METHODOLOGY FOR ASSIGNING COUNTRY AND INDUSTRY SCORE – FULL VERSION

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I Summary

This methodology aims to be a guidance for the calculation of the Country and Industry Risk (CIR) score intended for the corporate ratings.

The CIR score is assigned at a country-industry level and reflects the state of each corporate sector's macro environment in each country rated. It is assessed as a weighted average of the Country Risk and the Industry Risk scores, and is scaled from 1 to 6, ranging from very low to very high levels of country and industry risk. The CIR scale and the respective risk levels are summarized in the table below:

Score	Level of risk
1	Very Low
2	Low
3	Adequate
4	Moderate
5	High
6	Very High

The Country Risk score is calculated as the simple average of the Credit Climate Environment (CCE) and Banking Sector Risk (BSR) scores. The Industry Risk score is assessed as the weighted average of the associated risk scores from the cyclicality and barriers factors. The factors used are the following:

- Country Score
  - Country Credit Environment (CCE)
  - Banking Sector Risk (BSR)
- Industry Score
  - Industry Cyclicality
  - Industry Barriers
    - Number of patents granted worldwide
    - Growth rate of patents granted
    - Average Most Favored Nation (MFN) tariffs
    - Industry's Capital Intensity
    - Government ownership
    - Manual assessment for Industry Barriers Score

    o   Qualitative adjustment

II Sources if information

The data used for the Country Risk assessment was collected from internal sources and includes the agency's CCE and BSR scores calculated in accordance with respective methodologies.

The main data source for industry risk consideration was the Morningstar Global Equity Classification Structure (Morningstar Research, 2011). However, due to the nature of the measure and data limitation, each industry score has been subject to a qualitative expert assessment based on other qualitative sources, the experts' experience and best practices from the financial industry.

III Methodology (CIR)

1. Country Risk Score

The Country Risk Score is calculated as the simple average of the Credit Climate Environment (CCE) and Banking Sector Risk (BSR) scores.

1.1 Country Credit Environment rating score

This indicator is important to assess the overall macroeconomic risk of the country or countries included in the CIR analysis. The CCE score captures any fiscal, monetary, inflationary, institutional or regulatory risks the company may be exposed to; plus some additional factors related to the private sector of the country (e.g. the level of real interest rates, private sector debt, history of bankruptcies, etc.).

Score	1	2	3	4	5	6
Country Credit Environment score	> = 75	75 – 54	54 – 33	33 – 12	12 – -9	< -9

1.2 Banking Sector Risk score

The BSR is a key factor in order to assess the financial systematic risk of an economy given the fact most corporates are leveraged or have relations with the banking system, its exposure to the financial and banking system is substantial. The BSR captures the risk of the entire financial system, government risks and bank specific risks. For a more detailed overview the BSR scores, please consult the respective BSR Methodology.

Score	1	2	3	4	5	6
Banking Sector Risk score	> = 13,5	13,5 – 11	11 – 8	8 – 5,2	5,2 – 2,4	< 2,4

2. Industry Risk Score

The Industry Risk score is assessed as the weighted average of the associated risk scores from the Industry Cyclicality Score and the Industry Barriers Score.

	Low	**Medium**	**High**
	(1 – 2,5)	**(2,5 – 4,5)**	**(4,5 – 6)**
Cyclicality	**Defensive**	**Sensitive**	**Cyclical**
Barriers	**High**	**Medium**	**Low**

2.1 Industry Cyclicality Score

Each industry is categorized into Defensive, Medium or Cyclical depending on the extent to which the industry is affected by the state of the economic cycle. Industries in each cyclicality group are assigned scores from 1 (highest) to 6 (lowest) with a step of 0,5 points. The rationale behind each industry's cyclicality score assignment is justified by a thorough qualitative analysis with consideration of multiple analytical sources including Morningstar Global Equity Classification Structure (Morningstar Research, 2011)[1], as well as best practices from the financial industry.

2.2 Industry Barriers Score

Each industry is assigned a barriers score depending on how easy or hard it is for the new entrants to cope with the patenting, tariff protection, industry's capital intensity, technological development, as well as presence of significant government ownership in the industry. The rationale behind each industries' barriers score assignment is justified by a thorough qualitative analysis with consideration of multiple analytical sources.

2.2.1 Number of patents granted worldwide

This factor reflects the total amount of patents granted for each industry worldwide. The variable assesses the extent to which an industry is protected from the new entrants, with more patents signifying less risk for companies already operating in the given industry.

2.2.2 Growth rate of patents granted

This factor captures the ten year average dynamics of patenting for each industry worldwide. The variable assesses how industry new entrant protection is developing over time, with higher growth rate of patents granted representing a lower risk for the corporate established in the specific industry.

2.2.3 Average Most Favored Nation (MFN) tariffs

MFN is the lowest possible tariff a country can impose on imports from other countries which are members of the World Trade Organization. It captures the extent to which an industry is tariff protected, with higher average MFN meaning more protection from the new external entrants and hence less risk to the current industry participants.

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[1] Morningstar Research May 24, 2011
http://corporate.morningstar.com/us/documents/methodologydocuments/methodologypapers/equityclassmethodology.pdf

2.2.4 Industry's Capital Intensity

We assess an industry's capital intensity using the three following factors:

- **Capital stock per worker ln(K/L)** captures the amount of capital intensity of an industry, with higher intensity meaning more protection from potential entrants and less risk to the current industry players.

- **Technology group** reflects the extent of technological advancement of an industry. More technologically advanced industries are believed to be better protected and hence less risky for the industry incumbents.

- **Total factor productivity (TFP) growth** is the growth of the amount of value added per capital vs labor (K&L) unit and is a key determinant of a technological change. A higher TFP growth indicates structural technological advancements in a given industry, hence higher barriers to the new entrants and more protection to the companies already established in the given industry.

2.2.5 Government ownership

Industries with a higher government ownership concentration are believed to be more protected from the new entrants, in the sense that the SOEs will naturally have a greater competitive advantage (in terms of a superior financing, better access to resources, lower administrative barriers, etc.). Hence, in our view, industries with higher amount of **SOEs in the top-10 companies by industry** are of greater protection from the new entrants and hence less risky to the current market participants.

Note: The Barriers Score may also be assigned manually, e.g. if there is not enough data for the automatic assessment or if an analyst identifies that there is an additional non-quantifiable information that affects the score. In such cases, the analyst is to perform a deep macro analysis of an industry based on publically available information to be able to manually assess the industry barriers.

2.3 Qualitative adjustment

Each industry's score can be additionally adjusted depending on the expert's opinion about dynamics in the industry.

IV CIR Score Calculation

The CIR score is assessed as a weighted average of the Country Risk and the Industry Risk scores. The weights for the Country and Industry Risk scores depend on the country risk assessment. The higher the country risk, the higher its weight on the CIR score, and vice versa. The weights have been benchmarked following the best industry practices, deep macro analysis and calibration requirements.

We first calculate the industry risk score using the weights show in the below table. Afterwards, we proceed to calculate the country risk score also following the scores reflected below.

Factor	Weight
Industry Score	**100%**
Industry Cyclicality Score	*45%-50%*
Industry Barriers Score	*45%-50%*
Industry Barriers Score	*0%-5%**
Country Score	**100%**
Country Credit Environment	*50%*
Banking Sector Risk	*50%*

* The adjustment factors have an impact of at least 5%. However, the impact could be greater in many of these factors are identified.

After obtaining the Industry and Country scores, we proceed to calculate de final CIR score. as mentioned, the weights we use for the calculation will depend on the level of the country risk score as show in the table below.

Country Risk Score	Country Risk Weight	Industry Risk Weight
1;2	0%	100%
2;3	0%	100%
3;4	25%	75%
4;5	50%	50%
5;6	75%	25%

V Final CIR Score application

The impact of the CIR score on the final rating is constant at 30%. The other 70% corresponds to the Preliminary Credit Rating score (the idiosyncratic risk of the company plus any additional external support- and/or stress-factors). The distribution of the final rating score per level of CIR has been weighted and benchmarked following the best industry practices, deep macro analysis and calibration requirements.

	CIR					
	1	**1 - 2**	**2 - 3**	**3 - 4**	**4 - 5**	**5 - 6**
1	AAA / AA+	AA+ / A+	A+ / A-	A- / BBB+	BBB+ / BBB	BBB- / BB-
1 - 0,95	AA+ / AA	AA / A+	A / A-	A- / BBB+	BBB / BBB-	BBB- / BB-
0,95 - 0,9	AA	AA- / A	A / A-	A- / BBB	BBB / BB+	BB+ / B+
0,9 - 0,85	AA / AA-	AA- / A	A / BBB+	BBB+ / BBB	BBB / BB	BB / B+
0,85 - 0,8	AA- / A+	A+ / A-	A- / BBB+	BBB+ / BBB-	BBB- / BB-	BB- / B
0,8 - 0,75	A	A / BBB+	A- / BBB	BBB / BB	BB+ / B+	B+ / B
0,75 - 0,7	A / A-	A- / BBB+	BBB+ / BBB-	BBB- / BB-	BB- / B	B+ / B-
0,7 - 0,65	A- / BBB+	A- / BBB	BBB / BB	BB+ / B+	B+ / B	B / B-
0,65 - 0,6	BBB+	BBB+ / BBB	BBB- / BB-	BB- / B+	B+ / B-	B- / CCC+
0,6 - 0,55	BBB+	BBB+ / BBB-	BBB- / BB-	BB- / B+	B / B-	B- / CCC+
0,55 - 0,5	BBB+	BBB / BBB-	BB+ / BB-	B+ / B	B / B-	B- / CCC+
0,5 - 0,45	BBB+ / BBB	BBB / BB+	BB+ / B+	B+ / B	B / B-	B- / CCC+
0,45 - 0,4	BBB / BBB-	BBB / BB-	BB- / B	B+ / B-	B- / CCC+	CCC+ / CCC+
0,4 - 0,35	BBB- / BB+	BB+ / B+	B+ / B	B / B-	B- / CCC+	CCC+ / CCC
0,35 - 0,3	BB / BB-	BB- / B	B+ / B-	B- / CCC+	CCC+ / CCC	CCC+ / CCC
0,3 - 0,25	BB- / B	B+ / B-	B / CCC+	B- / CCC	CCC+ / CCC	CCC / CCC-
0,25 - 0,2	B / B-	B / CCC+	B- / CCC	CCC+ / CCC	CCC / CCC-	CCC-
0,2 - 0,15	B- / CCC+	B- / CCC	CCC+ / CCC	CCC / CCC-	CCC-	CCC-
0,15 - 0,1	CCC+ / CCC	CCC+ / CCC	CCC / CCC-	CCC / CCC-	CCC-	CCC-
0,1 - 0,05	CCC / CCC	CCC / CCC	CCC / CCC-	CCC-	CCC-	CCC-
0,05 - 0	CC	CC	CC	CC	CC	CC

(Row label column: **PRELIMINARY RELIABILITY RATING**)