

RatingsDirect®

Default, Transition, and Recovery: A Look At Ratings Behavior And Default Probability

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(Editor's Note: Standard & Poor's convenes its Academic Council, comprising a small group of scholars from top U.S. universities, biannually to discuss credit-related topics of mutual interest. This commentary reflects some of the views developed during the most recent meeting.)

Every year, Standard & Poor's Ratings Services publishes default and transition studies that cover a range of asset classes--corporates, structured finance, public finance, and sovereigns, among others. We solicit feedback to help us improve the accuracy, dependability, and usefulness of the studies with regard to both the past performance and predictive power of our credit ratings.

Toward this end, certain changes to the way we represent the statistical dispersion of borrowers in the studies as well as the addition of data in our default totals (for example, looking at dollar amounts along with the absolute number of defaults) would go a long way, panelists at Standard & Poor's Ratings Services' most recent Academic Council suggested.

Overview

- Credit ratings and defaults tend to be highly correlated, but there is no single measure to evaluate the rank-ordering power of ratings by default risk.
- Various measures are used in default and transitions studies to capture how well credit ratings perform, but these performance measures are often highly dependent on the nature of the sample data.
- Economic and market conditions--such as low interest rates and credit availability in recent years--could affect the relative ranking power of ratings and our ability to assess the performance of credit measures.

We carry out our default and transition studies on the basis of "static pools," grouping issuers by ratings categories at the beginning of each year, with all borrowers assigned to one or more of the pools. When a borrower defaults, we assign that default back to all of the static pools to which the borrower belonged. Because static pools include only entities with active ratings at the beginning date of a given pool, we exclude companies with previously withdrawn ratings and those that had defaulted. If we withdraw a rating after the start date of a particular static pool and there is subsequently a default, we include it in that static pool as a default and classify it into the rating category it was a member of at that time.

While other methods might charge defaults against only the initial rating on a borrower, we use this methodology to ensure that default rates account for ratings migration and to allow for default rates to be calculated across multi-period time horizons. We tally annual default rates for each static pool, first in units and later as percentages with respect to the number of issuers in each rating category. We combine these percentages to calculate cumulative default rates for the number of years the study covers.

We also calculate transition rates to compare the ratings on borrowers at the beginnings and ends of certain periods. To compute one-year ratings transition rates by ratings category, we compare the rating on each entity at the end of a particular year with the rating at the beginning of the same year (with a borrower that remains rated for more than one year counted as many times as the number of years it was rated).

The data in the default and transition studies that Standard & Poor's Global Fixed Income Research group publishes annually is of paramount importance to the transparency of ratings and to the credit markets, council panelists said, because they set historical performance benchmarks to predict default probabilities--which, in turn, helps lenders and investors set rates of return commensurate with the risks they assume. That said, panelists suggested that it's important to measure dollar amounts of defaults because investors don't invest uniformly--that is, many investors try to match their portfolios to certain indices, which are typically dollar-weighted. In short, calculating default rates by borrower gives the same weighting to a small company with comparatively little debt as it does to a highly leveraged international conglomerate.

The Gini Coefficient And Probability Of Default Models

In any event, academic studies have shown that the lower the rating on a borrower, the more important the seasoning of the debt is to default probability. In short, speculative-grade borrowers are more likely to default in the near term until about three years out, at which point the likelihood begins to reverse.

Meanwhile, borrowers with higher ratings tend to have lower average default rates, and lower-rated bonds tend to default more frequently, as expected. We test this expectation and the overall ranking power of our ratings through rank-ordering statistics, such as the Gini coefficient, in which we plot the cumulative percentage of ratings, from low to high, against the cumulative proportion of defaults in a Lorenz curve (a graphical representation of the proportionality of a distribution). In general, the higher the Gini coefficient, which represents the area between the random line and the Lorenz curve, the greater the correlation between our ratings and a borrower's default behavior.

This raises the question of the accuracy and effectiveness of probability of default (PD) models. PD models tend to be far less stable than credit ratings over time, and it's difficult to know how good one is, especially with small sample sizes. For example, in a model showing a 0.05% probability of default in a very small sample size (such as a group of three, as is the case with U.S. corporate borrowers we rate 'AAA'), you wouldn't expect any defaults, so if there is one, how can anyone say the model was right?

In addition, credit conditions can change rapidly, so the time component in a PD model can be distorted. And high correlation of a sample can skew studies of models because of the all-or-nothing characteristics the borrowers share. Meanwhile, default studies are very sample-dependent: It's hard to do a performance study on borrowers that have very little chance of defaulting but easy to do one on companies we rate 'CCC', for example.

Standard & Poor's believes it is helpful to use performance measures that address the accuracy of PD models, irrespective of sample diversity. At the same time, the market environment of recent years, with low interest rates and investors reaching for higher yields, has increased the challenge of measuring the performance of credit risk models when eventual default/survival is the primary observed variable. Many borrowers with substantial credit risk have

avoided defaults through the abundant availability of liquidity, leaving only the least viable firms to actually default. This raises questions about how to assess the effectiveness of PD models in the recent economic environment and, more broadly, how economic and market conditions affect our ability to assess the performance of credit measures.

Remaining Relevant

Ultimately, we strive to ensure that our credit ratings are relevant, and some academic studies find that announcements of new credit ratings or ratings changes provide information to the stock and bond markets. The studies conclude that ratings tend to explain cross-sectional differences in bond-yield spreads, for example, and reduce the information asymmetry between borrowers and investors. The findings also show that downgrades tend to be more relevant to financial markets than upgrades are.

This leads to the questions of "auto-correlation," in which ratings changes tend to lead to more changes in the same direction, and the perceived importance of ratings stability. Common opinion, as well as some (perhaps outdated) academic studies, suggest that, for example, downgrades are typically followed by further downgrades rather than upgrades, where one might expect to see a measure of randomness. Whether this is the result, however, of the value that the market places on stability and predictability of ratings is an open question. At any rate, it's not clear what investors prefer, panelists said, so it's difficult to determine the comparative value of more-stable ratings versus more-volatile PD models.

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