The Accuracy of Agency Ratings

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Abstract: Recently, regulators as well market participants have raised serious concerns about the validity of external credit ratings in predicting true status of corporate default risk in India. This article seeks to compare historical rating trends in India along with the global benchmarks. CRAs need to provide more insight about corporate rating movements to enable banks to derive early warning signals about inherent credit risk. The kind of risk indicators need to be disclosed has been highlighted in this article.

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 credit worthiness 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/borrowers 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 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 NBFCs facing a liquidity crisis. One of the biggest names in housing finance–Dewan Housing– is now being seen as a defaulter which was in investment category one year back. The IL&FS 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) when this Infrastructure Finance Company defaulted last year. It is therefore essential to specify the type of disclosures that CRAs will provide so that the market participants can properly read their signals.

Extracting Corporate Risk Profile from Rating Trend

Credit Rating Agencies in developed market provide valuable information about corporate credit risk profile. The transition matrices reported by S&P pro and Moody's globally provides 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 leading two global rating agencies report their yearly migration analysis since 1981 across various rating grades as well across industries. The yearly default rates across various portfolio segments (e.g. rating wise, industry wise, country wise) provide useful insight 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: One year average global corporate rating transition, 1981-2018

	IG	NIG	Default
IG	93.06%	1.87%	0.09%
NIG	2.26%	82.64%	3.66%
Default	0.00%	0.00%	100%

Source: Estimated from Historical Rating Migration Data reported by a leading US Rating Agency.
Note: Investment Grade (IG) category consists of rating notches AAA to BBB & Non-Investment Grade (NIG) group represents notches: BBB-CCC

As can be observed from the probability figures reported in table 1, 93.06% is the probability that a corporate begin the year as IG category remains in the same category at the end of the year as well. Similarly, 1.87% is the estimated probability that IG corporates will be downgraded to NIG category within a year. In the same logic, 2.26% is the probability that a NIG corporate will be upgraded to IG category within one year. In the same manner, the probability of default for IG category corporate is estimated as 0.09%. In comparison, the NIG rate corporate's one year probability of default is significantly higher and it is estimated as 3.66%.

Short-term vs. Long term view

Unlike global agencies the leading CRAs operating in India do not provide granular information about such rating trends. Moreover, since agencies follow through the cycle (TTC) rating method that give 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 & Renault, 2004). Hamilton (2002) has observed serial behavior to 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 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 with varied macroeconomic condition. It is possible to extract yearly marginal probability of default (MPDs) from CRAs reported cumulative transition matrix. However, for this, one has to use the following mathematical expression than has been derived from the agencies' computation methodology.

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

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

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

$$CPD(n)=d(1)+d(2)\times(1-d(1))+d(3)\times(1-d(1))\times(1-d(2))+....+d(n)\prod^{n-1}(1-d(n)) \quad Eq.\ (1)$$

where *d(n)*: marginal probability of defaults or year default rates & *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 4th and 5th year of issuance (as reported by the agency) is 13.13% and 19.10% . Then using the above expression, the estimated MPD for the 5th 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, following PD forecast (Table 2) has been generated from a leading domestic CRA's cumulative default history.

Table 2: Cumulative vs. Marginal PDs

Rating	% share	CPDs			Forward looking marginal PDs		
		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 (i.e. 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 default grade). Such information will enable the banks as well as investors to benchmark their asset portfolio and more prudently assess credit risk. Similarly, instead of reporting only absolute number of defaults across various industries, CRAs must provide industry default rates (i.e. number of accounts migrating from rated to default category over years). This will enable the banks and FIs 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: 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%

Source: Author's own computation based on published long term rating of 364 corporates (open pool)

One can notice from Table 3 probability estimates 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 even CRAs rating has cyclical behavior. During up-turn, many lower rated borrowers will move up to the rating scale. However, in macroeconomic stress situation, better rated corporates rating stability (mainly in Investment Grade 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 (i.e. rated to unrated) peaks up.

Corporate Portfolio Position & Accuracy of Credit Ratings

As can be observed from 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 that the share of investment graded borrowers has gradually been declined and there is an increase in the share of lower rated instruments. This also means that the median rating has moved to 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 power of the agency rating in differentiating solvent corporates from the risky ones.

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 (1989-2008)	0.63 (1988-2011)	0.46 (1988-2018)

Source: Compiled from Default studies of a leading CRA in India.
Note: Higher the value of the Gini coefficient, greater is the accuracy of rating approach.

Therefore, if banks base their internal credit risk analysis based 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) in December 6, 2017 has advised banks to follow “due diligence” while using external agency rating in estimating credit risk weighted assets. For this, banks will have to develop strong credit rating culture and utilize the rating history to study their migration pattern. This has been included in EASE (Enhanced Access & Service Excellence) reform index to check the credit risk underwriting standards of public sector banks in India delineated by the Indian Bankers' Association (IBA).

It is important to note that many globally best practiced banks are using CRAs ratings for estimation of corporate credit risk weighted assets under the Basel II/III standardized approach. However, to more precisely estimate their expected credit loss (ECL) and internal capital for unexpected loss charge, banks are advised to use Internal Rating Based (IRB) Models provided they have enough data to derive the key risk drivers (such as probability of default, loss given default etc.).

Concluding Suggestions

An 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 PD benchmarks for each rating category as well as across industries will enable the lenders as well 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, 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 will know which are the financial performance factors could trigger a rating change, upward or downward.

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