

The Accuracy of Agency Ratings

ARINDAM BANDYOPADHYAY

Recently, regulators as well as market participants have raised serious concerns about the validity of external credit ratings in predicting the true status of corporate default risk in India. A comparison is made of the historical rating trends in India along with the global benchmarks. The credit rating agencies need to provide more insights about corporate rating movements to enable banks to derive early warning signals about inherent credit risk. The kind of risk indicators that need to be disclosed has been highlighted.

The external rating is an opinion of an independent external agency, which does not have a business interest or relationship with the borrower. The rating agency assesses the creditworthiness of the borrower or issuer based on a number of financial and non-financial aspects. Their role is to evaluate and quantify credit risks, within a context of effective benchmarking of risks across industries and countries. These metrics have evolved over a period and each rating agency has its own unique method of arriving at the credit rating. Credit ratings give investors/lenders an indication of a financial institution's/borrower's relative strength, the likelihood that it will default and fail to repay investors. It also enables the regulator to proactively monitor the shift in the portfolio risk positions over time. In India, investors as well as banks are questioning the validity of agency ratings since they are slow to react to market changes. The Infrastructure Leasing & Financial Services (IL&FS) crisis created a scare in the financial markets and short-term borrowings started drying up. This is threatening to turn into a contagion, with many non-banking financial companies (NBFCs) facing a liquidity crisis. A big name in the housing finance industry is now being seen as a defaulter which was in the investment category one year ago. A major NBFC was given AAA rating by some of the leading rating agencies which was, all of a sudden, downgraded by nine notches to BB (which is a non-investment grade [NIG]) when this infrastructure finance company defaulted last year. It is, therefore, essential to specify the type of disclosures that credit rating agencies (CRAs) will provide so that the market participants can properly read their signals.

Corporate Risk Profile

The CRAs in developed markets provide valuable information about the corporate credit risk profile. The transition matrices

reported by S&P CreditPro and Moody's globally provide the profile of credit quality changes or migrations that have taken place for corporate credit portfolio between any two years that are selected. The rating transition matrix, including probabilities to move from one rating to another rating, represents the kernel of many credit risk and rating calculations. The two leading global rating agencies report their yearly migration analysis since 1981 across various rating grades as well as across industries. The yearly default rates across various portfolio segments (for example, rating-wise, industry-wise, and country-wise) provide useful insights to benchmark a bank's credit portfolio risk position.

A weighted average from such rating transitions as reported by a leading global rating agency gives us the following matrix (Table 1).

Table 1: One-year Average Global Corporate Rating Transition, 1981–2018 (%)

	IG	NIG	Default
IG	97.94	1.96	0.10
NIG	2.55	93.31	4.14
Default	0.00	0.00	100

Investment Grade (IG) category consists of rating notches AAA to BBB and Non-investment Grade (NIG) group represents notches BBB–CCC.

The above rating migration probabilities are withdrawn rating adjusted.

Source: Estimated from Historical Rating Migration Data reported by a leading US Rating Agency.

As can be observed from the probability figures reported in Table 1, 97.94% is the probability that a corporate begins the year, as the investment grade (IG) category remains in the same category at the end of the year as well. Similarly, 1.96% is the estimated probability that the IG corporates will be downgraded to the NIG category within a year. In the same logic, 2.55% is the probability that a NIG corporate will be upgraded to the IG category within one year. In the same manner, the probability of default for the IG category corporate is estimated to be 0.10%. In comparison, the NIG rate corporate's one year probability of default is significantly higher and it is estimated to be 4.14%.

Short Term vs Long Term

Unlike global agencies, the leading CRAs operating in India do not provide granular information about such rating trends. Moreover, since agencies follow through

Arindam Bandyopadhyay (*arindam@nibmindia.org*) is with the National Institute of Bank Management, Pune.

the cycle (TTC) rating method that gives importance to permanent components of the balance sheet (long term, 10 years trend of ratios), they are less reactive to changes in macroeconomic condition (De Servigny and Renault 2004). Hamilton (2002) has observed the serial behaviour of rating changes. That is, if rating changes in one direction, it tends to be followed by rating changes in the same direction. Companies that have been recently upgraded by the rating agency are twice likely to be upgraded again in the subsequent year compared to companies that have either been downgraded or retained the same rating. Therefore, there is a central tendency in the CRAS' rating movements. Hence, investors may not get much early warning signals if they only look at the long-run average rating transition matrix (1988–2019, for example) as reported by these agencies.

Therefore, it is necessary to know how the migration pattern and the predictive accuracy of these ratings are changing over time and under varied macroeconomic conditions. It is possible to extract the yearly marginal probability of default (MPDs) from CRAS' reported cumulative transition matrix. However, for this, one has to use the following mathematical expression that has been derived from the agencies' computation methodology.

$$MPD_n = 1 - \frac{(1-C_n)}{(1-C_{n-1})}; \quad \dots (1a)$$

where n is the symbol of time period; MPD =marginal probability of default; and C =cumulative probability of default.

This formula has been derived from the CRA's methodology for estimating cumulative probability of defaults for different time horizons, which is obtained from historical yearly marginal probability of defaults:

$$CPD(n) = d(1) + d(2) \times (1-d(1)) + d(3) \times (1-d(1)) \times (1-d(2)) + \dots + d(n) \prod_{i=1}^{n-1} (1-d(i)) \dots (1)$$

where $d(n)$ =marginal probability of defaults or year default rates and n represents year.

To further illustrate the method, let us take a numerical example. Assume that the cumulative probability of default (CPD) of B-rated corporate issuers in the fourth

and fifth year of issuance (as reported by the agency) is 13.13% and 19.10%. Then, using the above expression, the estimated MPD for the fifth year would be 6.87%. Thus, if the Cohort year is 2006, the probability of default in 2011 for B-rated corporate would be 6.87%.

Applying this concept, and using equation 1, the following probability of default forecast (Table 2) has been generated from a leading domestic CRA's cumulative default history.

Table 2: Cumulative vs Marginal Probability of Default (%)

Rating	% Share	CPDs			Forward Looking MPDs		
		1-year	2-year	3-year	2018	2019	2020
AAA	1.44	0.00	0.00	0.00	0.00	0.00	0.00
AA	3.55	0.02	0.09	0.18	0.02	0.07	0.09
A	6.63	0.20	0.95	1.91	0.20	0.75	0.97
BBB	21.15	0.86	2.13	3.83	0.86	1.28	1.74
BB	34.76	3.54	7.47	11.21	3.54	4.07	4.04
B	31.36	8.01	15.91	21.98	8.01	8.59	7.22
C	1.11	20.56	33.64	41.16	20.56	16.47	11.33

Source: Computed from Historical Rating Migration Data reported by a leading Domestic Rating Agency.

It is therefore suggested that for better transparency, CRAS should disclose year-wise rating migration count (that is, number of instruments rated in the beginning of the year and how many of them are retained in the same grade and go down to other grades, including movement to the default grade). Such information will enable the banks as well as investors to benchmark their asset portfolios, and more prudently, assess credit risk. Similarly, instead of reporting only absolute number of defaults across various industries, CRAS must provide industry default rates (that is, the number of accounts migrating from rated to default category over the years). This will enable the banks and financial institutions to understand the nature of industry risk in their credit portfolio.

Using a sample of published rating provided by a leading rating agency in India, we have constructed the following transition matrix (Table 3).

Table 3: One-year Average Corporate Rating Transition in India, 2008–15 (%)

	IG	NIG	Default
IG	95.84	3.50	0.66
NIG	8.70	79.71	11.59
Default	0.00	10.39	89.61

The above migration matrix is rating withdrawn adjusted. Source: Author's own computation based on published long term rating of 364 corporates (open pool).

One can notice from probability estimates in Table 3 that the rating stability

and default rate of domestic corporates is different from the global corporates. The domestic rating agency's rating is more volatile than the global agency mainly in the NIG category. Moreover, 10.39% of defaulted corporates are moved up to NIG category.

It has been observed that CRAS' rating have cyclical behaviour. During upturns, many lower-rated borrowers will move up to the rating scale. However, in a situation of macroeconomic stress, better-rated corporates rating stability (mainly in IG segment) will sharply decline and as a result unexpected credit risk goes up in those situations. It has also been observed that during economic stress the percentage of rating withdrawals (that is, rated to unrated) peaks up.

Corporate Portfolio Position

As can be observed from the figures reported in Table 4, there is a deterioration in the overall corporate credit portfolio quality in India. The shift is quite prominent since we have arranged them in time dimension. As can be seen, the share of investment graded borrowers has gradually declined and there is an increase in the share of lower rated instruments. This also means that the median rating has moved to the more risky grade. The rating accuracy which is measured by a statistical metric called Gini coefficient has also decreased over time. This implies that there is a significant deterioration in the discriminatory

Table 4: Grade-wise Distribution of Corporate Borrowers in India (%)

Grades	FY2008	FY2011	FY2018
AAA	34.90	1.40	1.37
AA	35.64	4.80	5.99
A	16.25	7.40	9.84
BBB	7.50	24.50	37.90
BB	2.65	29.90	26.69
B	0.38	20.00	8.55
CCC/D	2.68	12.00	9.67
Total	100.00	100.00	100.00

Rating Accuracy

(Gini coefficient)	0.82	0.63	0.46
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Higher the value of the Gini coefficient, greater is the accuracy of rating approach. Source: Compiled from default studies of a leading CRA in India.

power of the agency rating in differentiating solvent corporates from the risky ones.

Therefore, if banks base their internal credit risk analysis on domestic external ratings only, they may underestimate their loan default risk and hence will be vulnerable to more volatility or shocks in their future business. This is primarily the reason why Basel Committee for Banking Supervision (BCBS) on 7 December 2017 had advised banks to follow “due diligence” while using external agency rating in estimating credit risk weighted assets. For this, banks will have to develop a strong credit rating culture and utilise the rating history to study their migration pattern. This has been included in EASE (Enhanced Access and Service Excellence) reform index to check the credit risk underwriting standards of public sector banks in India, delineated by the Indian Banks’ Association (IBA).

It is important to note that many globally best practised banks are using CRAs’

ratings for the estimation of corporate credit risk weighted assets under the Basel II/III standardised approach. However, to estimate more precisely their expected credit loss (ECL) and internal capital for unexpected loss charge, banks are advised to use internal ratings-based (IRB) models, provided they have enough data to derive the key risk drivers (such as probability of default, loss given default, etc).

Conclusions and Suggestions

Improved disclosures by domestic CRAs would immensely benefit the banking industry as well as the regulators to take a system level view of corporate credit risk position in India. A uniform probability of default benchmarks for each rating category as well as across industries will enable the lenders as well as investors to take a portfolio view of credit risk. It is advised that our domestic agencies start publishing their

monthly rating updates so that more sophisticated time series based early warning signal indicators can be constructed. Recently, the Securities and Exchange Board of India (SEBI 2019) has issued a set of wider disclosure norms for the CRAs to improve transparency in reporting the risk profile of the corporate entities. The industry would then be aware of the financial performance factors that could trigger a rating change, upward or downward.

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