

RISK LABORATORY

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What's in a Rating?

When the aftershocks from the **Standard and Poor's** (S&P) downgrade of the U.S. government abate, the profound issue of how to evaluate creditworthiness will still be open. Perspectives on this issue range from seriously subjective to markedly mathematical. Since the agencies have had their say on the matter in recent weeks, we look to the Barra Market-Implied Ratings Model for a second opinion.

Corporate bond spreads are a coarse indication of the market assessment of bond creditworthiness. In order to compare market to agency ratings, Figure 1 shows spread-ranked bonds aggregated into agency cohorts. To aggregate into market cohorts, we need only draw lines, and this is done by the Barra Market-Implied Ratings Model, which assesses approximately 7,500 U.S. corporate bonds in the Merrill Corporate Master Index each business day. The criterion for determining the cutoffs between cohorts is simple and intuitive. Like a teacher aiming to give similar grades to students with materially similar test scores, the model searches for clusters and gaps in the data. The cohort-separating lines are drawn to minimize distinctions between bonds with materially similar spreads.

The transparent, quantitative, top-down view of credit that comes from the bond market contrasts sharply with the opaque, subjective, bottom-up perspective of the agencies. From the S&P website, "A credit rating is Standard & Poor's opinion on the general creditworthiness of an obligor, or the creditworthiness of an obligor with respect

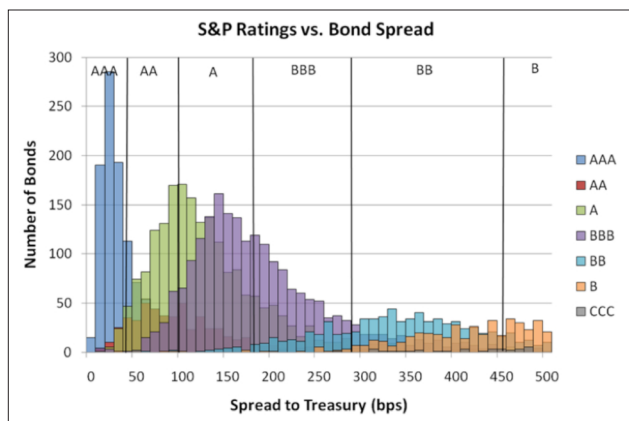


Fig 1: Histograms of Agency-rated cohorts by spread on 30 April 2011. The vertical lines delineate the Market-Implied rating cohorts.

to a particular debt security or other financial obligation."

The 30 April 2011 snapshot of the U.S. bond market in Figure 1 indicates coarse agreement between agency and market ratings, but there are important differences as well. For example the market-implied AA cohort is composed predominantly of agency-rated A bonds, and there are large numbers of agency-rated BBB bonds that the market-implied model classifies as A or even AA. The substantial overlap between the market-implied BB cohort and agency BBB cohort is striking, since it crosses the boundary between investment grade and high yield. This

raises the question of whether market-implied BBs with relatively low spreads are on the verge of an upgrade. Notably, the width of the spread distribution broadens dramatically as agency assessed quality diminishes.

Market-Implied ratings tend to be more responsive – or less stable – than ratings by agencies. This is illustrated in Figure 2, which shows the percentage of bonds at each rating on 30 April 2010 that got the same rating one year later. For example, 75% of the bonds that the market-implied model rated as BBB in 2010 were still BBB in 2011. The analogous value for the agencies is 94%. Figure 3a shows a time series of agency and market-implied ratings of a bond issued by **Georgia Pacific Corporation**. The agency rating is stabler than the market-implied rating, which oscillates between BB and BBB before settling on the latter. The jump from high yield to investment grade happens later for agencies than for the market. There is a rich statistical literature addressing the tradeoff between stability and responsiveness. Neither is preferred in an absolute context. It can be worthwhile to compare ratings from stable and responsive models, since a disparity may point to something interesting.

Notably, there is at least one example where the market-implied ratings were not overly responsive. Figure 3b shows a time series of market-implied ratings for Lehman Brothers, which enjoyed an A rating from S&P until its demise.

Market-Implied ratings are just one example of a quantitative credit ranking. Others are MKMV's Expected Default Frequencies (EDFs) and Barra Default Probabilities (BDPs). These models rely principally on equity markets and fundamental data to assess creditworthiness, and like the Barra Market-Implied Ratings

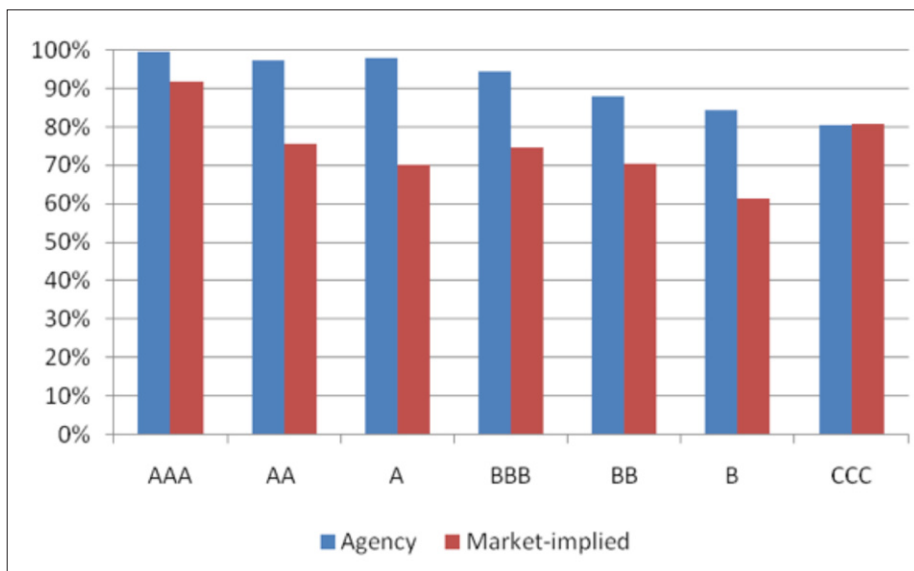


Fig 2: Percentage of bonds in each rating cohort on 30 April 2010 that had the same rating on 30 April 2011.

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Model, they tend to be more responsive than the agencies. It is possible to juxtapose ratings based on credit default swaps (CDS) against bond market implied ratings. Default swaps comprise a smaller universe – the Markit universe is roughly 3000 issuers world-wide – and they tend to be more liquid and transparent than bonds. Empirical evidence discussed in a 2010 article by **Jacobs, Karagozlu** and **Peluso** suggests that the relationship between CDS spreads and agency ratings is similar to the relationship between bond spreads and agency ratings.

Quantitative ratings are a relatively recent innovation, but agencies have been rating bonds for a long time. Ratings for corporate bonds from **John Moody**, Poor's Publishing Company, and **Fitch** were publicly available early in the twentieth century, at which time their business model was "investor pays." In the 1930s, the Office of the Controller of the Currency prohibited banks from investing in "speculative investment securities" as determined by "recognized rating manuals." And in the 1970s, **Moody's**, S&P and Fitch were given the role of "Nationally Recognized Statistical Rating Organizations" by the SEC. At roughly the same time, a game-changing switch from "investors pays" to "issuer pays" was instituted. The potential for conflict of interest inherent in this arrangement, along with the impact that agency ratings have on markets, has been widely discussed in the academic literature and the media. The silhouette in Figure 1 showing the clustering of spreads for bonds with a common agency rating may be an indication of that impact.

Over time, agencies have expanded to cover a broad and varied collection of securities: bonds issued by sovereigns, states, municipalities, as well as corporations, and also more complex instruments such as structured products. However, they apply a uniform set of ratings to this heterogeneous pool. Should agency ratings on different types of securities be compared directly? Is a sovereign bond rated BBB by an agency roughly as creditworthy as a BBB collateralized debt obligation? This issue does not arise for the Barra Market-Implied Ratings Model, since its entire focus is the bond market.

An indication of the market view of the U.S. government downgrade may come from Treasury yields, which dropped on the day after the downgrade and have been declining since. In other words, U.S. Treasuries are functioning more than ever as a safe harbor in the wake of the market disruption sparked by the downgrade. The S&P downgrade contrasts sharply with the Fitch affirmation of its AAA rating of the U.S. government. Fitch notes that the benchmark status of U.S. Treasuries effectively provides a liquidity option to the U.S. government. This status is echoed by the use of U.S. Treasuries as the benchmark in the Barra Market-Implied Ratings Model.

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FURTHER READING

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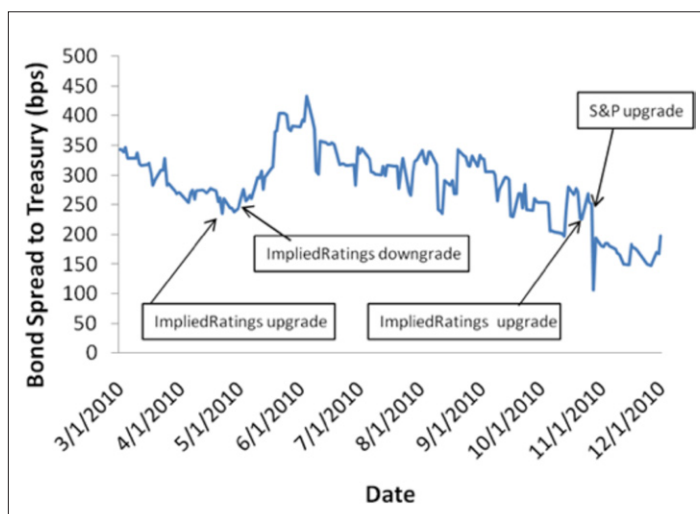


Fig 3a: History of spreads and ratings for Georgia Pacific in 2010. The timing of the Market-Implied Ratings and S&P upgrade from BB to BBB are indicated on the plot. Market-Implied Ratings tend to be more responsive, or less stable, than Agency Ratings.

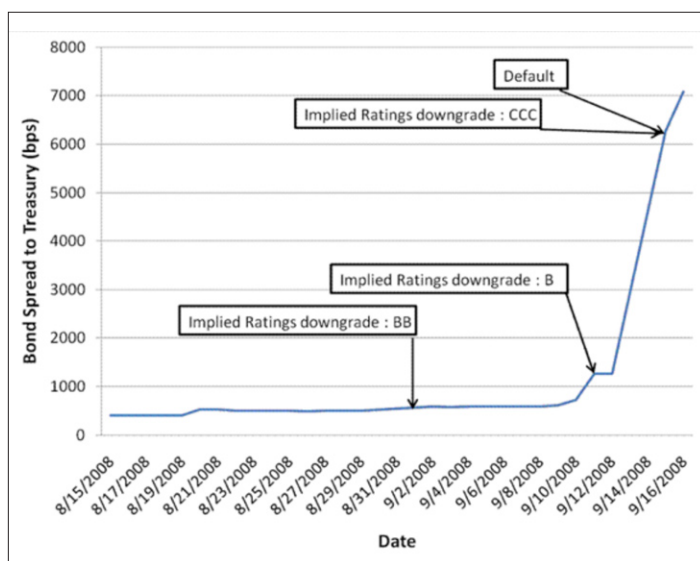


Fig 3b: History of spreads and ratings for Lehman Brothers in 2008. The timing of the Market-Implied Ratings is indicated on the plot. Lehman Brothers was rated A by S&P until 15 September 2008, the day it filed for bankruptcy.