Bond Rating Analysis

Yijia Mao

Aug. 06, 2014

What is a bond rating?

According to Investopedia[1], a bond rating is a grade given to bonds that indicates their credit quality. Private independent rating services, such as, Standard & Poor's, Moody's and Fitch provide these evaluations of a bond issuer's financial strength, or its ability to pay a bond's principal and interest in a timely fashion. Ratings are assigned when bonds are first issued, and reviewed on a regular basis. If a rating agency concludes that the issuer's creditworthiness has improved, it may upgrade the bond ratings; conversely, if it concludes that an issuer's creditworthiness has deteriorated, it may downgrade[2].

What's the importance of bond rating?

In *What's in a Bond Rating*[3] on *The Journal of Financial and Quantitative*, the authors Thomas F. Pogue and Robert M. Soldofsky explained that determinant of corporate bond ratings is the rater's "judgment" about the firm's ability to make the scheduled interest and principal or sinking fund payments on time. Bond ratings were developed prior to World War I in response to a commercially viable need for independent and reliable judgment about the quality of corporate bonds. Bond ratings were important to many large corporate borrowers because they were generally unwilling to increase their leverage ratio above the level that would drop their bond rating below A as a matter of "financial insurance." A high bond rating may be merely a status symbol for the firm. Michael Papadakis[4] also pointed out that bond ratings play an important role in the marketing of bond issuance and the overall interest rate that the issuer ultimately pays over the life of the bonds. The higher the credit rating, the lower the interest cost and thus the more economic it becomes to finance new projects via capital markets. If the company has a high rating, it is a great sign for the investors that hold the company's debt because it indicates the company is performing well in the market. Rating agencies classify the bonds into two general categories: investment grade bonds and below investment grade (junk) bonds. Investment grade bonds are bonds with ratings above BBB, which have lower credit risks. Junk bonds

---

[1] Investopedia, Bond Rating Definition, http://www.investopedia.com/terms/b/bondrating.asp
[2] The Street, Ratings (Bonds) Definition, http://www.thestreet.com/topic/46901/ratings-bonds.html
[3] What's in a Bond Rating, Thomas F. Pogue, Robert M. Soldofsky, The Journal of Financial and Quantitative Analysis, Cambridge University Press, 1969
[4] What are Bond Ratings and Why are they important? Michael Papadakis, B&F Brick Newsletter, October 2011

are usually purchased as speculative investments; they might provide higher yields to the investors, but also exposed to greater risk.

Are bond ratings reliable?

H. Kent Baker and Sattar A. Mansi[5] have analyzed the conflicting incentives of rating agencies and the accuracy of bond ratings in 2002. Because rating agencies charge the corporations fees for rating their bonds, this payment structure may encourage the agencies to assign higher ratings to these issuers to maintain their revenue. However, the rating agencies have to disseminate only correct information; otherwise, their reputation is at risk and the agencies may face potential legal damages. The authors conducted a survey to examine what level of accuracy the issuers and investors think about their corporate bond ratings from 1 (most accurate) to 4 (least accurate).

The following table shows the rank of perceived accuracy for big four rating agencies in 2002:

Perceived Accuracy of Rating Agencies in Rating Corporate Bonds

Rating Agency		*Ranking of Accuracy*						O^2
	n	*1*	*2*	*3*	*4*	*Mean*	*Rank*	$(df = 3)$
Standard & Poor's								
Issuers	112	67.0%	24.1%	4.5%	4.5%	1.46	1	14.94**
Investors	77	45.5	45.5	9.1	0.0	1.64	1	
Moody's								
Issuers	112	35.7	51.8	8.0	4.5	1.91	2	3.38
Investors	77	46.8	40.3	10.4	2.6	1.69	2	
Duff & Phelps								
Issuers	58	15.5	25.9	46.6	12.1	2.55	3	15.94**
Investors	77	5.2	9.1	51.9	33.8	3.14	3	
Fitch								
Issuers	51	9.8	15.7	29.4	45.1	3.10	4	8.40*
Investors	77	2.6	5.2	28.6	63.6	3.53	4	

It shows the Standard & Poor's was regarded as the most accurate rating agency in 2002. One question from the survey focused on determining whether quality ratings measure what they are supposed to measure: "Do issuers and institutional investors believe published ratings of corporate bonds accurately reflect their issuers' creditworthiness?" The following table shows how different issuers and institutional investors' opinions are:

[5] Assessing Credit Rating Agencies by Bond Issuers and Institutional Investors, H. Kent Baker, Sattar A. Mansi, Journal of Business Finance & Accounting, 2002

Table 11

Bond Ratings and Issuers' Creditworthiness

Response	*Issuers* ($n = 112$)	*Investors* ($n = 96$)	O^2 ($df = 2$)
Yes	69.6%	63.5%	
No, overstate risk	28.6	18.8	16.709**
No, understate risk	1.8	17.7	

As we can see from the table, both a majority of issuers and investors believe that bond ratings accurately reflect their issuer's creditworthiness, but they assess bond ratings from different perspectives. A higher percentage of issuers than investors perceive that bond ratings overstate the issuers' credit risk because bond issuers are concerned about whether ratings overstate their credit risk so that their borrowing costs increase. For bond investors, they care more about whether the ratings understate the issuer's credit risk so that the understatement of bond ratings actually indicates a bigger possibility of default.

However, when Enron declared bankruptcy in December 2001, the media and Congress questioned why the three major rating agencies had maintained "investment grade" ratings on Enron's bonds until five days before its bankruptcy. As Lawrence J. White argued[6], this notoriety led to an increasing number of people doubting the accuracy and timeliness of bond ratings. The similar situation happened again when WorldCom's financial condition was weakened but rating agencies were too slow to recognize this change. The question of what true value the credit rating agencies could actually bring to the financial markets remains open and unresolved. Therefore, as White described in *Markets: The Credit Rating Agencies*, the government reacted to the growing criticism of the three bond raters by increasing the government control. The Sarbanes-Oxley Act of 2002 was established first and then the Credit Rating Agency Reform Act was signed into law in September 2006. To address issues of conflict of interest and transparency, the Securities and Exchange Commission promulgated regulations to place restrictions on the conflict of interest in the "issuer pays" business model in both 2008 and 2009.

Fennell and Medvedev (2011) at Financial Services Authority (FSA)[7] also agreed that the primary regulatory objective is that rating agencies should provide accurate ratings of credit risk to investors and implicitly to regulators. Inflated ratings could pose a threat to financial stability and lead to systematic risk because they underestimate the investment risk; whereas ratings that overestimated risks would impose excessive capital requirement on banks and increase the costs to the economy. The current issuer-pays model encourages rating shopping, which means that the company chooses the rating agency that is willing to assign the highest rating to the bonds/securities that it issued. Fennell and Medvedec

[6] Markets: The Credit Rating Agencies, Lawrence J. White, Journal of Economic Perspectives, Spring 2010

[7] An Economic Analysis of Credit Rating Agency Business Models and Ratings Accuracy, Damien Fennell, Andrei Medvedec, Financial Services Authority, November 2011

suggested several alternative business models for credit rating agencies (CRAs), such as, the investor-pays model, a public model and a platform model.

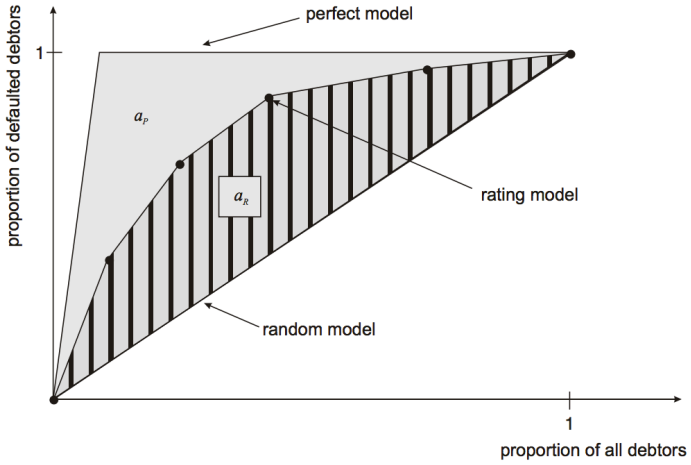
In investor-pays model, the investors pay for the companies' bond ratings. It is a good complement to the existing issuer-pays model because now the CRAs can provide independent opinions about the companies' credit risk to individual investors, instead of relying on the companies. Admittedly, investor-pays model might incur free rider problems or decrease the number of investors who give up investing in the bond markets due to the high costs.

In the platform model, CRAs are selected through an independent and practicable platform. And in the last model, public model, where this takes the form of non-profits, national or international CRAs, offers available free ratings. It might be hard to transition the current issuer-pays model to the public model because the public CRAs could have much more advantages than private CRAs.

Even if we assume that the credit ratings are accurate, there may exist some discrepancies across different regions. In a paper called *Measuring the Quality and Consistency of Corporate Ratings across Regions*[8] by four researchers at Moody's in November 2004, the authors explained the extensive body of policies and practices that Moody's uses to ensure the ratings are of high quality and accuracy. They introduced that Moody's has been using cumulative accuracy profile (CAP) and its associated accuracy ratio (AR) to measure the accuracy of its rating system. CAP is defined as the graph of all points that indicate the cumulative probabilities that the debtors will default; Accuracy Ratio (AR) is defined as the ratio of the performance improvement of the model being evaluated over the naïve model (aR) to the performance improvement of the perfect model over the naïve model (aP): AR= aR/aP. In the following graph, as Bernd Engelmann, Evelyn Hayden, Dirk Tasche explained CAP in their discussion paper[9]: the polygon shows the performance of the model being evaluated in depicting the percentage of defaults while the straight line below denotes the naïve cases of zero information or random assignment of rating scores. The third line represents the case of perfect information where all defaults are assigned to the lowest rating scores.

[8] Measuring the Quality and Consistency of Corporate Ratings, Richard Cantor, Pamela Stumpp, Michel Madelain, Eric De Bodard, Moody's Investors Service, November 2004, https://www.moodys.com/sites/products/DefaultResearch/2003000000434370.pdf

[9] Measuring the Discriminative Power of Rating Systems, Bernd Engelmann, Evelyn Hayden, Dirk Tasche, Deutsche Bundesbank, Nov 1 2003



Conclusion

Bond rating, a grade given to various bond issuers by credit rating agencies, is important for investors when considering whether to make investments; it is also important for bond issuers because with high ratings, it is easier to finance the companies through capital markets. In early 21st century, investors and issuers tended to believe that the credit ratings were accurate and timely while after the credit rating crisis occurred in 2007-2008, people started to lose faith in credit ratings and the rating agencies were trying to evaluate and ensure the accuracy of their rating system in order to maintain their good reputation. Issuer-pays model is widely used in credit rating industry nowadays but since the issuers pay fees to rating agencies, rating agencies are inclined to overrate these issuers, which might lead to rating shopping. Some scholars have suggested alternative models but we still need more evidence to check if these alternative models can function as well as the normal issuer-pays model or even bring more benefits.