implications for the provision of additional information, as pertaining to structured products:

- Along with the rating, a measure of the *ex ante* accuracy (or confidence) of the rating. It may well be the case that certain structured products should not be rated.
- Along with the rating, and its precision, a measure of the securities' liquidity in the secondary market.
- Along with the rating, its precision, and its liquidity, a measure of its market risk.

As an illustration, the AAA tranche of a CDO-squared on a mortgage pool would get, in addition to its AAA rating, a mark of high imprecision, high illiquidity, and high market risk. Additional useful information would be the current market prices of various related securities. There is extensive evidence that market prices tend to have more and earlier information, albeit with much more volatility, about default probabilities and losses than do ratings.

Alternative Business Models

Clearly, the rating agencies' business model needs to be fixed. This has been talked about for years, and the current crisis shows that these concerns are valid. The focus should be on revamping the system, which will increase

competition (and therefore improve quality), and on fixing the conflicts of interest.

However, there is little discussion in the Act of the problem that ratings are currently used by some institutional investors to conduct regulatory arbitrage—that is, simultaneously taking excessive risk while adhering to the regulator’s safety standards because of the NRSROs’ overly optimistic rating. This suggests that alternative models, such as “investor pays,” may suffer from similar abuses and not provide a solution to the rating agencies’ problem, and EU proposals of a possible switch to this model may be premature.

While investors may, indeed, try to game the ratings systems through the arbitrage process, it is clear that the recent criticism of agencies has already motivated a number of new entrants to the credit risk rating industry. These new firms and models may not be NRSRO designates, but will provide investors and regulators with additional estimates of, for example, the probability of default of issuers and also possibly the distribution of possible outcomes. Many of these newcomers are likely to advocate point-in-time statistical models for default assessment that will likely provide more timely, albeit also more volatile, estimates of default than will the traditional through-the-cycle rating process of all the major existing rating agencies. The challenge for institutional investors and their boards is to analyze these new methods in order to determine the value added and to compare their benefits with the additional costs involved.

In terms of sticking with the “issuer pays” model, Bolton, Freixas, and Shapiro (2008) argue that up-front payments to credit rating agencies would eliminate the conflict of interest, and enforced disclosure of all ratings would mitigate the shopping-for-ratings problem. An alternative approach, and one that Section 939D of HR 4173 is directly based on and is highlighted for potential implementation by the Dodd-Frank Act, is provided for in Mathis, McAndrews, and Rochet (2009). (See also Raboy 2009 and Richardson and White 2009.) The main idea is that issuers no longer choose the rating agency, but instead must go through a centralized clearing process. The idea is motivated through both theoretical and empirical work that shows the conflict of interest of issuers choosing rating agencies is a first-order problem for structured finance products. The optimal resolution in Mathis, McAndrews, and Rochet (2009) is such a scheme. The proposals in this chapter as well as in Raboy (2009) and Richardson and White (2009) have the advantage of simultaneously solving the following: (1) the free-rider problem, because the issuer still pays; (2) the conflict of interest problem, because the agency is chosen by the regulating body; and (3) the competition problem, because the regulator’s choice can be based on some degree of excellence, thereby providing the rating agency with incentives to invest

resources, to innovate, and to perform high-quality work. As we mentioned before, however, it does put tremendous faith in the ability of the regulator to monitor and evaluate the rating agencies' performance.

So, we now move forward with new regulation on rating agencies. Many issues are addressed fairly well; others are deferred. We hope that our comments will help in the new studies that are mandated by the new Act.

NOTES

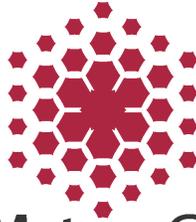
1. See, for example, Financial Crisis Inquiry Commission June 2, 2010, hearings on "Credibility of Credit Ratings, the Investment Decisions Made Based on Those Ratings, and the Financial Crisis," testimony by Mark Froeba and Eric Kolchinsky.
2. In fact, so-called point-in-time models developed by scholars and practitioners, such as structural and Z-Score type procedures, will usually provide more advanced early warning signals of downgrades and defaults than do CRAs that use more conservative through-the-cycle, longer-term criteria. Indeed, Altman and Rijken (2004, 2006) found that rating agencies, on average, wait 1.6 times longer than do multivariate predictive models to signal the rating change; and, when CRAs do change their ratings, the amount of the change (particularly downgrades) is only 0.6 times as much as the change should have been compared with the point-in-time model.
3. In the Skreta and Veldkamp (2009) model, competition also leads to ratings inflation; but this outcome occurs because more (competing) raters—even when they are trying for accurate ratings—provide more opportunities for inadvertent optimistic errors, which the rated firms can then select opportunistically.
4. Indeed, we are aware of at least four new recent efforts in this direction proposed by firms like Morningstar, Inc., Audit Integrity Score, Bloomberg's CRAT score, and the RiskMetrics Group's Z-Metrics approach. One of this chapter's authors (Altman) is involved in the last effort.
5. See Title IX, Subtitle C, Sec. 931, "Findings."
6. See Title IX, Subtitle C, Sec. 932, "Enhanced Regulation, Accountability and Transparency of Nationally Recognized Statistical Rating Organizations."
7. See Title IX, Subtitle C, Sec. 932, "Enhanced Regulation, Accountability and Transparency of Nationally Recognized Statistical Rating Organizations."
8. See Title IX, Subtitle C, Sec. 932, "Enhanced Regulation, Accountability and Transparency of Nationally Recognized Statistical Rating Organizations."
9. See Title IX, Subtitle C, Sec. 939B, "Elimination of Exemption from Fair Disclosure Rule."
10. See Title IX, Subtitle C, Sec. 939, "Removal of Statutory References to Credit Ratings."
11. See Title IX, Subtitle C, Sec. 933, "State of Mind in Private Actions."
12. Note that in this respect the removal of the exemption from Regulation FD for credit rating agencies proposed in the bill and described earlier seems to make

- sense, since it will be hard to justify a differentiation in reporting standards between these different gatekeepers in the financial market.
13. See Title IX, Subtitle C, Sec. 932, “Enhanced Regulation, Accountability and Transparency of Nationally Recognized Statistical Rating Organizations.”
 14. See Title IX, Subtitle C, Sec. 939F, “Study and Rulemaking on Assigned Credit Ratings.”
 15. See Title IX, Subtitle C, Sec. 939F, “Study and Rulemaking on Assigned Credit Ratings.”
 16. <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/10/230>.
 17. One particularly egregious example was the structuring of synthetic collateralized debt obligations (CDOs) built from BBB-rated mezzanine tranches of multiple residential mortgage-backed securities (RMBSs) in the nonprime area. The BBB-rated tranches already represented options on diversified pools of mortgages, so pooling these BBB tranches from a number of RMBSs would not add much additional diversification, which in turn should have greatly affected the assumptions underlying the synthetic CDOs, especially for the higher-rated tranches.
 18. On-the-run Treasury securities are the most recently issued Treasury securities and are more liquid than the other Treasury securities, which are called off-the-run.

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RiskMetrics Group

The Z-Metrics™ Methodology For Estimating Company Credit Ratings And Default Risk Probabilities

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Z-Metrics™ Methodology For Estimating Company Credit Ratings And Default Risk Probabilities, March 2010.

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The Z-Metrics™ Methodology for Estimating Company Credit Ratings and Default Risk Probabilities

Credit Conditions Background

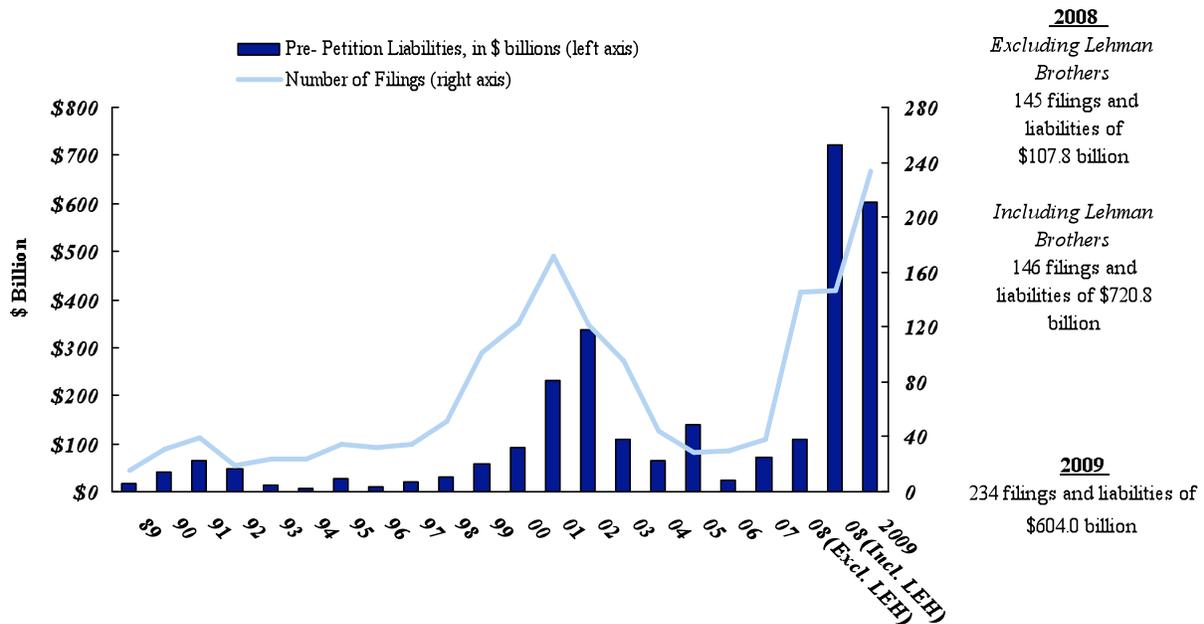
Since mid-2007, most of the world has been going through a period of extreme financial and economic turmoil. The financial sector's problems have negatively impacted real economic growth, asset prices, unemployment levels and individual firm default and bankruptcy rates. High-yield bond and leveraged loan default rates in 2009 were near or surpassed record levels in the United States¹ and Europe and the outlook for the next several years is extremely uncertain and precarious.

In the United States in 2009, over 230 firms with liabilities of at least \$100 million filed for Chapter 11 bankruptcy protection with combined liabilities of over \$600 billion. Forty-three (43) of these bankruptcy filings involved firms with at least \$1 billion in liabilities, with companies like General Motors Corp., the CIT Group, Chrysler, LLC, Capmark Financial Group, General Growth Properties, Charter Communications, Lyondell Chemical Co., R. H. Donnelley Corp. and Nortel Networks, each with more than \$10 billion in liabilities "leading" the way.² Not counting the impact of the mammoth Lehman Brothers bankruptcy in 2008, 2009 was easily the highest bankruptcy year ever in terms of Chapter 11 liabilities (Figure 1).

¹ Moody's issuer-denominated high-yield bond default rate peaked at over 13% in 2009, while Altman's dollar denominated rate was 10.74%, the second highest in the history of the high-yield bond market. S&P's leveraged loan default rates were at record levels near year-end 2009.

² For a complete list of Chapter 11 bankruptcies and corporate defaults, see E. Altman & B. Karlin, "Defaults and Returns in the High-Yield Bond Market Report: The year 2009 in Review," NYU Salomon Center Special Report, February 2010.

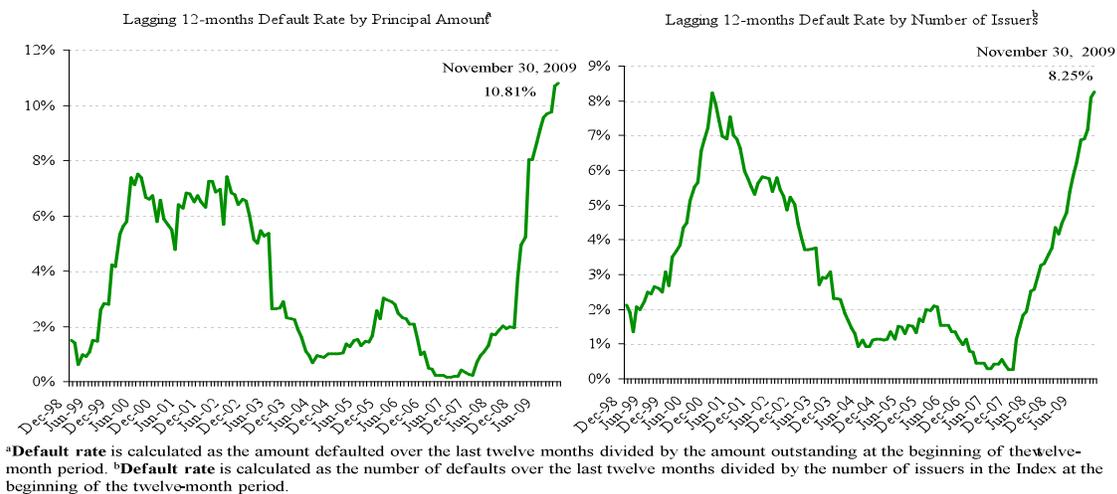
FIGURE 1
Total Filings And Liabilities* Of Companies Filing For Chapter 11 Protection 1989 - 2009



*Minimum \$100 million in liabilities
 Source: NYU Salomon Center Bankruptcy Filings Database

Default rates on U.S. and Canadian high-yield bonds and leveraged loans, despite their moderation in the later part of the year, reached double digits in 2009, with the latter loan default rate a record year (Figure 2). For high-yield bonds, it was the fourth (essentially the fifth if you include 2001's 9.8%), year in the modern high-yield market that defaults exceeded 10% (Figure 3), indicating the fairly continuous need for credit institutions and other investors to carefully monitor the financial outlook and credit-worthiness of industrial and financial enterprises. The importance of credit risk assessment and especially the estimation of default probabilities has relevance not only to asset prices in credit and debt markets, but also in equity and in many types of derivative markets, particularly the credit default swap market.

Figure 2
Lagging Twelve-Month Leveraged Loan Default Rate by Principal Amount & Number of Issuers

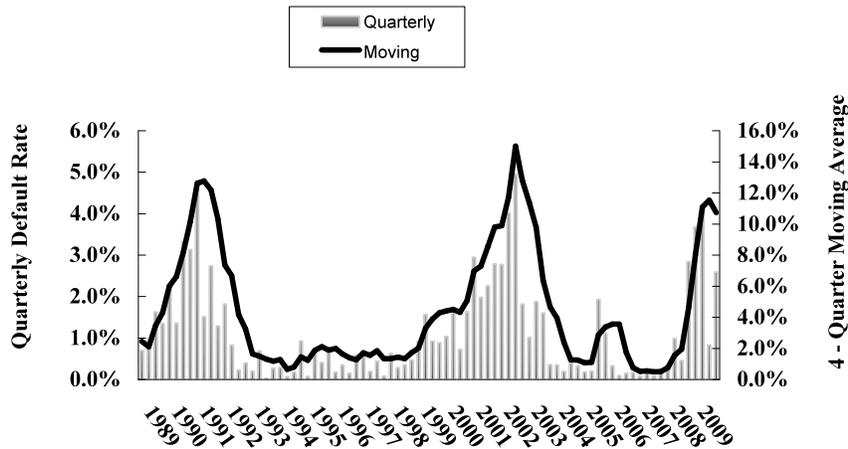


Source: S&P LCD

1

The recent economic turmoil is not limited to firms in the United States and Canada, as worldwide problems were evident elsewhere, especially in such countries as the UK, Spain, Ireland, Greece, other Western and Central European countries, and the Middle-East. Additionally, other recessions and crises in the recent past have severely impacted enterprises in Asia and Latin America, as well as most other developed and emerging economies. Highlighting this point, a recently released (October 2009) stress-test from the *Committee of European Banking Supervisors* indicates that large European banks could face credit losses of €400 billion in 2009 and 2010. Given these concerns, credit risk assessment is a mainstream necessity for market professionals and firms among the world's economies.

FIGURE 3
QUARTERLY DEFAULT RATE AND FOUR QUARTER MOVING AVERAGE
1989 - 2009



Source: Authors' Compilations

Our Z-Metrics™ Approach

To address the assessment of credit risk of companies, RiskMetrics Group has partnered with Dr. Edward Altman of NYU’s Stern School of Business and Dr. Herbert Rijken of the Vrije University of Amsterdam. The Z-Metrics methodology is the result of combining RiskMetrics’ thought leadership in market risk and credit risk with Altman and Rijken’s vast experience in evaluating the creditworthiness of corporations, which includes the development of the groundbreaking “Z score” and their more recent analysis of the accuracy and timing of rating agencies’ performance³.

Our objective is to assess the credit risk of non-financial enterprises by developing up-to-date credit scoring and probability of default metrics for enterprises both public and private, large and small, on a global basis. Starting with a large sample of firm data over the

³ Altman Edward I., Rijken Herbert A., 2006, *A Point-in-Time Perspective on Through-the-Cycle Ratings*, Financial Analysts Journal, January/February, Vol. 62, No. 1 : pp. 54-70

period 1989-2009, involving more than 260,000 quarterly and annual firm financial statements and associated market prices and macroeconomic data observations, we have utilized a multivariate logistic regression structure to construct our models. We used the criterion of a “credit event,” which is defined here to be either a formal default or bankruptcy legal event, whichever comes first, to segregate firms into cohorts. Those firms which have had a credit event within a given timeframe (i.e., 1 year or 5 years) were assigned to the “distressed” or “credit event” group; those that did not incur a credit event were assigned to the non-distressed group. It is based on these cohorts that we have built a model to predict performance.

We emphasize that our results will be applicable across the complete spectrum of credit quality and ratings from the lowest to the highest default risk categories. The result is a robust model with high default/non-default classification and predictive accuracy.

Whenever possible, we compare our output with publicly available credit ratings and existing models. The accuracy ratios and observed results on samples of individual defaulting firms using our new approach outperform existing methodologies in our analysis. Our user-friendly results will first be specified for relatively large (greater than 50 million USD in sales) non-financial firms in the U.S. and Canada and very soon (later 2010) to the UK and the rest of the world.

Objectives of our Z-Metrics™ Models

- To construct an accurate, logical and robust credit-scoring model based on large and representative samples of non-financial companies that have either suffered a serious negative credit event or have remained healthy.
- To assign a point in time probability of default (PD) over one-year and five-year horizons based on a firm’s credit score.
- To assign our unique Z-Metrics credit rating, given the PD, to each firm representing the full spectrum of creditworthiness; one that is easily mapped to familiar credit terminology.
- To provide stressed PDs and ratings under various scenarios.

The credit scores, Z-Metrics credit ratings and probabilities of default will be available for the following populations:

- Large (greater than \$50 million in sales) publicly-held firms in the U.S. and Canada
- Large, privately-held firms in the U.S. and Canada (based on data availability)
- Small publicly-held firms in the U.S. and Canada (available later in 2010)
- **Large and small firms outside the U.S. and Canada (available later in 2010). We expect, however, that our U.S. model will also be immediately applicable to publicly-held firms in most other developed nations.**

Variables Assessed

- We analyzed over 50 fundamental financial statement variables covering such performance characteristics as solvency, leverage, size, profitability, interest coverage, liquidity, asset quality, investment, dividend payout, and financing results.
- In addition to point-in-time measures, we analyzed the trends in many of the variables mentioned above.
- We also included equity market price and return variables and their volatility patterns, adjusted for market movements. These variables have typically been used in structural, distance-to-default measures.
- We supplemented firm fundamental measures with several macroeconomic measures to adjust for macro-stresses on the world's economies.
- In all cases, we carefully examined the complete distribution of variable values, especially in the credit-event sample. This enabled us to devise transformations on the variables to either capture the nature of their distributions or to reduce the influence of outliers. These transformations included logarithmic functions, first differences and dummy variables if the trends or levels of the absolute measures were positive/negative.

Sample Characteristics

- Our first model's original sample consisted of over 1,000 U.S. or Canadian non-financial firms that suffered a credit event ("credit event sample") and a control sample of thousands of firms that did not suffer a credit event, roughly a ratio of 1:15. After removing those firms with insufficient data, the credit event sample was reduced to 638 firms for our public firm sample and 802 observations for our private firm sample. Historically, about 50% of all bond defaults in the U.S. take place on the same date as the bankruptcy filing and about 50% precede the bankruptcy date, if there is a filing at all. Outside the U.S., a "Chapter-11" bankruptcy type of filing is a relatively rare event, although payment defaults on loans and bonds are more common.

- The credit-event date is either the default date or bankruptcy date, whichever occurred first. Some firms in our sample went bankrupt but did not have publicly-traded debt.
- The sample period covered 1989-2008. See Figures 4A and 4B for the breakdown of number of credit-event observations by year of incidence. Figure 4B's sample is used to compare our model with Agency ratings.
- The one-year (12 months) model is based on data from financial statements and market data approximately one year prior to the credit event and includes macroeconomic data. The five-year model includes up to five annual financial statements prior to the event, except we use quarterly data for trend variables in conjunction with market data for the same period. No macroeconomic variables are included in the five-year models.
- We utilized quarterly observations in our trend variables for up to five years prior to the credit-event or non-credit event dates. In total, we included over 260,000 observations with sufficient financial data available.
- For all of our fundamental financial ratio variables, we closely examined the distribution of values, especially for the credit-event sample. For example, we observe that the distribution of the variable interest/(earnings before interest and taxes) [interest/EBIT] for our bankrupt/default sample had two modal values, one positive from +2.0 to +4.0 times and one negative from -0.5 to -3.0 times (Figure 5). Note that the distributions are quite similar for both the first half and second half of the sample period. And, in the cases of the retained earnings/total assets variable [RE/TA] and the market value of equity/total liability variable [MV/LIB] for the entire sample, the distributions had some high positive and negative outliers suggesting logarithmic transformations to reduce outlier influence (Figure 6).
- Macro-economic variables are included to capture the time-series variation of default probabilities over time. Since most firms have a higher probability of default in stressed periods, e.g., at the end of 2008, we wanted to capture heightened or lower probabilities by examining such variables as GDP growth, unemployment, credit spreads, inflation, among others.
- Our final public Z-Metrics Model for large U.S./Canadian firms has 12 fundamental variables, including both static and trend measures plus two macroeconomic variables (the unemployment rate and the spread between high-yield bonds and 10-year U.S. Treasuries). For our "stressed" ratings and PDs, we examine two critical measures—equity price and earnings.

FIGURE 4A
Number of default and bankruptcy events by year used to estimate the Z-Metrics large firm credit scoring models.

year of event	Z-Metrics public models				Z-Metrics private models			
	all events	default events ¹	bankruptcy events ²	default & bankruptcy events ³	all events	default events ¹	bankruptcy events ²	default & bankruptcy events ³
1990	25	13	3	9	34	22	4	9
1991	30	19	0	11	38	25	0	13
1992	16	8	4	4	24	13	6	5
1993	12	5	3	4	16	8	4	4
1994	8	1	5	2	10	3	5	2
1995	14	5	3	6	20	8	3	9
1996	12	2	7	3	13	2	8	3
1997	13	3	3	7	16	8	4	4
1998	35	19	6	10	36	20	6	10
1999	48	28	6	14	56	32	7	17
2000	63	25	16	22	75	35	16	24
2001	105	42	24	39	128	60	24	44
2002	70	37	17	16	103	58	20	25
2003	50	20	15	15	70	37	15	18
2004	25	9	8	8	33	16	8	9
2005	18	6	2	10	20	6	2	12
2006	10	5	2	3	12	3	3	6
2007	8	4	4	0	12	8	4	0
2008	26	6	14	6	33	11	14	8
2009	50	12	22	16	53	15	21	17
total	638	269	164	205	802	390	174	239

1 Corporate bond default event without a bankruptcy filing at the same time. Often a bankruptcy filing is followed later.

2 A bankruptcy event in absence of a corporate bond default event.

3 A substantial fraction of all bankruptcy events coincides with a corporate bond default event.

Source: Altman NYU Salomon Center Default and Bankruptcy databases.

FIGURE 4B
Number of default and bankruptcy events by year used to compare Z-Metrics ratings with Agency ratings.

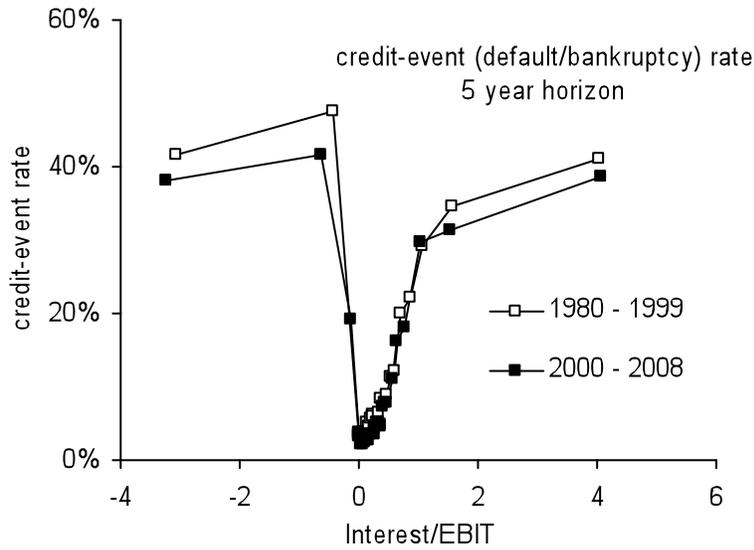
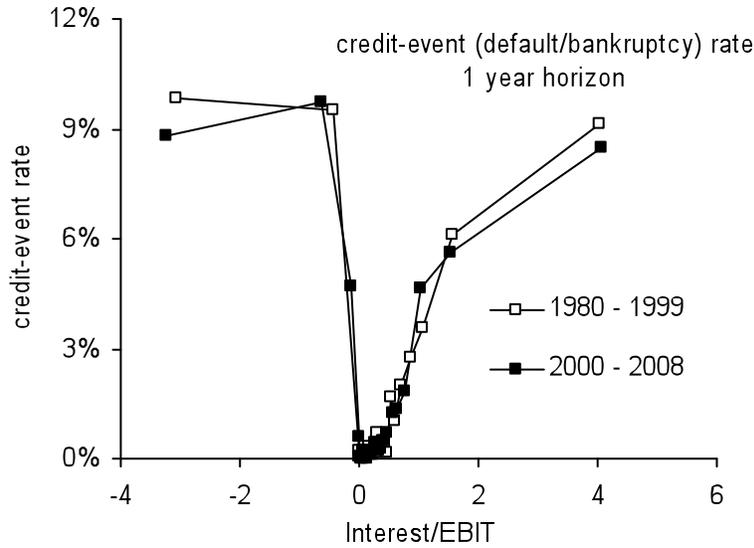
year of event	Z-Metrics public models			Z-Metrics private models		
	all events	only default events ¹	bankruptcy & default coincide	all events	only default events ¹	bankruptcy & default coincide
1990	21	13	8	26	18	8
1991	29	18	11	33	22	11
1992	9	6	3	15	11	4
1993	7	4	3	10	7	3
1994	2	0	2	3	1	2
1995	9	4	5	15	7	8
1996	5	2	3	5	2	3
1997	10	3	7	12	8	4
1998	26	18	8	27	19	8
1999	37	26	11	43	30	13
2000	40	23	17	51	32	19
2001	73	37	36	94	53	41
2002	45	33	12	69	52	17
2003	34	20	14	54	37	17
2004	17	9	8	23	14	9
2005	15	6	9	18	6	12
2006	6	3	3	9	3	6
2007	4	4	0	8	8	0
2008	13	5	8	20	10	10
2009	32	12	20	36	15	21
total	434	246	188	571	355	216

¹ Corporate bond default event without a bankruptcy filing at the same time. Often a bankruptcy filing is followed later.

Source: Altman NYU Salomon Center Default and Bankruptcy databases.

FIGURE 5

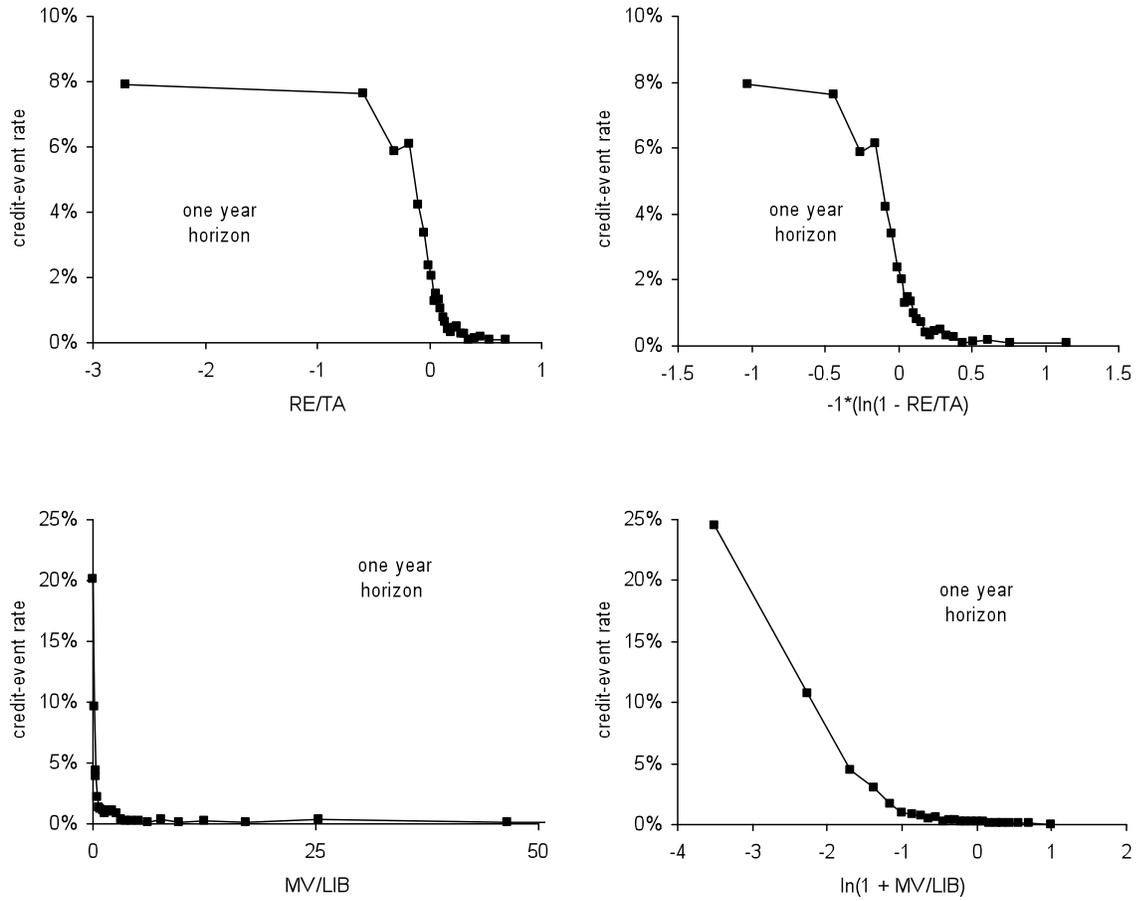
Credit event rate as a function of Interest/EBIT for one year (Top panel) and five year (Bottom Panel) horizons



Sources: Altman NYU Salomon Center Default and Bankruptcy databases; COMPUSTAT.
Bankruptcy/default rates in period 1980 - 1999 are scaled by a constant to match the overall bankruptcy/default rates in period 2000 - 2008.

FIGURE 6

Impact of Log Transformations on the distribution of credit event rates for the variables RE/TA (Top Panel) and MV/LIB (Bottom Panel)



Sources: Altman NYU Salomon Center Default and Bankruptcy databases; COMPUSTAT.

Public and Private Firm Models

Our emphasis in this White Paper will be on the Z-Metrics publicly owned firm model which is based on defaulted and non-defaulted, non-financial firms (Figure 4A lists the number of firms by year in that sample). In addition, we will construct essentially a private firm model, although the data is from publicly held companies (Figure 4B) and we replace market value with book value of equity. The application of our privately-held firm model will be useful for clients who are interested in non-public firms, although data on the private companies will have to be supplied by either the client or from databases that will be deemed relevant. We also anticipate that some clients will be interested in “private” leveraged buyout firms with publicly held debt and financial statements available.

One additional application of both the publicly held and privately held firm models utilized together is for those clients primarily interested in equity market investments. Since the public model contains equity market value variable(s), a firm’s score will already be influenced by either a rising or falling stock price. For example, an alternative strategy to investing in the highest Z-Metrics score firms’ equities might be to select only those firms whose fundamentals have improved, reflected by improved private firm Z-Metrics ratings, but whose public-firm model ratings have not escalated in the most recent period.

While we find that the inclusion of market value of equity variables adds considerable information and predictive power to our public firm models, we expect that the performance of our private firm model will be of particular relevance to those clients who are interested as well in only the fundamentals of credit risk of enterprises. In essence, the private firm model applied to public firms strips away the influence of the market and isolates a firm’s fundamental operating and financial performance. A user will, therefore, assess both models’ PDs and ratings.

In any case, we will be able to supply credit scores, PDs, and Z-Metrics Ratings based on both publicly held as well as privately held firm models for one- and five-year horizons.

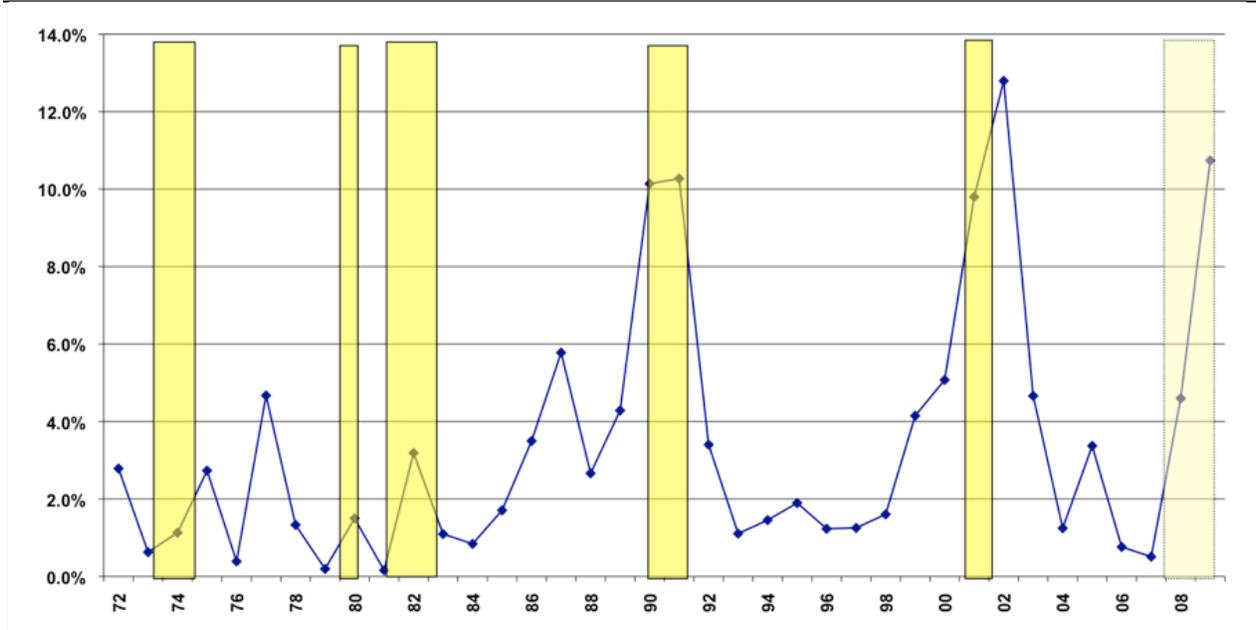
Macro-Aggregate Variables

As noted earlier, our one-year PD models, both public and private, will assess the additional value-added of variables which are not specific to individual firms, but which capture systemic or market factors, heightening or lessening stress on firm performance. As shown in Figure 7, when the economy is in a recession, the aggregate default rate on high-yield bonds increases and tends to peak near or at the end of a recession. For example, we observe double-digit high-yield bond default rates in 1990 and 1991, again in 2001 and 2002, and finally in 2009. In each cycle, the economy was in a recession.

Another aggregate measure that we find adds value to our models is the yield-spread , or risk premium, between risky debt and risk-free securities. For example, Figure 8 shows the time series regression relationship between the yield-spread on high-yield bonds and 10-year U.S. Treasury bonds. In this case, the yield-spread is observed one year prior to the default rate. Note that the regression relationship is extremely significant for the period 1978-2008, essentially our sample period, with the yield-to-maturity spread explaining about 70% of the variation in dollar-denominated high-yield bond default rates.

FIGURE 7

Historical Default Rates and Recession Periods in the U.S.: High Yield Bond Market 1972-2009

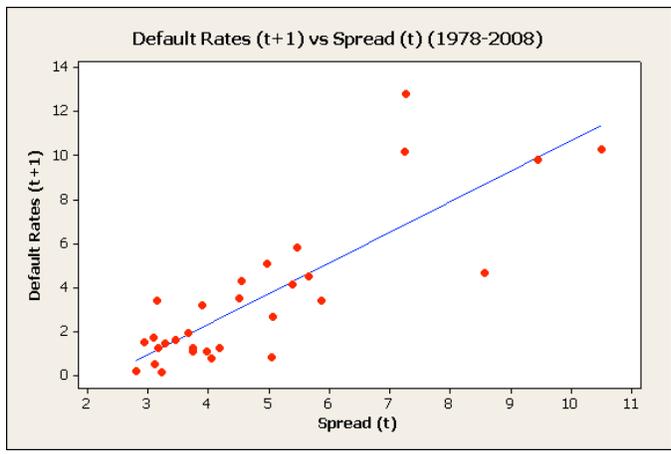


Periods of Recession: 11/73 - 3/75, 1/80 - 7/80, 7/81 - 11/82, 7/90 - 3/91, 4/01 - 12/01, 12/07 - present.

Sources: E. Altman (NYU Salomon Center) and National Bureau of Economic Research

FIGURE 8

Dollar Denominated Default Rate Predictions: Default Rate [t+1] Versus Yield Spread [t]



The regression equation is
Default Rate = - 3.25 + 1.39 * Spread

Predictor	Coef	SE Coef	T	P
Constant	-3.2490	0.9072	-3.58	0.001
Spread	1.3904	0.1741	7.99	0.000

S = 1.86079 R-Sq = 69.5% R-Sq(adj) = 68.4%

Source: E. Altman and B. Karlin, "Default Rates and Returns on High-Yield Bonds", NYU Salomon Center, February 2010.

Z-Metrics Model Construction and Tests

Logit Model Estimation

- We estimate our credit scoring model based on a standard logit-regression functional form whereby:

$$CS_{i,t} = \alpha + \sum B X_{i,t} + \varepsilon_{i,t} \quad (1)$$

$CS_{i,t}$ = Z-Metrics credit score of company i at time t

B = variable parameters (or weights)

$X_{i,t}$ = set of fundamental, market based and macroeconomic variables for firm/quarter observations

$\varepsilon_{i,t}$ = error terms (assumed to be identically and independently distributed)

$CS_{i,t}$ is transformed into a probability of default by $PD_{i,t} = \frac{1}{1 + \exp(-CS_{i,t})} \quad (2)$

- Comparisons are made with the actual issuer ratings (see for example our 1989-2008 and 2009 comparisons in Figures 16 and 17 respectively, below). In order to ensure a fair comparison, credit scores are converted to agency equivalent (AE) ratings by ranking credit scores and by matching exactly the actual Agency rating distribution with the AE rating distribution at any point in time.
- We also compare our Z-Metrics results to the well established Altman Z"-score (1995) model⁴.

⁴ Altman's original Z-score model (*Journal of Finance*, September 1968) is well-known by practitioners and scholars alike and is considered by many as the traditional benchmark for bankruptcy prediction. It was built, however, over 40 years ago and is primarily applicable to publicly held manufacturing firms. A more generally applicable Z"-score variation was popularized in 1995 as a means to assess the default risk of non-manufacturers, and was first applied to emerging market credits. Both models are discussed in E. Altman and E. Hotchkiss, *Corporate Financial Distress and Bankruptcy*, John Wiley & Sons, 2006 and will be compared in several tests to our new Z-Metrics model. The Altman Z-score models do not translate easily into a probability of default or rating system, as does the Z-Metrics system.

Criteria for Selection of the Z-Metrics Models

A number of important criteria were the basis for our final selection of variables in the construction of our public and private one- and five-year credit scoring models. These included:

- Accuracy ratios for credit-event prediction of both Type I (correct default prediction) and Type II (correct non-default prediction) results
- Comparison of our accuracy ratios with existing models such as rating agencies and Altman's Z-score models
- Comparison of accuracy ratios for both in-sample and out-of-sample results
- Comparison of Agency issuer ratings with our Z-Metrics AE ratings
- Discriminatory power of our model across the entire spectrum of ratings, including high rating levels for one-year and five-year horizons
- Stability of explanatory power and parameters of individual variables over time and across sectors of non-financial industrial firms
- Selection of macro-variables and fundamental factors that reflect timely changes in stress for industrial firm credit-worthiness over time, i.e., robustness to bear and bull markets
- Examination of key variables to stress the credit score, PD and rating results

Accuracy Ratios

One of the key success determinants of any credit risk model is how well the model classifies firms into high risk (low ratings) levels based on data from before some critical credit event takes place. In our model's estimation, the objective is to attain high levels of accuracy (low levels of errors) to classify, and ultimately to predict, firms which default on their obligations and/or go bankrupt. The standard measure for these assessments is the so-called "accuracy ratio," which measures the proportion of credit-event firms correctly predicted to go bankrupt or non-bankrupt based on different credit score cut-off levels. In

essence, the objective is to maximize the Type I and Type II accuracy levels (minimize errors) for test and holdout samples of firms.

Figure 9 compares the Type I accuracy ratios for our Z-Metrics AE ratings to actual Agency ratings and Altman Z"-score AE ratings, for the entire sample period 1989-2008, for our 1 year and 5 year models. The results in Figure 9 are based on the percentage *Type I* accuracy (predicting default when the firm defaults) using the credit score cut-offs for different AE rating classes. The various AE rating classes can also be thought of as different PD or credit score levels. Rating class 1 includes firms with a rating \leq CCC+/Caa1, rating class 2 = B-/B3, 3 = B, 4 = B+/B1 and so on. Figure 10B shows the *Type II* error rates for Z-Metrics AE ratings, actual Agency ratings, and AE ratings for Z"-scores.

From Figures 9 and 10A, we see that if the cut-off score was set at the 4th rating class equivalent level (B+), our (12-month) Z-Metrics model would result in about a 10% error (90% accuracy) rate for one-year predictions, compared to an 18% error rate for Agency ratings and about a 20% error for the Z"-score model. For a five-year horizon, Type I error rates are about the same for Z-Metrics models and Agency ratings. This latter result is not surprising since the Rating Agencies' through-the-cycle methodology is a longer term perspective approach as is our five-year Z-Metrics approach.

Figure 10B also shows the Type II error rate (false positive prediction of default) for the three models based on a one-year prediction horizon at various rating class cut-off levels. As expected, there is very little difference between the three models at all rating class cut-off levels since the ratio of non-defaults to defaults is greater than fifteen to one over the entire 20-year sample period. At the 4th rating class cut-off level, the Type II error rate is approximately 20% for all models. So, to conclude, the Type I and II error rates at our proposed cut-off score level (B+) results in a 10% Type I and 20% Type II error rate. These compare very favorably to Agency ratings and Z"-score models.

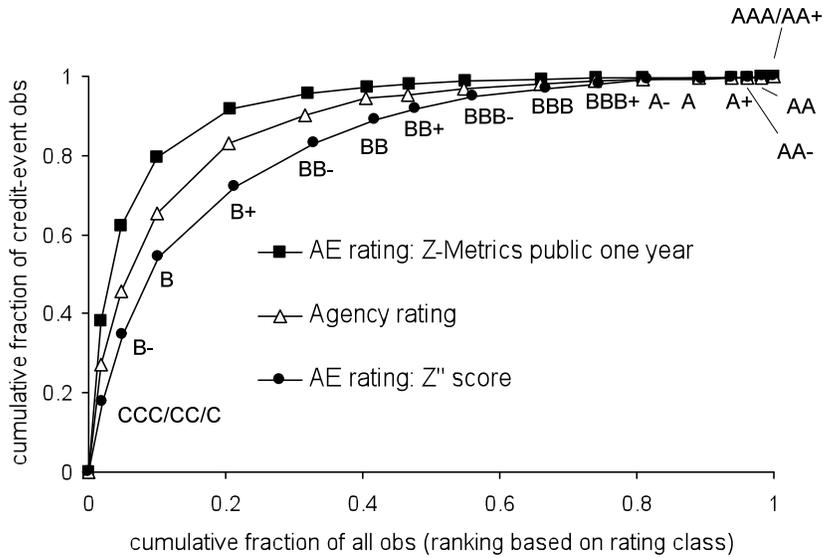
Figures 11A and 11B compare the Z-Metrics AE ratings with the Agency ratings over one-year and five-year horizons for two different 10-year sample periods: an in-sample 1989-1998 period (equivalent to a model construction sample) and 1999-2008 (equivalent to a holdout or out-of sample period). Note that the Z-Metrics public model is approximately 7.5% more accurate for one-year predictions in the in-sample period and a little better, about 10.0% more accurate, in the out-of-sample period. The Z-Metrics one-year public model has better accuracies for all horizon periods during the in-sample period (Figure 11A). In the out-of-sample period test (Figure 11B), the Z-Metrics one-year public model outperforms the Agency ratings for all horizon periods as well. Similar results are observed with the five-year Z-Metrics model compared to Agency ratings. The Z-Metrics private-firm models' results are not as impressive but still quite acceptable. This is mainly due to the lack of market value of equity data in the private model. Of course, most of the private firms will not, in reality, have an Agency rating.

Stability of the Models

We assessed the stability of the Z-Metrics models by observing the accuracy ratios for our tests in the in-sample and out-of-sample periods (Figures 11A and 11B) and also by observing the size, signs and significance of the coefficients for individual variables. The accuracy ratios were very similar between the two sample periods and the coefficients and significance tests were extremely close.

FIGURE 9

Cumulative accuracy profile curves for Agency ratings¹, Z''-score, and Z-Metrics agency equivalent (AE) ratings (1989 - 2008)



¹ Agency ratings refer in the first place to corporate issuer S&P ratings. Corporate issuer Moody's ratings are added if a corporate issuer S&P rating is not available.

Sources: Altman NYU Salomon Center Default and Bankruptcy databases; COMPUSTAT.

FIGURE 10A

Type I error rates for Agency ratings, Z"-score, and Z-Metrics agency equivalent (AE) ratings (1989 - 2008):
one year prediction horizon for publicly owned firms

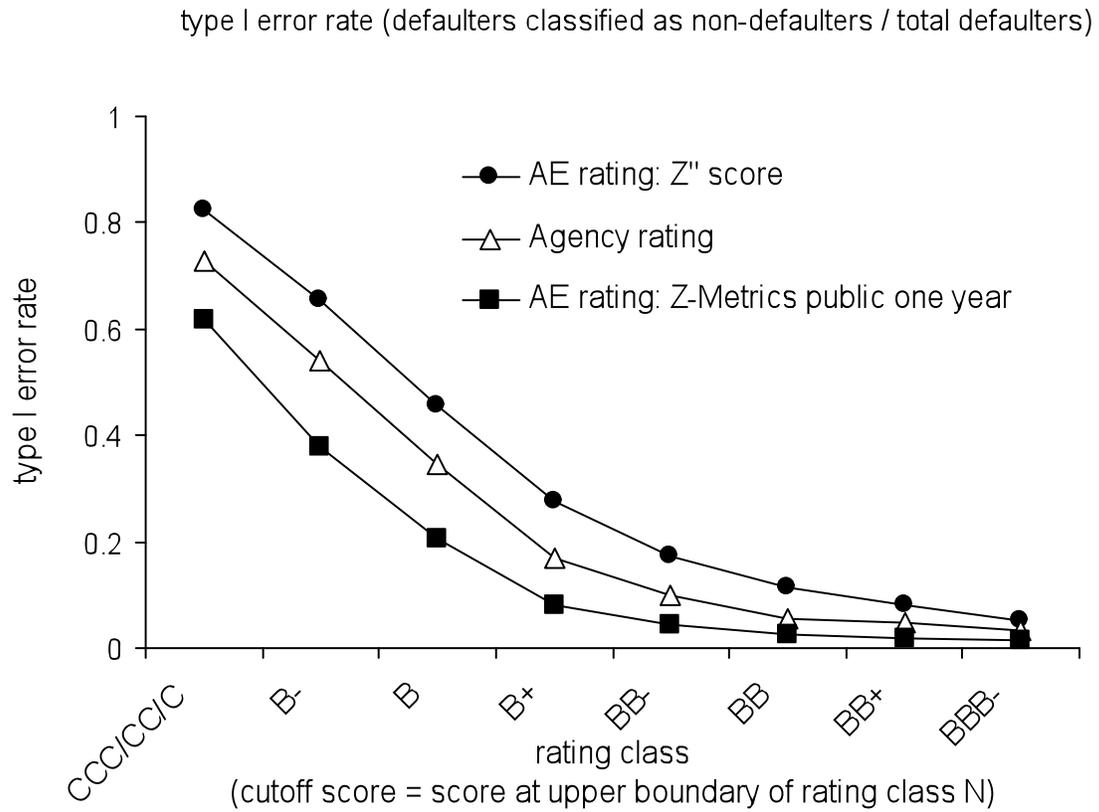


FIGURE 10B

Type II error rates for Agency ratings, Z"-score, and Z-Metrics agency equivalent (AE) ratings (1989 - 2008):
one year prediction horizon for publicly owned firms

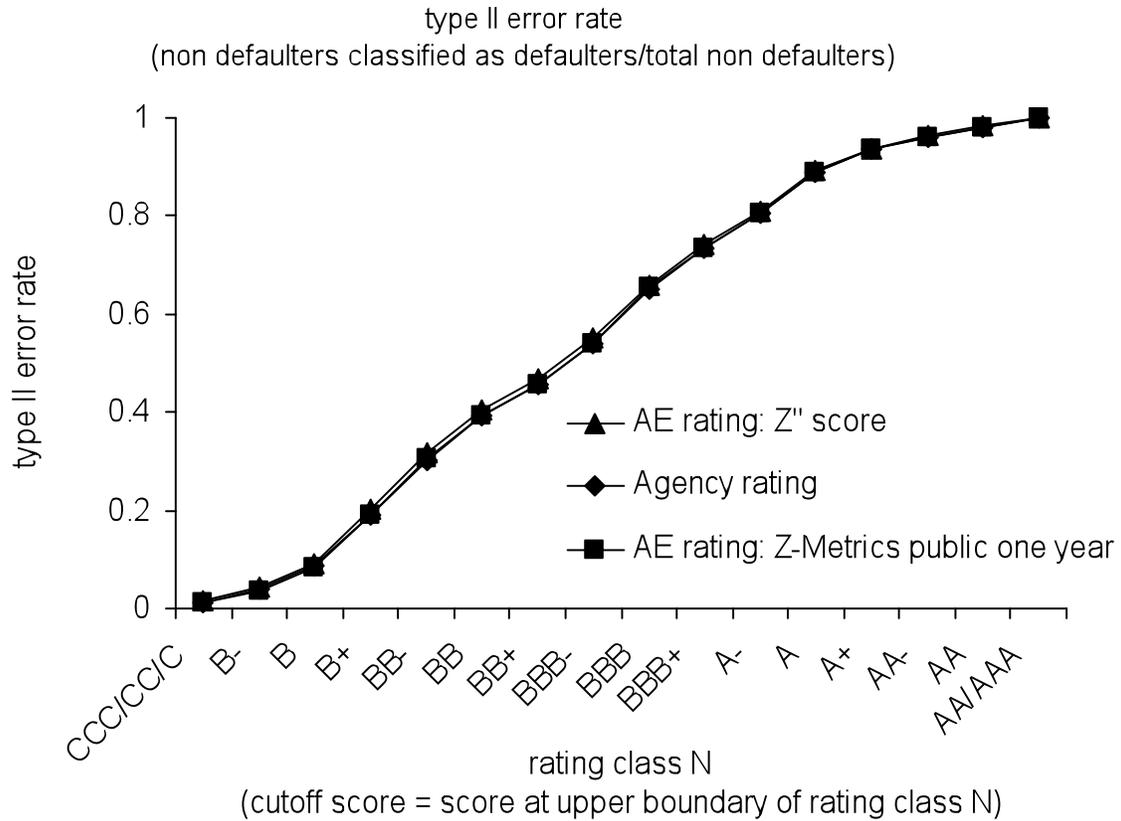


FIGURE 11A

In sample test: Relative ACR ratio values for Z-Metrics agency equivalent (AE) ratings compared to Agency ratings. Models are estimated and tested in the 1989 - 2008 sample for public and private firm models

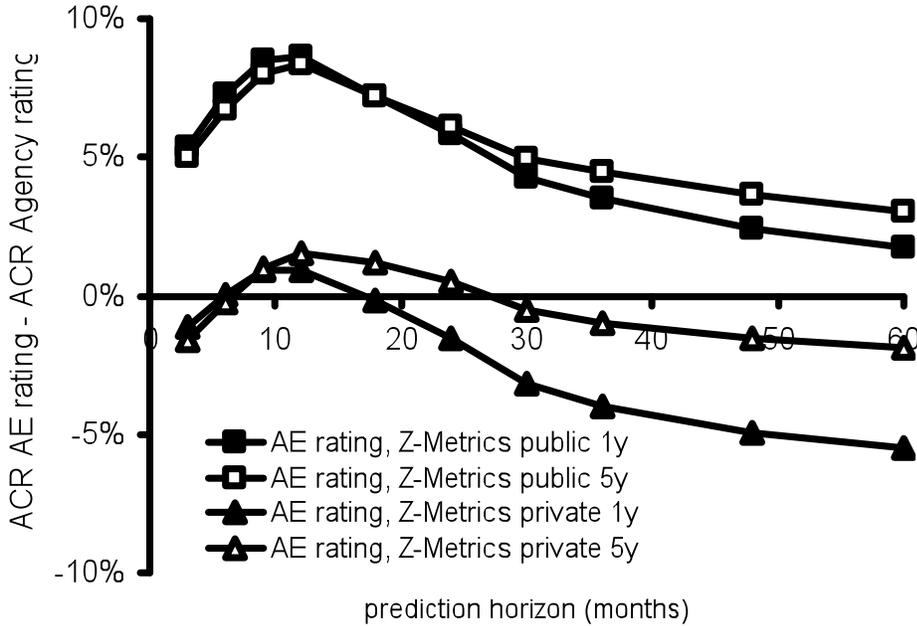
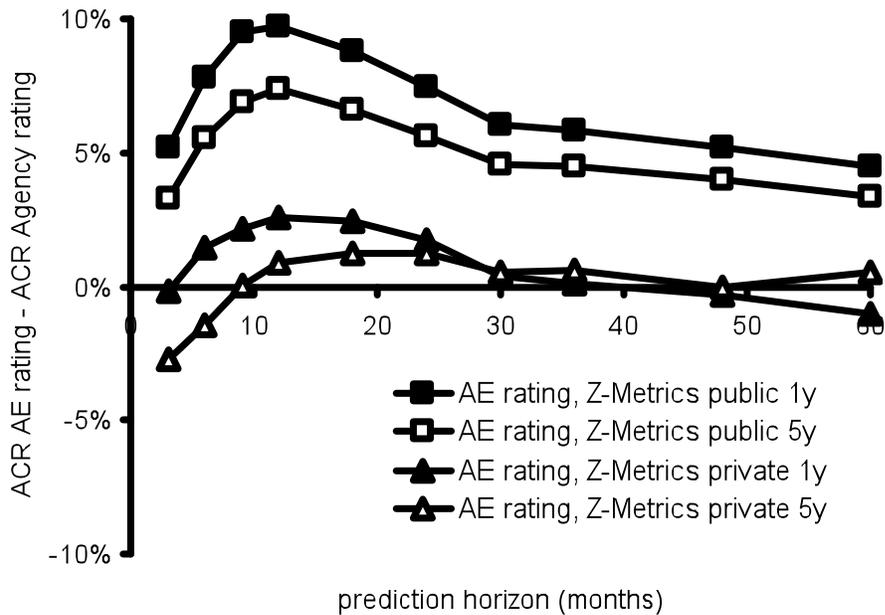


FIGURE 11B

Out of sample test: Relative ACR ratio values for Z-Metrics agency equivalent (AE) ratings compared to Agency ratings. Models are estimated in a 1989 - 1998 sample and tested in the 1999 - 2008 sample



The Z-Metrics™ Rating System

The Z-Metrics Rating System has 15 rating categories ranging from the most credit worthy “ZA+” rating to the lowest quality “ZF-“ rating. The rating categories are based on a firm’s probability of default (PD) for one- and five-year horizons for public firms, as shown in Figure 12A, and private firms, as shown in Figure 12B. The PD of an entity is computed via the logit transformation of a raw score, as shown in equation (2).

For public firms (Figure 12A), note that ratings ZA+ to ZB- (top 6 levels) all have one-year PDs of less than 0.2% and less than 4.5% for five years. We classify these firms as “**high-grade.**” The “**low-grade**” levels are for one-year PDs greater than 1% and greater than 14% for five-year PDs. The “**mid-grade**” range are the ZC levels. We observe that within the period 1989-2008, 22.6% of the firms had one-year PDs greater than 1% and about the same percentage (22.2%) had five-year PDs above 14%. A 16.9% percentage of the observations had extremely low one-year PDs of less than 6 basis points (0.06%) - our three-top ZA categories - and 18.0% had five-year PDs less than 1.75%. About 5.3% of the observations had one-year PDs of more than 10% (our bottom-three ZF ratings), and 5.4% had five-year PDs of at least 45%; 1% of the firms had five-year PDs greater than 80%.

In addition to the rating distribution over relatively long sample periods (e.g., 20 years), our model can, and will, calculate one-year PDs as of a particular point in time. For example, as of year-end 2008 (Figure 13), when several macro-variables and particularly our stock market measures indicated a stressed environment based on such measures as yield spreads, unemployment rates, and equity/debt ratios, the distribution of PDs shows a much smaller percentage of firms with extremely low one-year PDs (e.g., only about 8.4% of firms had PDs below 0.06% [ZA], compared to 16.9% for the entire 20-year sample period) and a higher percentage of firms with high one-year PDs (e.g., about 9.8% of firms had PDs above 10% [ZFs] and about 33.4% of firms had PDs above 1.0% [ZD + ZF], compared to respectively

5.3% and 22.6% for the entire 20-year sample period). Our five-year horizon model does not have macro-variables since we assume that such factors are not likely to affect default probabilities as far out as 3-5 years.

A one-year PD of 20 basis points (0.20%) in the Z-Metrics Rating System is equivalent to a BBB (Baa) rating and a one-year PD of about 4.0% (400 bps) is analogous to single B companies.⁵ For five years, a BBB (Baa) equivalent company is comparable to a Z-Metrics PD of about 2.5%-3.5% and a B rated company would have an equivalent Z-Metrics PD of 20-30%.

Based on our Z-Metrics results, our rating system classifies firms in the high-grade range of credit risk [ZA and ZB ratings], mid-grade range [ZC ratings] or low-grade range [ZD and ZF ratings].

Figure 13 (top panel) shows the proportions of high-grade companies each year over the period 1989-2008; proportions of mid-grade credit risk companies are shown in the central panel and low-grade companies are in the bottom panel. Note that the proportions of high risk (low-grade range of ratings) increases during the stress periods of 1990-1991, 2000-2002 and again in 2008. Indeed, during these stress periods, we can observe that the proportions of high, medium and low-grade ranges of ratings were approximately equal at about one-third each.

Small-Firm Models

Preliminary results on building and testing models for relatively small firms (<\$100 million in sales) indicate quite comparable absolute accuracy performance results and clearly imply that there is some meaningful value added to utilizing a specific model for small firms. This preliminary conclusion seems to hold for both publicly and privately-held enterprises.

⁵ Cumulative default frequencies are published regularly by the three major rating agencies and are combined and compared in Caouette, Altman, et al, *Managing Credit Risk*, 2nd edition, John Wiley & Sons, (2008), p.263.

FIGURE 12A
Definition of Z-Metrics Ratings for public models

Z-Metrics™ Ratings	Z-Metrics public - 1 Year				Z-Metrics public - 5 Years			
	one year PD		% representation		five year PD		% representation	
	min	max	1989/ 2008	2008	min	max	1989/ 2008	2008
ZA+	0.00%	0.02%	3.5%	2.1%	0.00%	0.75%	3.4%	2.4%
ZA	0.02%	0.04%	5.8%	4.6%	0.75%	1.25%	7.0%	5.4%
ZA-	0.04%	0.06%	7.6%	6.1%	1.25%	1.75%	7.6%	6.4%
ZB+	0.06%	0.09%	10.6%	10.0%	1.75%	2.50%	10.6%	9.9%
ZB	0.09%	0.14%	10.9%	11.2%	2.50%	3.50%	11.1%	11.3%
ZB-	0.14%	0.20%	8.8%	9.1%	3.50%	4.50%	8.1%	8.6%
ZC+	0.20%	0.30%	9.4%	10.8%	4.50%	6.00%	8.6%	9.7%
ZC	0.30%	0.50%	10.1%	10.4%	6.00%	9.00%	11.1%	12.1%
ZC-	0.50%	1.00%	10.6%	11.4%	9.00%	14.00%	10.0%	10.3%
ZD+	1%	2%	7.6%	8.2%	14%	20%	6.3%	6.8%
ZD	2%	4%	5.2%	5.8%	20%	30%	6.0%	6.6%
ZD-	4%	10%	4.5%	4.7%	30%	45%	4.5%	4.9%
ZF+	10%	25%	2.6%	2.6%	45%	65%	3.0%	3.2%
ZF	25%	50%	1.5%	1.6%	65%	80%	1.4%	1.6%
ZF-	50%	100%	1.2%	1.3%	80%	100%	1.0%	1.0%

The boundaries of each rating class are fixed and based on probabilities of default.

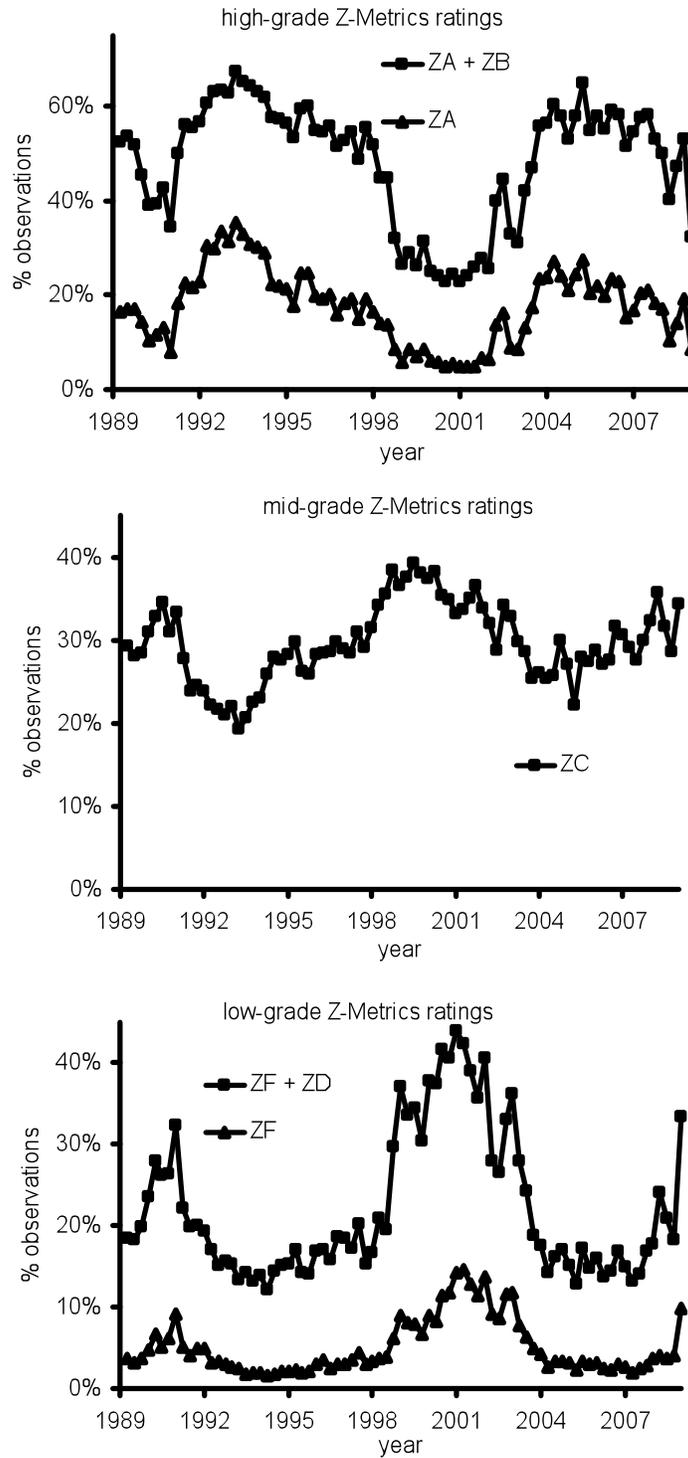
FIGURE 12B
Definition of Z-Metrics Ratings for *private* models

Z-Metrics™ Ratings	Z-Metrics private - 1 Year				Z-Metrics private - 5 Years			
	one year PD		% representation		five year PD		% representation	
	min	max	1989/ 2008	2008	min	max	1989/ 2008	2008
ZA+	0.00%	0.03%	2.7%	0.0%	0.00%	1.00%	1.7%	2.5%
ZA	0.03%	0.05%	4.8%	2.4%	1.00%	1.50%	6.2%	7.9%
ZA-	0.05%	0.08%	7.7%	5.8%	1.50%	2.00%	6.5%	8.3%
ZB+	0.08%	0.13%	10.6%	8.9%	2.00%	3.00%	12.4%	14.3%
ZB	0.13%	0.20%	10.7%	10.7%	3.00%	4.00%	11.1%	11.4%
ZB-	0.20%	0.30%	10.5%	11.2%	4.00%	5.00%	9.0%	9.0%
ZC+	0.30%	0.45%	9.6%	11.3%	5.00%	6.50%	9.7%	9.3%
ZC	0.45%	0.70%	9.1%	10.5%	6.50%	9.00%	10.3%	9.8%
ZC-	0.70%	1.50%	11.9%	14.3%	9.00%	13.00%	8.9%	8.1%
ZD+	1.5%	3.0%	7.9%	9.8%	13%	20%	8.2%	7.4%
ZD	3.0%	5.0%	4.6%	5.2%	20%	30%	6.5%	5.3%
ZD-	5.0%	10.0%	4.7%	4.8%	30%	45%	5.4%	4.1%
ZF+	10.0%	18.0%	2.8%	2.7%	45%	55%	1.9%	1.2%
ZF	18.0%	30.0%	1.4%	1.4%	55%	65%	1.2%	0.8%
ZF-	30.0%	100.0%	0.8%	1.0%	65%	100%	1.1%	0.7%

The boundaries of each rating class are fixed and based on probabilities of default.

FIGURE 13

Rating Scale distribution for Z-Metrics Ratings for Public firms' model results (1989 - 2008)



Stress Ratings

Any risk manager will tell you that a single estimate of default risk, while helpful and representing a base-case scenario for future health/distress conditions, should be supplemented by worse case or stressed conditions. Indeed, one of the criticisms of established credit agency ratings is that the public is offered a single rating for each entity or security (although the agencies do publish whether the entity is on a type of “watch-list” or “outlook” for positive or negative movement in the near future). Certainly, one of the major faults of ratings during the recent residential mortgage-backed security (RMBS) debacle is that the ratings assigned to these complex securities did not address the possibility of a significant drop in housing prices. As such, the observed ratings proved to be wildly optimistic. Although not nearly as flagrant as RMBS problems, ratings on individual companies and their securities can be criticized as well since they present a base-estimate, but not a truly stressed environment rating.⁶

To address these issues, we propose to assign Z-Metrics Stressed Ratings based on potential changes in several key variables in our models. These variables include equity price and earnings. Wherever these variables are used in ratios, the stress will be applied to all of these ratios. Specifically, we propose to stress these variables as follows:

- Equity price -25.0%
- Earnings -5.0% (as a percentage of total assets)

Figure 14 details the change in the proportion of firms assigned to our Z-Metrics Rating System based on stressed values for each of these indicators while figure 15 illustrates these results graphically. Note that as expected, all rating changes are in the negative direction as the firms become more risky under the various stressed scenarios. Also, as expected the

⁶ This issue is discussed in Altman, et.al., (*Regulation of Rating Agencies*), e-book from the NYU Stern School of Business, 2009, Chapter 15 of *Real Time Solutions for Financial Reform*.

greatest average downward rating change is when both indicators are stressed. The greatest rating changes from the original distribution (column 1, from Figure 14A) are found in the high-grade range, in the ZA and ZB categories.

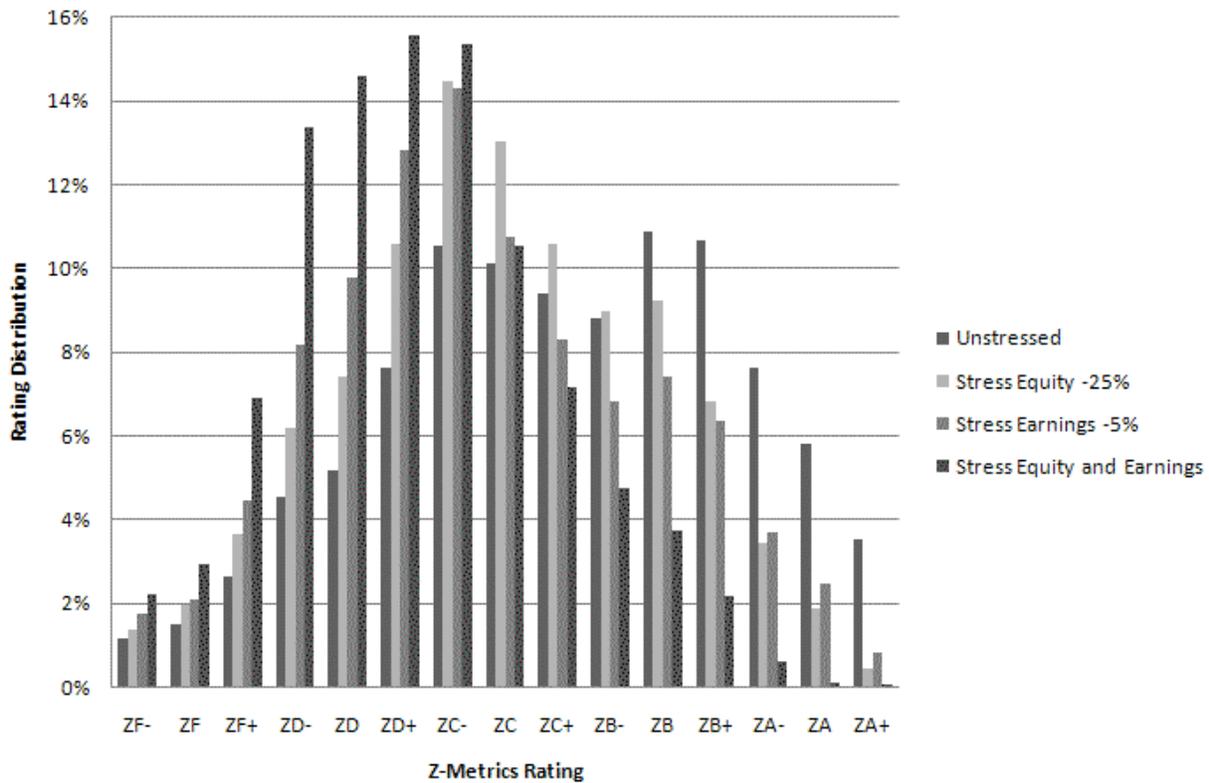
Of the two critical variable indicators, our stressed scenarios are slightly more severe with a drop in earnings of 5% of total assets, compared to a 25% drop in market value of equity. For example, the average ZB firm falls by an average of 2.2 notches to about ZC+ when the earnings variable is stressed while the average ZB firm falls by 1.7 notches when the equity variable is stressed. Firms already in the lower rating categories (ZFs), show smaller rating changes although their PDs could increase a fair amount (for the lowest ZF- rating category rating changes are obviously absent). Finally, whether or not the various stress scenarios are relevant is based on the assessment of the analyst/investor. We will present these stress scenario ratings for each firm, in any case. In most situations, the most likely variable to become stressed is the market value of equity ratio, especially if there is a systemic change in the stock market.

FIGURE 14

Stress Scenario Impact on Z-Metrics Ratings via Changes to Equity Price and Earnings

	ZF-	ZF	ZF+	ZD-	ZD	ZD+	ZC-	ZC	ZC+	ZB-	ZB	ZB+	ZA-	ZA	ZA+
Unstressed Distribution:	1.16%	1.49%	2.65%	4.52%	5.18%	7.64%	10.56%	10.11%	9.39%	8.82%	10.89%	10.65%	7.62%	5.81%	3.51%
Stress Equity Price -25%, Earnings 0%															
Avg Chg in Rtg:	0	-0.15	-0.25	-0.37	-0.53	-0.67	-0.74	-0.94	-1.37	-1.52	-1.72	-1.68	-1.65	-1.62	-1.30
New distribution %:	1.39%	1.94%	3.67%	6.18%	7.40%	10.57%	14.49%	13.01%	10.59%	8.98%	9.23%	6.82%	3.43%	1.86%	0.45%
Stress Equity Price 0%, Earnings -5%															
Avg Chg in Rtg:	0	-0.38	-0.42	-0.56	-0.82	-1.11	-1.27	-1.50	-1.80	-2.09	-2.20	-1.95	-1.68	-1.51	-0.96
New distribution %:	1.77%	2.08%	4.44%	8.19%	9.80%	12.82%	14.31%	10.74%	8.28%	6.81%	7.41%	6.35%	3.69%	2.48%	0.83%
Stress Equity -25%, Earnings -5%															
Avg Chg in Rtg:	0	-0.59	-0.74	-0.96	-1.33	-1.75	-2.11	-2.49	-2.92	-3.43	-3.80	-4.00	-4.05	-3.86	-3.26
New distribution %:	2.21%	2.92%	6.92%	13.37%	14.61%	15.56%	15.36%	10.53%	7.17%	4.75%	3.72%	2.15%	0.60%	0.11%	0.01%

FIGURE 15
Effect of Stress on Rating Distribution



Prediction Results - 2009 Defaults/Bankruptcies

Perhaps the most important robustness tests of credit scoring models are how well they *predict* critical events based on samples of firms which were not used to build the model, and particularly if the events took place subsequent to the building of the model(s). An associated test is how well the model does compared to other methods which are available and where the data and comparable results are transparent, again outside the test sample period. Figures 16 and 17 show our Z-Metrics models' results for defaults/bankruptcies that occurred in 2009. These results are indicative of the models' predictive accuracy for both our public (16A) and private (16B) Z-Metrics models for one-year and five-year horizons and also comparative tests with Agency ratings and the Z-score and Z''-score models. Z-Metrics model results are displayed in terms of AE ratings, probabilities of default and also our own rating system.

Comparative Results

Figures 16A (public firm model) and 16B (private firm model) list a sample of 2009 defaults and compare - one-year prior to default - our Z-Metrics AE ratings with Agency ratings⁷ and AE ratings for the Z and Z"-score models. Results are presented for both our public and private firm Z-Metrics models, the latter being relevant when, for some reason, we are not able to find a market value of equity available (like for a LBO). We also show our results for a smaller sample of bankruptcies where data was available but the firm did not have publicly rated bonds outstanding. In addition, we show Z-Metrics PDs for our one-year and five-year models, as well as the associated Z-Metrics Ratings (see Figures 13A and 13B). Finally, in Figure 17, we summarize the comparisons between Agency ratings with our Z-Metrics AE ratings for the entire test sample period (1989-2008), as well as for the out-of-test-sample period, 2009.

Equivalent Ratings Test Results

Figure 16A compares Agency ratings with Z-Metrics AE ratings for 38 non-financial defaulting companies rated by S&P⁸. The Z-Metrics AE ratings are based on the percentage of firms rated by S&P in each rating class and then using those same percentages within the entire distribution of Z-Metrics credit scores. So, if there are 2% of all firms with a CCC+ rating and below, or actual rating = 1, we classified a firm within the lowest 2% of all Z-Metrics scores also to the lowest Z-Metrics AE rating class (AE = 1). This matching of rating distributions is done each point in time. Therefore, a direct comparison is possible. We also list the Z-Metrics PDs for one- and five-year horizons as well as our own Z-Metrics Ratings for

⁷ Whenever possible, we use the S&P actual rating. When the S&P rating was not available, and Moody's was, we used Moody's. Results are essentially the same if we reversed the process and used Moody's as our primary reference rating.

⁸ Actual ratings range from 1 for CC/CCC categories, 2 for B-, 3 for B, ..., to 16 for AAA/AA+ rated companies.

56 non-financial defaulting companies (for 18 firms we did not have an Agency rating). Similar comparisons are made using the Z-score models.

Examples of our comparative analysis show that *Accuride* was rated B+ (2) by S&P 11 months prior to its default on November 2009 and its Z-Metrics AE rating was B- (4), with a PD of 29.8% for one year and 66.8% for five years. Its Z-Metrics Rating was the second lowest, ZF. *Accuride's* Z"-score had an AE rating of BB-(5). *General Motors* has a actual Agency rating of B- ten months prior to its default/bankruptcy in June 2009, but had a CCC (15) rating from Z-Metrics, one-year PD of 31.6%, a 5-year PD of 67.3%, and a Z-Metrics Rating of ZF for both horizons. The Z"-score also had a CCC (15) rating. Another example, *Spectrum Brands* actual Agency rating was CCC (15) while the Z-Metrics AE rating was B- (4) 12 months prior to default. For Spectrum, the Z"-score had an AE rating of B+ (2). In the first two examples, the Z-Metrics model gave a better default prediction while in the third example, the Agency rating performed better.

Figure 17 summarizes the in-sample (1989-2008) comparisons between the S&P rating and the Z-Metrics' AE ratings and also the out-of-sample (2009) results. We believe these comparisons, along with the earlier discussed accuracy ratios, clearly show Z-Metrics' overall superiority to both actual Agency ratings and the Z"-score models' AE ratings.

For the period 1989-2008, based on 402 defaulted firm comparisons, we observe that the one-year Z-Metrics public firm model had a lower (higher PD) rating equivalent in 206 instances, a higher (lower PD) result in 96 instances and the same rating in 100 instances, compared to the Agency rating at approximately one year prior to default. For the one-year Z-Metrics private firm model the plus and minus differences are about equal (213 vs. 181, with 141 the same as Agency ratings). Results for our five-year models were essentially the same. For the out-of-sample 2009 defaults, the comparative results were 16 firms with Z-Metrics lower AE ratings (higher PDs), 6 with higher AE ratings (lower PDs) ratings and 10 with the same rating. So, in both sample periods, the rating agencies had a higher rating (lower

implied PD) than did Z-Metrics in more than 2 out of every 3 defaulting cases where the two ratings differed.

It is also worth noting that the average Agency rating for firms one year before default was 0.62 rating classes higher than the Z-Metrics AE rating for the in-sample 20-year period and 0.50 rating classes higher for the out-of-sample 2009 period (Figure 17).⁹ This is a statistically significant improvement over the rating agencies since the p-value was less than 0.0001 in these comparisons.

Results comparing our new Z-Metrics model to Altman's original Z and Z"-score models are even more striking. The Z-score models had significantly higher (1.5 rating notches) rating equivalents (lower PDs) for firms one year before default in our samples. For the period 1989-2008, the Z-score model had higher AEs in 57% of the cases, lower AEs in 21% of cases, and the same AEs in 22% of cases. For Z"-scores, the results are almost identical. In 2009, the results were even more impressive, with higher AEs in 75% of the cases, lower AEs in 18% of cases, and the same AEs in 7% of cases. We conclude that for both the in-sample and out-of-sample results, defaulted firms were overall deemed more risky one year prior to default using our Z-Metrics approach than either actual Agency ratings or AE ratings for Z-score models.

The standard error of notch differentials across all firms (defaulted and non-defaulted) is approximately 2.8 notches for the Z-Metrics one-year public model and 2.3 notches for the five-year public model. Based on the average differential of defaulting firms and the standard error differences across all firms, we find that the Z-Metrics rating system provides superior and considerably different results than either the rating agencies or Z-score models.

⁹ The maximum differentials between Agency ratings and the Z-Metrics AE ratings was eight (8) rating notch classes higher and seven (7) rating notch classes lower for the 20-year sample period. For 2009 defaults, Agency ratings had a maximum differential of three rating notch classes above or below AE ratings.

FIGURE 16A

Out of sample comparison of default prediction results for 2009 defaults: Agency Ratings, *Public Z-Metrics™* and Z-score Agency Equivalent (AE) Ratings, *Public Z-Metrics™* Ratings and Probabilities of Default data are from one year prior to default.

Company	Month of default in 2009	Ratings & PD Data (months before default)		Agency rating	Agency Equivalent (AE) Ratings				Z-Metrics PD values		Z-Metrics Ratings	
		total liabilities (\$ mio)			Z-Metrics models		Z-score models		1y public macro	5y public	1y public macro	5y public
					1y public macro	5y public	Z score	Z" score				
ACCURIDE CORP	10	11	840	4	2	2	5	5	29.8%	66.8%	ZF	ZF
ALLIS-CHALMERS ENERGY INC	6	13	639	3	6	5	5	6	0.3%	7.5%	ZC+	ZC
AMERICAN ACHIEVEMENT CORP	2	13	336	3	.	.	.	.	.	.	.	.
AVENTINE RENEWABLE ENERGY	4	11	408	4	3	3	9	8	3.7%	29.0%	ZD	ZD
BEAZER HOMES USA INC	9	13	2606	3	3	3	.	.	4.0%	25.3%	ZD-	ZD
BUILDING MATERIALS HLDG CP	6	13	613	2	2	2	9	5	13.1%	34.3%	ZF+	ZD-
CARAUSTAR INDUSTRIES INC	5	12	432	2	1	1	5	3	14.5%	53.3%	ZF+	ZF+
CHAMPION ENTERPRISES INC	11	13	702	3	3	3	5	4	5.2%	37.4%	ZD-	ZD-
CHEMTURA CORPORATION	3	13	2563	7	5	5	4	4	0.7%	8.2%	ZC-	ZC
COMMERCIAL VEHICLE GROUP INC	8	13	334	4	5	5	6	6	0.3%	7.6%	ZC+	ZC
DAYTON SUPERIOR CORP	4	11	407	3	1	1	3	2	23.1%	66.2%	ZF+	ZF
EDDIE BAUER HOLDINGS INC	6	13	555	2	2	2	3	2	4.8%	36.7%	ZD-	ZD-
ENERGY FUTURE HOLDINGS CORP	11	12	57099	2	.	.	.	.	.	.	.	.
ENERGY PARTNERS LTD	4	11	713	3	4	3	3	2	1.3%	18.4%	ZD+	ZD+
FAIRPOINT COMMUNICATIONS INC	10	11	735	6	4	5	2	3	1.4%	10.6%	ZD+	ZC-
FINLAY ENTERPRISES INC	8	12	624	1	1	1	5	5	42.6%	70.8%	ZF	ZF
FINLAY FINE JEWELRY CORP	6	12	631	1	.	.	.	.	.	.	.	.
FLEETWOOD ENTERPRISES INC	3	12	619	1	2	2	6	2	9.4%	49.8%	ZD-	ZF+
FORD MOTOR CO	4	12	272215	3	2	3	2	2	5.5%	30.6%	ZD-	ZD-
FREESCALE SEMICONDUCTOR INC	3	12	11927	4	.	.	.	.	.	.	.	.
GENERAL MOTORS CORP	6	10	184363	2	1	1	1	1	31.6%	67.3%	ZF	ZF
GEORGIA GULF CORP	7	11	2005	1	2	2	5	4	17.9%	47.2%	ZF+	ZF+
HEXION SPECIALTY CHEMICALS	3	12	5380	3	.	.	.	.	.	.	.	.
HOVNANIAN ENTRPRS INC -CL A	7	13	3155	2	1	1	.	.	19.9%	57.2%	ZF+	ZF+
IDEARC INC	3	13	10267	6	3	4	9	7	4.8%	12.4%	ZD-	ZC-
LEAR CORP	6	11	6683	4	3	3	7	4	2.9%	26.2%	ZD	ZD
LIBBEY INC	11	12	806	3	3	3	4	4	14.2%	55.1%	ZF+	ZF+
MILACRON INC	3	13	652	1	1	1	3	2	55.7%	84.0%	ZF-	ZF-

Agency ratings (S&P or Moody's) and agency equivalent (AE) ratings: CCC/CC/C = 1, B- = 2, B = 3, B+ = 4, BB- = 5, BB = 6, BB+ = 7, BBB = 8, BBB+ = 9

. = not available, mostly because of missing data

FIGURE 16A CONT'D

Company	Month of default in 2009	Ratings & PD Data		Agency rating	Agency Equivalent (AE) Ratings				Z-Metrics PD values		Z-Metrics Ratings	
		total liabilities (\$ mio)	(months before default)		Z-Metrics models		Z-score models		1y public macro	5y public	1y public macro	5y public
					1y public macro	5y public	Z score	Z' score				
R H DONNELLEY CORP	5	12	14266	4	.	.	2	3	.	.	.	.
SMURFIT-STONE CONTAINER CO	1	12	5532	4	4	3	4	3	1.3%	18.1%	ZD+	ZD+
SOURCE INTERLINK COS INC	4	12	1996	3	1	2	4	3	16.0%	50.3%	ZF+	ZF+
SPANSION INC	1	12	2183	3	2	2	3	3	8.0%	37.7%	ZD-	ZD-
SPECTRUM BRANDS INC	2	12	3315	1	2	2	3	4	14.1%	47.1%	ZF+	ZF+
TLC VISION CORP	12	13	160	3	3	3	1	1	8.7%	48.1%	ZD-	ZF+
TRONOX INC	1	11	1294	4	2	2	4	4	15.4%	40.6%	ZF+	ZD-
UNISYS CORP	7	12	3771	4	3	3	3	2	1.7%	23.9%	ZD+	ZD
VISTEON CORP	5	13	7002	3	2	2	4	3	8.1%	41.4%	ZD-	ZD-
YOUNG BROADCASTING -CL A	2	11	951	1	1	1	2	4	67.7%	83.3%	ZF-	ZF-
defaulted firms with no actual S&P(Moody's) rating available in database - 12 months prior to default												
AURORA OIL & GAS CORP	7	11	122	.	.	.	.	.	16.1%	55.0%	ZF+	ZF+
BARZEL INDUSTRIES INC	9	11	557	.	.	.	.	.	17.4%	61.5%	ZF+	ZF+
BEARINGPOINT INC	2	12	2451	.	.	.	.	.	27.7%	67.6%	ZF	ZF
CALIFORNIA COASTAL CMNTYS	10	11	266	.	.	.	.	.	46.5%	78.2%	ZF	ZF
DECODE GENETICS INC	11	12	302	.	.	.	.	.	38.8%	81.7%	ZF	ZF-
EDGE PETROLEUM CORP	10	11	340	.	.	.	.	.	38.4%	65.7%	ZF	ZF
FOAMEX INTERNATIONAL INC	2	11	729	.	.	.	.	.	48.0%	78.8%	ZF	ZF-
HARTMARX CORP	1	12	232	.	.	.	.	.	5.7%	27.4%	ZD-	ZD
MAGNA ENTERTAINMENT CORP	3	13	880	.	.	.	.	.	52.4%	78.1%	ZF-	ZF
MIDWAY GAMES INC	2	11	184	.	.	.	.	.	11.8%	58.5%	ZF+	ZF+
MONACO COACH CORP	3	13	238	.	.	.	.	.	0.3%	3.2%	ZC+	ZB
NORTEL NETWORKS CORP	1	11	13480	.	.	.	.	.	5.5%	36.0%	ZD-	ZD-
OSCIENT PHARMACEUTICALS CO	7	11	303	.	.	.	.	.	22.2%	69.6%	ZF+	ZF
PACIFIC ETHANOL INC	5	12	273	.	.	.	.	.	7.1%	31.3%	ZD-	ZD-
PROLIANCE INTERNATIONAL INC	7	11	146	.	.	.	.	.	8.7%	40.0%	ZD-	ZD-
SUN-TIMES MEDIA GROUP INC	3	12	867	.	.	.	.	.	21.6%	62.8%	ZF+	ZF+
TRANSMERIDIAN EXPL INC	3	12	335	.	.	.	.	.	7.6%	42.8%	ZD-	ZD-
TXCO RESOURCES INC	5	12	180	.	.	.	.	.	0.2%	5.9%	ZC+	ZC+

Agency ratings (S&P or Moody's) and agency equivalent (AE) ratings: CCC/CC/C = 1, B- = 2, B = 3, B+ = 4, BB- = 5, BB = 6, BB+ = 7, BBB = 8, BBB= 9

. = not available, mostly because of missing data

Source: Standard&Poor's, Moody's and author compilations

FIGURE 16B

Out of sample comparison of default prediction results for 2009 defaults: Agency Ratings, *Private Z-Metrics™* and Z-score Agency Equivalent (AE) Ratings, *Private Z-Metrics™* Ratings and Probabilities of Default data are from one year prior to default.

Company	Month of default in 2009	Ratings & PD Data (months before default)		Agency rating	Agency Equivalent (AE) Ratings				Z-Metrics PD values		Z-Metrics Ratings	
		total liabilities (\$ mio)			Z-Metrics models		Z-score models		1y private macro	5y private	1y private macro	5y private
					1y private macro	5y private	Z score	Z" score				
ACCURIDE CORP	10	11	840	4	4	4	5	5	5.7%	12.1%	ZD-	ZC-
ALLIS-CHALMERS ENERGY INC	6	13	639	3	.	.	5	6	.	.	.	.
AMERICAN ACHIEVEMENT CORP	2	13	336	3	4	3	.	.	2.0%	14.0%	ZD+	ZD+
AVENTINE RENEWABLE ENERGY	4	11	408	4	6	5	9	8	0.6%	7.8%	ZC	ZC
BEAZER HOMES USA INC	9	13	2606	3	4	5	.	.	1.5%	7.4%	ZD+	ZC
BUILDING MATERIALS HLDG CP	6	13	613	2	2	2	9	5	9.9%	32.3%	ZD-	ZD-
CARAUSTAR INDUSTRIES INC	5	12	432	2	2	2	5	3	6.8%	32.8%	ZD-	ZD-
CHAMPION ENTERPRISES INC	11	13	702	3	5	4	5	4	2.8%	11.9%	ZD+	ZC-
CHEMTURA CORPORATION	3	13	2563	7	6	5	4	4	0.5%	6.3%	ZC	ZC
COMMERCIAL VEHICLE GROUP INC	8	13	334	4	9	6	6	6	0.3%	5.0%	ZB-	ZC+
DAYTON SUPERIOR CORP	4	11	407	3	2	1	3	2	6.5%	47.0%	ZD-	ZF+
EDDIE BAUER HOLDINGS INC	6	13	555	2	3	3	3	2	4.4%	26.0%	ZD	ZD
ENERGY FUTURE HOLDINGS CORP	11	12	57099	2	1	2	.	.	45.6%	33.4%	ZF-	ZD-
ENERGY PARTNERS LTD	4	11	713	3	2	2	3	2	8.2%	30.7%	ZD-	ZD-
FAIRPOINT COMMUNICATIONS INC	10	11	735	6	4	3	2	3	4.3%	16.5%	ZD	ZD+
FINLAY ENTERPRISES INC	8	12	624	1	2	2	5	5	7.0%	25.5%	ZD-	ZD
FINLAY FINE JEWELRY CORP	6	12	631	1	3	3	.	.	3.0%	19.1%	ZD	ZD+
FLEETWOOD ENTERPRISES INC	3	12	619	1	1	1	6	2	16.9%	51.6%	ZF+	ZF+
FORD MOTOR CO	4	12	272215	3	3	4	2	2	4.7%	10.8%	ZD	ZC-
FREESCALE SEMICONDUCTOR INC	3	12	11927	4	2	2	.	.	15.3%	29.7%	ZF+	ZD
GENERAL MOTORS CORP	6	10	184363	2	1	2	1	1	21.4%	33.9%	ZF	ZD-
GEORGIA GULF CORP	7	11	2005	1	1	2	5	4	11.1%	31.0%	ZF+	ZD-
HEXION SPECIALTY CHEMICALS	3	12	5380	3	3	3	.	.	4.7%	24.6%	ZD	ZD
HOVNANIAN ENTRPRS INC -CL A	7	13	3155	2	1	1	.	.	14.7%	38.2%	ZF+	ZD-
IDEARC INC	3	13	10267	6	5	4	9	7	0.7%	8.9%	ZC-	ZC-
LEAR CORP	6	11	6683	4	5	5	7	4	0.8%	7.7%	ZC-	ZC
LIBBEY INC	11	12	806	3	4	4	4	4	3.6%	14.0%	ZD	ZD+
MILACRON INC	3	13	652	1	1	1	3	2	16.6%	50.3%	ZF+	ZF+

Agency ratings (S&P or Moody's) and agency equivalent (AE) ratings: CCC/CC/C = 1, B- = 2, B = 3, B+ = 4, BB- = 5, BB = 6, BB+ = 7, BBB = 8, BBB+ = 9

. = not available, mostly because of missing data

FIGURE 16B CONT'D

Company	Month of default in 2009	Ratings & PD Data (months before default)	total liabilities (\$ mio)	Agency rating	Agency Equivalent Ratings				Z-Metrics PD values		Z-Metrics Ratings	
					Z-Metrics models		Z-score models		1y public macro	5y private	1y private macro	5y private
					1y private macro	5y private	Z score	Z" score				
R H DONNELLEY CORP	5	12	14266	4	4	4	2	3	2.1%	10.7%	ZD+	ZC-
SMURFIT-STONE CONTAINER CO	1	12	5532	4	.	.	4	3	.	.	.	.
SOURCE INTERLINK COS INC	4	12	1996	3	3	3	4	3	4.0%	16.2%	ZD	ZD+
SPANSION INC	1	12	2183	3	3	3	3	3	4.2%	16.5%	ZD	ZD+
SPECTRUM BRANDS INC	2	12	3315	1	2	2	3	4	10.7%	31.2%	ZF+	ZD-
TLC VISION CORP	12	13	160	3	3	3	1	1	6.9%	19.0%	ZD-	ZD+
TRONOX INC	1	11	1294	4	3	3	4	4	4.0%	21.5%	ZD	ZD
UNISYS CORP	7	12	3771	4	4	3	3	2	1.6%	15.6%	ZD+	ZD+
VISTEON CORP	5	13	7002	3	2	2	4	3	11.4%	29.5%	ZF+	ZD
YOUNG BROADCASTING -CL A	2	11	951	1	1	1	2	4	39.3%	67.9%	ZF-	ZF-
defaulted firms with no actual S&P(Moody's) rating available in database - 12 months prior to default												
AURORA OIL & GAS CORP	7	11	122	.	.	.	.	.	4.7%	23.0%	ZD	ZD
BARZEL INDUSTRIES INC	9	11	557	.	.	.	.	.	8.2%	29.3%	ZD-	ZD
BEARINGPOINT INC	2	12	2451	.	.	.	.	.	24.6%	56.6%	ZF	ZF
CALIFORNIA COASTAL CMNTYS	10	11	266	.	.	.	.	.	27.2%	41.9%	ZF	ZD-
DECODE GENETICS INC	11	12	302	.	.	.	.	.	29.1%	56.9%	ZF-	ZF
EDGE PETROLEUM CORP	10	11	340	.	.	.	.	.	7.9%	13.9%	ZD-	ZD+
FOAMEX INTERNATIONAL INC	2	11	729	.	.	.	.	.	10.6%	53.0%	ZF+	ZF+
HARTMARX CORP	1	12	232	.	.	.	.	.	.	.	.	.
MAGNA ENTERTAINMENT CORP	3	13	880	.	.	.	.	.	21.8%	50.1%	ZF	ZF+
MIDWAY GAMES INC	2	11	184	.	.	.	.	.	41.8%	77.6%	ZF-	ZF-
MONACO COACH CORP	3	13	238	.	.	.	.	.	0.1%	1.7%	ZA-	ZA-
NORTEL NETWORKS CORP	1	11	13480	.	.	.	.	.	3.4%	20.5%	ZD	ZD+
OSCIENT PHARMACEUTICALS CO	7	11	303	.	.	.	.	.	21.3%	66.4%	ZF	ZF
PACIFIC ETHANOL INC	5	12	273	.	.	.	.	.	6.3%	26.5%	ZD-	ZD
PROLIANCE INTERNATIONAL INC	7	11	146	.	.	.	.	.	8.3%	41.0%	ZD-	ZD-
SUN-TIMES MEDIA GROUP INC	3	12	867	.	.	.	.	.	1.7%	18.3%	ZD+	ZD+
TRANSMERIDIAN EXPL INC	3	12	335	.	.	.	.	.	12.9%	45.9%	ZF+	ZF+
TXCO RESOURCES INC	5	12	180	.	.	.	.	.	0.3%	6.0%	ZC+	ZC+

Agency ratings (S&P or Moody's) and agency equivalent (AE) ratings: CCC/CC/C = 1, B- = 2, B = 3, B+ = 4, BB- = 5, BB = 6, BB+ = 7, BBB = 8, BBB+ = 9

. = not available, mostly because of missing data

Source: Standard&Poor's, Moody's and author compilations

FIGURE 17

**Defaulted firms' corporate Agency ratings compared with Z-Metrics and Z-scores Agency equivalent ratings
(Comparison is made approximately 1 year prior to default)**

		Credit scoring model					
		Z-Metrics 1y public macro	Z-Metrics 1y private macro	Z-Metrics 5y public	Z-Metrics 5y private	Z-score	Z"-score
IN SAMPLE: issuers defaulted in 1989 - 2008							
Agency Rating minus AE Rating	average minimum maximum	0.62 8 -7	0.05 9 -11	0.60 7 -5	0.15 9 -9	-0.90 9 -12	-0.81 9 -11
% Firms with higher Agency rating		51%	40%	51%	40%	34%	31%
% Firms with lower Agency rating		24%	34%	24%	30%	50%	50%
% Firms with equal rating		25%	26%	26%	30%	17%	19%
Total number of firms		402	535	402	535	451	451
OUT OF SAMPLE: issuers defaulted in 2009							
Agency Rating minus AE Rating	average minimum maximum	0.50 3 -3	-0.14 2 -5	0.47 2 -2	0.03 3 -2	-1.31 4 -7	-0.62 3 -4
% Firms with higher Agency rating		50%	31%	50%	28%	17%	28%
% Firms with lower Agency rating		19%	31%	16%	33%	66%	52%
% Firms with equal rating		31%	39%	34%	39%	17%	21%
Total number of firms		32	36	32	36	29	29

Source: Standard & Poor's, Moody's and author compilation.

Sovereign Default Risk Assessment: A Z-Metrics Application from the Bottom-Up

Periodically, sovereign economic conditions spiral out of control and require a massive debt restructuring and/or bailout accompanied by painful austerity programs for the country to function again in world commercial and financial markets. Recent instances have involved several Latin American countries in the 1980s, Southeast Asian nations in the late 1990s, Russia in 1998 and Argentina in 2000. These are examples of situations when a nation's severe problems not only impacted their own people and markets but created seismic financial tremors which extended beyond their borders. We are now experiencing this with the situation in Greece and several of its southern European neighbors.

The dire condition of these nations usually first manifests as a surprise to most, including the agencies that rate the default risk of sovereigns and the companies that reside in these suddenly threatened nations. It was not long ago that Greek debt was investment grade. In 1996, South Korea was considered one of the so-called "Asian Tigers" with an AA-rating, one of the best credit ratings possible. Within one year, South Korea was downgraded to BB-, one of the so-called "junk" rating categories and would have defaulted if not for a \$50 billion bailout from the IMF.

Academics and market practitioners have not had an impressive record of predicting serious financial downturns or of providing adequate early warnings of impending sovereign economic and financial problems. These analysts generally use the traditional macroeconomic indicators, such as GDP growth, debt levels relative to GDP, trade and financial deficits, unemployment, productivity, and so on. While no guarantee of providing the magic formula for early warning transparency of impending doom, we believe that one can learn a great deal about sovereign risk by analyzing the health and aggregate default risk of a nation's private corporate sector - - a type of bottom-up analysis. Models such as the Z-Metrics system can provide an important additional measure of sovereign vulnerability.

Given the Z-Metrics default probabilities, one can compute both a median default probability and a score for each country and use these as an assessment of the overall health of the nation's private sector. As a basis for this conclusion, we can draw from the observation that at the end of 1996, the Z-Score tests showed that South Korea was the riskiest country in all of Asia, prior to the beginning of the Asian crisis in Thailand that eventually spread east to cover most countries. Thailand and Indonesia followed Korea closely as the next most vulnerable countries. While the Z-Scores showed that Korea had become risky, as noted above, it was still considered to be an excellent credit by traditional methods.

The current situation in Europe is also instructive. In a recent test of default probabilities using the Z-Metrics measure (see Figure 18), Greece has the most risky and least healthy private sector profile with a five-year median cumulative default probability of over 1,000 basis points (10.60%), followed by Portugal (9.36%), Italy (7.99%), and Spain (6.44%). Germany and France display a moderate overall credit risk cohort (5.5%) with the U.K. (perhaps a surprise) and the Netherlands rounding out our survey as the least risky corporate sectors. By comparison, the U.S. and Canada also display healthy metrics. With the most notable exception of Greece, our 5-year median PDs "cumulative default probability" for corporates are quite close to the PD for sovereigns. PDs for sovereigns are derived from the credit default swap (CDS) market's 5-year contract over the first three months in 2010. The CDS market's PD assessment for Greece is more than twice our median PD for its corporate sector. Differences can also be observed for the U.K. and Spain, although at lower PD levels. Of course, 50% of the corporations in all countries have PDs greater than the median.

So, in prescribing difficult sanctions to governments for them to qualify for bailouts and subsidies, we should be careful to promote, not destroy, private enterprise valuations. A healthy corporate sector can provide valuable tax revenues for the sovereign. Improving corporate health can be an early indicator of a return to health of the sovereign as well as an early warning of impending problems when the trend is negative and the PDs are high.

FIGURE 18

Financial Health of the Private Sector of Selected Countries: The Z-Metrics Assessment

Country	Num of Listed Companies	Five-Year Public Model*			Median PD from CDS Spreads†		One-Year Public Model*		
		Median PD	Std. Dev. PDs	Median Rating	Five Year	Median PD	Std. Dev. PDs	Median Rating	
Netherlands	61	3.33%	7.52%	ZB	2.83%	0.153%	1.020%	ZB-	
United Kingdom	442	3.62%	11.60%	ZB-	6.52%	0.218%	2.580%	ZC+	
Canada	368	3.70%	12.20%	ZB-	4.15%	0.164%	3.350%	ZB-	
U.S.A.	2236	3.93%	9.51%	ZB-	3.28%	0.139%	2.320%	ZB	
France	297	5.51%	9.72%	ZC+	3.75%	0.290%	2.060%	ZC+	
Germany	289	5.54%	13.10%	ZC+	2.67%	0.268%	3.960%	ZC+	
Spain	82	6.44%	9.63%	ZC	9.39%	0.363%	1.360%	ZC	
Italy	155	7.99%	10.20%	ZC	8.69%	0.493%	1.650%	ZC	
Portugal	30	9.36%	7.25%	ZC-	10.90%	0.482%	0.827%	ZC	
Greece	79	10.60%	14.40%	ZC-	24.10%	0.935%	3.660%	ZC-	

*Based on Z-Metrics PDs from January 1, 2010 to April 1, 2010

†Assuming a 40% recovery rate, based on CDS Spreads observed from January 1, 2010 to April 1, 2010. PD computed as $1 - e^{(-5\%/s/(1-R))}$

Sources: RiskMetrics Group, 2010; Markit; Compustat