

JCR-ER Methodology on Global & National Scale Credit Rating Mapping

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1 Primary Drivers of International Credit Rating

International foreign and local currency ratings assigned to a company fundamentally measures transfer risk (TR), convertibility risk (CR), other country specific risks (OR) and traditional individual risks; financial, operational and corporate.

1.1 Transfer Risk

Transfer risk measures the uncertainties and possible obstacles on the international transfer of the domestically generated funds to repay foreign debt, typically due to restrictions imposed upon by the local administrations, external institutions etc, even though the private actors may have adequate funds. In this regard, transfer risk concerns private sector more while public sector may be affected as well.

Globalization and increasing integration of national economies, international trade and investment is reducing the risk of foreign currency restrictions and subsequently transfer risk.

In general, external debt to GDP in excess of 40%, annual external debt repayment to export over 25%, current account deficit and short term external debt less capital raised internationally to export ratio higher than 50% and current account deficit ratio in excess of 6% indicate notable transfer risk.

The export/import ratio, balance of payments and inflation differentials are among the primary factors accounted by the local administrations in their policy decisions concerning restrictions on the international transfers. For instance, an emerging market may impose limitations on the expatriation of assets and funds should the current account deficit surges or the foreign reserves deplete rapidly.

1.2 Convertibility Risk

The ability to convert domestically generated funds into the currency of the obligation is evaluated within the scope of convertibility risk. A currency is considered as convertible as long as it could be exchanged for foreign currency in another country within the

Rating	Sovereign Risks			Firm Specific Risks		
	Transfer	Convertibility	Other	Financial	Operational	Corporate
International FC	✓	✓	✓	✓	✓	✓
National	x	x	✓	✓	✓	✓

Table 1: Risk Factors in Consideration

current rate. As such, the central bank policies and international acceptance of the domestic currency by international reserve banks is an important consideration. Typically emerging markets with limited access to international capital markets face obstacles with respect to convertibility of the domestic currency. It should be noted that the spread between ask and bid for the domestic currency might indicate convertibility limitations.

The fundamental requirement and idiosyncrasy of convertibility is the right to freely transact in foreign currency and permission to export and import. Whether the currency regime is fixed or floating is not relevant within the scope of convertibility, as long as currency markets are available.

1.3 Other Country Specific Risks

The legal, social and macroeconomic environment of the country have important considerations for the assignment of the international credit rating. It is important to note that all of the country risks except for transfer and convertibility are evaluated in the assignment of *both* international and national credit ratings.

Rule of law, protection of private property, intellectual property rights, entrepreneurial environment are assessed with respect to the legal superstructure of the country. Sophistication of commercial and property laws and efficiency of the litigation processes are important factors.

The social tensions, or lack thereof, cohesion, stability and effectiveness of social institutions, NGOs and transparency are analyzed with respect to the social aspects of the country risks, among others.

Macroeconomic environment, with a special focus on the relevant sector in question, are measured with respect to the internationally accepted leading and current indicators. Overall market and investor sentiment, growth rate, production gap, if any, unemployment, price indices and several factors are studied in this regard.

2 JCR-ER Methodology on Mapping National Ratings to International Ratings

Fundamentally, national credit rating of an institution is directly related to its international foreign currency credit rating, via transfer and convertibility risks. These afore-

mentioned risk factors are time dependent and have alternating implications for firms with different national credit ratings. Upon analysis of several factors underpinning transfer and convertibility risks, TR and CR could be stated as a random variable for each year t and rating level i , obtaining a value between 1 and 0 with the latter defining ultimate riskiness level and vice versa. For the sake of database management and preservation of historical values, transfer and convertibility risk data could be stated as matrices with $n \times k$ size where n equals the year in consideration and k refers to the rating scale, as in "AAA to D". For instance, suppose the following *hypothetical* figures are estimated for CR for years 2016 to 2014 and with a simplified national rating scale from "AAA to D";

Year	AAA	AA	A	BBB	CCC	D
2016	.98	.96	.93	.90	.88	.86
2015	.99	.96	.92	.90	.87	.85
2014	.93	.90	.88	.86	.84	.83

Table 2: Data for Hypothetically Estimated TR Coefficients

$$i = \{AAA, AA+, ..BBB-, ...D\} \quad (1)$$

$$t = (2016, 2015, 2014) \quad (2)$$

which yields;

$$TR_{2016,i} = \{.98, .96, .93, .90, .88, .86\} \quad (3)$$

Similarly for the convertibility risk suppose the following values are estimated;

Year	AAA	AA	A	BBB	CCC	D
2016	.97	.95	.92	.89	.87	.85
2015	.99	.96	.92	.90	.87	.85
2014	.93	.90	.88	.86	.84	.83

Table 3: Data for Hypothetically Estimated CR Coefficients

Then naturally,

$$CR_{2016,i} = \{.97, .95, .92, .89, .87, .85\} \quad (4)$$

Once TR and CR parameters are correctly estimated for each rating category and time period, the national credit rating could finally be used to calculate the international credit rating score of an entity as follows;

$$INT_{t,i} = NAT_{t,i} \cdot TR_{t,i} \cdot CR_{t,i} \quad (5)$$

where $INT_{t,i}$ denotes the international foreign currency credit rating and $NAT_{t,i}$ indicates the national credit rating for period t and rating scale i . Suppose the national credit rating score is calculated as 85 in 2016 within the relevant methodology, and that score corresponds to rating of A according to a hypothetical rating scale. Then the international foreign currency rating of the entity in 2016 could be calculated as;

$$INT_{2016,A} = NAT_{2016,A} \cdot TR_{2016,A} \cdot CR_{2016,A}$$

$$INT_{2016,A} = 85 \cdot .93 \cdot .92 = 72.726$$

which corresponds to an international foreign currency credit rating of BBB.

Therefore, national credit rating and international credit rating of an entity could be mathematically and theoretically related for each observation period and rating scale. The important issue for the transition is to correctly estimate the transfer and convertibility risks for individual observation periods and various credit quality categories. Then, expect for certain cases with specific and exceptional circumstances, national credit rating could be used as a basis to determine the borrowers ability to honor its international foreign currency obligations.

