

Monitoring Risk While Pursuing High Returns

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Understanding the different approaches to measuring credit, and what those techniques allow their users to actually see, is a crucial element in evaluating the risk of corporate default. Without an objective perspective on the relative strengths of the tools used to determine credit risk, a company is limited in its ability to make necessary adjustments.

How do you distinguish between healthy corporations or banks and distressed ones? There are measures, including balance sheets, market data and macroeconomic data, among others, that can be used in quantitative approaches like Altman's Z-Score, and there are more qualitative measures such as the ratings supplied by agencies and independent services.

Because rating agencies are paid by the issuer, many observers believe that they tend to give the institutions the benefit of the doubt, according to Elliot Noma, founder of Garrett Asset Management. "They have a tool, but they also have to make a call, saying, 'What's the probability of default for this institution?'"

The independent rating services, on the other hand, are paid by investors, and they are widely perceived to have the reverse bias. "It's better for them to advise an investor to avoid an opportunity rather than the investor going into the opportunity and then there's an immediate default," says Noma.

Agency ratings are designed to be stable over many years and varying business conditions. "The stability is desired both by the issuers of debt, because their cost of capital varies dramatically with the different ratings, as well as investors who often have restrictions on what they can hold," explains Rajan Singenellore, Global Head of the Default Risk and Valuation Group at Bloomberg. Neither party wants wildly gyrating ratings.

On the day before Lehman Brothers' Sept. 15, 2008 declaration of bankruptcy, Moody's, Standard & Poor's, and Fitch Ratings all gave the firm an A rating. That rating had been consistent in the lead-up to Lehman's collapse, and that consistency brought the ratings agencies considerable scrutiny in the aftermath of its bankruptcy.

The Soul of a Corporation

"Quantitative models can give you a window into the vital signs—the soul—of a corporation, especially the part that's related to its credit health," says Singenellore.

While agency ratings tend to move slowly, quantitative models do not share some of their restrictions. Quantitative models are more free to respond to market changes and rapid changes in fundamentals. "A quantitative model also performs the important role of being an independent assessment of credit risk, which is gaining more and more importance in the light of recent regulations," adds Singenellore.

One such model, the Z-Score, was developed more than 40 years ago by New York University professor Edward Altman and offers a quantitative tool to gauge a non-financial corporation's risk of default. A comparison of average Z-Scores and average rating agency evaluations finds them to be relatively closely aligned, says Noma, who is also a Senior Risk Consultant at Asset Alliance.

Balance-sheet-focused models like the Z-Score, however, are less applicable to financial companies, due to some of those firms' unique characteristics, like higher operational leverage and less transparency, and their relationships with the central banks. Noting that there is considerable diversity in the methodologies used to analyze banks, Noma points out that the major rating agencies concentrate on capital ratios, off-balance sheet items, liquidity risk and how the bank relates to the sovereign.

Bloomberg's quantitative model, DRSK, can handle both banks and non-financial companies, according to Singenellore. But because banks are much more highly leveraged, they must be calibrated to their own sector. "Once you do that," he says, "the hybrid structural approach does a great job of discriminating between financial firms that failed and ones that did not."

A Hybrid Approach

Like most structural models, Bloomberg's DRSK is based on the options pricing model developed in the early 1970s by MIT professor Robert Merton, which says that shareholders essentially have a call option on the value of a firm's underlying assets. DRSK estimates the probability of default over the next 12 months by calculating the likelihood that the value of a company's assets will fall below the value of its liabilities.

The DRSK model does not use credit market variables such as bond yield or CDS spread as input. Rather, it is an equity markets-based view of default risk. In addition to market data and balance sheet fundamentals, DRSK also includes companies' income statements, making it "truly a hybrid structural model," says Singenellore. "You ignore the income statement in credit analysis only to your own peril," he adds.

Whatever your tool, transparency is critical, particularly as you make decisions about which variables are more or less important as the environment changes, says Noma.

Transparency is a significant strength of a quantitative model, notes Singenellore. "You get a very clear link between inputs and outputs. It's really flexible. It allows you to override your inputs and create 'what if' scenarios at will." What happens if a firm pays back some debt or takes on more? What if it changes the debt maturity from short-term to long-term? What if it refinances? A quantitative model allows you to quickly assess the effect of such actions on credit health.

Looking Back

Using DRSK to retroactively estimate the probability of Lehman's default at various points over the last decade or so of its existence brings tears to Singenellore's eyes—"I actually watched it happen from the inside,"

he says. Prior to joining Bloomberg, Singenellore was a Senior Vice President in Lehman's enterprise valuation group, responsible for equity valuations used in proprietary trading strategies and developing credit analysis methods.

As early as 2000, a combination of leverage and market cap volatility led to a 5% likelihood of Lehman's default, with several peaks of 2% and 3% throughout the decade. About a year prior to the actual event, the default probability began to rise in a significant and sustained fashion.

Bloomberg's model also found the default probability of American Airlines, which declared bankruptcy on Nov. 29, 2011, rising significantly about six months prior to the event. And DRSK would have predicted a high default probability for MF Global about three months after it went public in June 2007. The probability values remained fairly high throughout 2008, 2009 and 2010 before rising rapidly in mid-2011. MF Global declared bankruptcy on Oct. 31, 2011.

Magic Bullets

No matter how effective your credit analysis model, there is always a human element. "Even though they are objective models, there is a subjective component in terms of what variables I put in them, what my back-test period is, what my out-of-sample period is, and the relevance of everything I've seen so far," says Noma.

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And even the best quantitative model can only do so much. The kinds of fraud that brought down Enron and WorldCom, for example, are largely outside of the power of such techniques to detect. “If it’s not in the market cap and it’s not anywhere in the published statements—a quantitative model has no other magic bullet,” says Singenellore.

Still, he adds, an analysis of a company’s default probability in comparison to accounting ratios might show some indication of distortions in the relationship between the underlying accounting measures and default risk. “Once you start noticing that, you may begin to question it more closely,” he says.

Conclusion

Beyond the view that quantitative models provide of the credit health of a company, they also help identify candidates for due diligence. Because bond spreads reflect the market’s estimation of default probabilities—the yield demanded in the market rises as default risk rises—companies whose default risk is out of line with their spreads call out for further investigation.

In addition, output from quantitative models such as DRSK also offers a good first estimate for the intrinsic value of credit default swaps, given the estimated level of default probability for a particular firm, notes Singenellore. He also points to the

models’ ability to help examine the credit risk of portfolios in numerous ways.

As a company, your models allow to you to say, “these are the relevant inputs and these are the signs of what we think is important,” says Noma.

Such flexibility is key in a low-return environment, as firms strive to gain a deeper understanding of the drivers behind the creditworthiness of companies and, ultimately, the total risk of their portfolios.

Creating a culture of risk awareness.*

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