Methodology

Rating Companies in the Mining Industry

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Introduction to DBRS Methodologies

• DBRS publishes rating methodologies to give issuers and investors insight into the rationale behind DBRS's rating opinions.
• In general terms, DBRS ratings are opinions that reflect the creditworthiness of an issuer, a security or an obligation. DBRS ratings assess an issuer’s ability to make timely payments on outstanding obligations (whether principal, interest, preferred share dividends or distributions) with respect to the terms of an obligation. In some cases (e.g., non-investment grade corporate issuers), DBRS ratings may also address recovery prospects for a specific instrument given the assumption of an issuer default.
• DBRS rating methodologies include consideration of historical and expected business and financial risk factors as well as industry-specific issues, regional nuances and other subjective factors and intangible considerations. Our approach incorporates a combination of both quantitative and qualitative factors.
• The considerations outlined in DBRS methodologies are not exhaustive and the relative importance of any specific consideration can vary by issuer. In certain cases, a major strength can compensate for a weakness and, conversely, a single weakness can override major strengths of the issuer in other areas. DBRS may use, and appropriately weight, several methodologies when rating issuers that are involved in multiple business lines.
• DBRS operates with a stable rating philosophy; in other words, DBRS strives to factor the impact of a cyclical economic environment into its ratings wherever possible, which minimizes rating changes due to economic cycles. Rating revisions do occur, however, when more structural changes, either positive or negative, have occurred, or appear likely to occur in the near future.
• DBRS also publishes criteria which are an important part of the rating process. Criteria typically cover areas that apply to more than one industry. Both methodologies and criteria are publicly available on the DBRS website and many criteria are listed below under “Rating the Specific Instrument and Other Criteria.”
Overview of the DBRS Rating Process

- There are generally three components to the DBRS corporate rating process: (1) an industry risk rating (IRR); (2) an issuer rating; and (3) considerations for specific securities. The figure below outlines this process.
- An industry risk rating is a relative ranking of most industries that have a DBRS methodology, typically using just three ranges of the DBRS long-term debt rating scale (i.e., “A”, BBB and BB), without making use of the “high” or “low” descriptors. The IRR is a general indication of credit risk in an industry and considers, among other things, an industry’s: (1) profitability and cash flow; (2) competitive landscape; (3) stability; (4) regulation; and (5) other factors. An “industry,” for the purposes of the IRR, is defined as those firms that are generally the larger, more established firms within the countries where the majority of DBRS’s rated issuers are based; this remains true for DBRS methodologies that are more global in nature. The industry risk rating helps DBRS set the BRR grid (see below) in that it positions, in an approximate way, an average firm in the industry onto the BRR grid. For firms in industries with low IRRs, the IRR can, in effect, act as a constraint or “cap” on the issuer’s rating.
- The issuer rating is DBRS’s assessment of the probability of default of a specific issuer. It is a function of: (1) the business risk rating (BRR), determined by assessing each of the primary and (where relevant) additional BRR factors in the BRR grid for a specific issuer; and (2) the financial risk rating (FRR), determined by assessing each of the primary and (where relevant) additional FRR metrics. The two components, BRR and FRR, are combined to determine the issuer rating; in most cases the BRR will have greater weight than the FRR in determining the issuer rating. Throughout the BRR and FRR determination process, DBRS performs a consistency check of the issuer on these factors against the issuer’s peers in the same industry.
- The issuer rating is then used as a basis for specific instrument ratings. DBRS assigns, for example, a recovery rating and notches up or down from the issuer rating to determine a specific instrument rating for instruments of non-investment grade corporate issuers. (See “Rating the Specific Instrument and Other Criteria” below.)

DBRS Rating Analysis Process

- Industry Risk Rating
- Business Risk Rating
  - Primary BRR Factors
  - Additional BRR Factors
- Financial Risk Rating
  - Primary FRR Metrics
  - Additional FRR Metrics
- Issuer Rating
- Instrument Rating

* Depending on the instrument, “other criteria” may include the recovery methodology for non-investment grade issuers or the preferred share and hybrid criteria, for example. Please refer to the section below entitled “Rating the Specific Instrument and Other Criteria” for a list of these criteria, as well as other criteria that may be applicable at any stage of the rating process.
Mining Industry

• The mining industry includes companies involved in the exploration, development, extraction, processing, refining and sale of minerals and coal.
• Per the three-tier IRR system described on the previous page, the mining IRR is BBB. Given the volatility of the industry, it is rare that a mining company will achieve a rating in the AA range.
• The mining industry is capital intensive with the need for large upfront investments before production is achieved. Mineral reserves are considered to be depleting (primarily through production) and require replenishment, which often means ongoing significant investment to maintain productive capacity.
• The mining industry is characterized by: (1) persistent demand for basic mineral commodities driven by population growth, societal wealth increases and the industrialization and urbanization of developing countries, such as China; (2) high earnings volatility driven by economic cycles; (3) significant barriers to entry, including resource discovery, long lead times for development and high capital costs; (4) a high degree of regulation that is concerned with environmental, health and safety compliance; (5) relatively low and slowly evolving risk of substitution of most mineral commodities; and (6) often high political risk, ranging from changes in taxation or royalty frameworks to difficult licensing processes, social unrest or expropriation, particularly when mines are located in less politically stable countries.
• While some mined commodities face substitution risk (e.g., plastics are increasingly replacing metals in cars and other products), the threat of obsolescence of most commodities is low. Over the short to medium term, supply and demand imbalances can drive volatility in commodity pricing although this pricing volatility can be moderated in certain sectors where production is concentrated in the hands of a leading producer that can voluntarily reduce production to maintain pricing stability (potash, diamonds or platinum group metals, for example).
• Mining exploration, development, extraction, processing, refining and shipping use a wide variety of often sophisticated technologies. Although the use of these technologies is important to productivity and costs, they are generally available through the purchase of specific equipment or via licensing; therefore, mining operations are considered at relatively low risk to changing technology.
• As is the case with the oil and gas (O&G) industry, reserves are the key source of earnings and cash flow. Reserve grade, capital costs to start production, the required mining method, extraction costs, access to transportation and the degree of vertical integration of processing all affect costs. Low cost producers (below the 50th percentile on the industry cost curve) have the most secure profitability.
• Mining industry operating margins are higher than average industry margins because of high capital intensity, the need for large upfront investments and higher-than-average investment risk, which lead to a high cost of capital. A high cost of capital demands higher average returns over the long run; however, the distribution of profitability through the supply chain can vary (e.g., margins are currently low for the refining of certain minerals).
• While most commodities are generally global markets with one price, regional markets or premiums may develop in response to the high proportion of transportation or other costs as in the cost structure of certain bulk minerals.
• Mining encounters higher-than-average industry regulation. Regulation concerned with environmental factors related to mine development and, in some cases, with product usage are increasing. Mining often disturbs a significant land area, leading to restrictions related to multiple use of land (for parks, urban or recreational development, O&G activities, agriculture, forestry, etc.), which can increase costs or prohibit mining outright. Mine development and operation attract public attention and have a high social impact, often resulting in organized public opposition and requiring the agreement of local populations. Mine decommissioning is subject to often costly closure and reclamation requirements.
• Political risks are higher in the mining industry as minerals have to be mined where they are found. Many new mine developments are in unstable political jurisdictions with ill-defined legal and regulatory systems. Royalties and taxes are sources of income to governments in need of revenue. In addition, the government-mandated in-country processing requirements (e.g., labour force utilization, community infrastructure, etc.) can lead to further regional benefits at the expense of production costs.
Mining Business Risk Rating

**PRIMARY BRR FACTORS**

- The BRR grid below shows the primary factors used by DBRS in determining the BRR. While these primary factors are shown in general order of importance, depending on a specific issuer’s business activities, this ranking can vary.

### Mining - Primary BRR Factors

<table>
<thead>
<tr>
<th>Rating</th>
<th>AA</th>
<th>A</th>
<th>BBB</th>
<th>BB</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reserves of Core Operations</strong></td>
<td>Very long reserve life at existing production rates for key products.</td>
<td>Well above average reserve life at existing production rates for key products.</td>
<td>Reserve life at existing production rates for key products would range from average to above average.</td>
<td>Relatively short reserve life at existing production rates for key products.</td>
<td>Short reserve life at existing production rates for key products.</td>
</tr>
<tr>
<td><strong>Cost Competitiveness</strong></td>
<td>Most operations are very low cost (first-quartile cost on industry cost curve).</td>
<td>Operations are primarily a combination of first- or second-quartile cost.</td>
<td>Average operation is second-quartile cost or better.</td>
<td>Most operations are third- or fourth-quartile cost.</td>
<td>Most operations are very high cost (fourth-quartile on industry cost curve).</td>
</tr>
<tr>
<td><strong>Size and Critical Mass</strong></td>
<td>Very large size able to withstand multiple project development risks and able to access people, resources and technologies.</td>
<td>Large size able to withstand large project development risks and able to access people, resources and technologies.</td>
<td>Mid-size able to withstand moderate scale project development risks and able to access most people, resources and technologies.</td>
<td>Small size with concerns over ability to withstand development project risks and with potential challenges in accessing people, resources or technologies.</td>
<td>Moderate size able to withstand smaller project development risks with potential challenges in accessing people, resources or technologies.</td>
</tr>
<tr>
<td><strong>Diversification</strong></td>
<td>Very well diversified by product, production location, political jurisdiction and pricing format.</td>
<td>Good diversification by product, production location, political jurisdiction and pricing format. (i.e., spot market-based pricing versus weekly, monthly, annual or other contract-based pricing format).</td>
<td>Several products and/or several production locations, plus multiple political jurisdictions.</td>
<td>Few products and/or few production locations.</td>
<td>Reliance on single commodity or single production location.</td>
</tr>
<tr>
<td><strong>Political Risk</strong></td>
<td>Almost all production from countries considered stable/friendly to mining.</td>
<td>Most of production from countries considered stable/friendly to mining.</td>
<td>Majority of production from countries considered stable/friendly to mining.</td>
<td>Most of production from countries not considered stable/friendly to mining.</td>
<td>Heavily reliant on production from countries not considered stable/friendly to mining.</td>
</tr>
</tbody>
</table>

The following BRR risk factors are relevant to issuers in all industries (although the relevance of sovereign risk can vary considerably):

**Sovereign Risk**

The issuer rating may, in some cases, be constrained by the credit risk of the sovereign; in other words, the rating of the country in which the issuer operates generally sets a maximum rating for the issuer. If the issuer operates in multiple countries and a material amount of its business is conducted in a lower-rated country, DBRS may reflect this risk by downwardly adjusting its issuer rating.

**Corporate Governance**

Please refer to [DBRS Criteria: Evaluating Corporate Governance](#) for further information on how DBRS evaluates corporate governance and management.
ADDITIONAL BRR FACTORS

- The additional BRR factors discussed below may be very important for certain issuers, depending on their activities, but they do not necessarily apply to all issuers in the industry.

_Growth Strategy_
- Growth by acquisition is considered more risky than growth through the development of internally held properties (organic growth).
- Appropriate valuation of acquired assets is difficult and acquisitions may be the result of bidding wars.
- Integration of operations and business cultures is difficult and expected synergy may not be realized.

_Management of Controllable Risks_
- Hedging of future product prices can reduce risks, particularly for new operations that are built based on economics with a specified revenue base.
- Hedging the future cost of key input materials through upstream integration or financial instruments reduces earnings volatility.
- Hedging foreign exchange and interest rate risks reduces earnings volatility.
- Providing insurance programs to mitigate the impact of the potential destruction of key assets or the cost of unforeseen business interruption can reduce earnings volatility.
Mining Financial Risk Rating

PRIMARY FRR METRICS

• The FRR grid below shows the primary FRR metrics used by DBRS to determine the FRR. While these primary FRR metrics are shown in general order of importance, depending upon an issuer’s activities, the ranking can vary by issuer.
• DBRS ratings are primarily based on future performance expectations, so while past metrics are important, any final rating will incorporate DBRS’s opinion on future metrics, a subjective but critical consideration.
• It is not unusual for a company’s metrics to move in and out of the ranges noted in the grid below, particularly for cyclical industries. In the application of this matrix, DBRS looks beyond the point-in-time ratio.
• Financial metrics depend on accounting data whose governing principles vary by jurisdiction and, in some cases, industry. DBRS may adjust financial statements to permit comparisons with issuers using different accounting principles.
• Please refer to DBRS Criteria: Financial Ratios and Accounting Treatments – Non Financial Companies for definitions of, and common adjustments to, the ratios in the FRR grid below.
• Liquidity can be a material risk factor, especially for lower-rated, non-investment grade issuers. DBRS will consider, in determining FRR, available sources of liquidity including cash on hand, cash flow, access to bank lines, etc., as well as uses of liquidity such as operations, capital expenditures, share buybacks and dividends.
• While market pricing information (such as market capitalization or credit spreads) may on occasion be of interest to DBRS, particularly where it suggests that an issuer may have difficulty in raising capital, this information does not usually play a material role in DBRS’s more fundamental approach to assessing credit risk.

Mining - Primary FRR Metrics

<table>
<thead>
<tr>
<th>Primary Metric</th>
<th>AA</th>
<th>A</th>
<th>BBB</th>
<th>BB</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flow-to-debt</td>
<td>&gt; 75%</td>
<td>45% to 75%</td>
<td>30% to 45%</td>
<td>15% to 30%</td>
<td>&lt; 15%</td>
</tr>
<tr>
<td>Debt-to-EBITDA</td>
<td>&lt; 0.75x</td>
<td>0.75x to 1.5x</td>
<td>1.5x to 2.5x</td>
<td>2.5x to 3.5x</td>
<td>&gt; 3.5x</td>
</tr>
<tr>
<td>EBITDA-to-interest</td>
<td>&gt; 25.0x</td>
<td>15.0x to 25.0x</td>
<td>7.5x to 15.0x</td>
<td>2.5x to 7.5x</td>
<td>&lt; 2.5x</td>
</tr>
<tr>
<td>EBIT-to-interest</td>
<td>&gt; 20x</td>
<td>10.0x to 20.0 x</td>
<td>5.0x to 10.0x</td>
<td>2.0x to 5.0 x</td>
<td>&lt; 2.0x</td>
</tr>
<tr>
<td>Debt-to-capital</td>
<td>&lt; 20%</td>
<td>20% to 35%</td>
<td>35% to 45%</td>
<td>45% to 60%</td>
<td>&gt; 60%</td>
</tr>
</tbody>
</table>

ADDITIONAL FRR METRICS

• The primary FRR metrics above will be the most important metrics that DBRS will use in determining the FRR of an issuer, but other metrics may be used, depending on an issuer’s activities, capital structure, pension liabilities and off-balance sheet obligations.
• Profitability, particularly in the medium term, can be an important differentiator of credit risk. DBRS may assess profitability through a variety of metrics, including margin analysis and return on capital.
• While free cash flow (i.e., net of changes in working capital, dividends and capex, etc.) can be volatile and negative on occasion, DBRS may use this and/or other cash flow metrics to assess a company’s ability to generate cash to repay debt.
• Given the volatility of commodity prices and the sensitivity of demand to economic cycles, mining is among the most cyclical of industries and financial metrics can vary widely throughout the cycle. It is the nature of this industry that the top-of-cycle company financial metrics will often appear exceptionally strong, while the opposite occurs at the bottom of the cycle. Because of this, the weighting of FRR metrics compared with BRR factors is even lower for mining companies relative to other industries, especially for investment-grade issuers.
Blending the BRR and FRR into an Issuer Rating

• The final issuer rating is a blend of the BRR and FRR. In most cases, the BRR will have greater weight than the FRR in determining the issuer rating.
• At the low end of the rating scale, however, particularly in the B range and below, the FRR and liquidity factors play a much larger role and the BRR would, therefore, typically receive a lower weighting than it would at higher rating levels.

Rating the Specific Instrument and Other Criteria

• For non-investment grade corporate issuers, DBRS assigns a recovery rating and reflects the seniority and the expected recovery of a specific instrument, under an assumed event of default scenario, by notching up or down from the issuer rating in accordance with the principles outlined in the criteria DBRS Recovery Ratings for Non-Investment Grade Corporate Issuers.
• Preferred share and hybrid considerations are discussed under Preferred Share and Hybrid Criteria for Corporate Issuers (Excluding Financial Institutions).
• The issuer rating (which is an indicator of the probability of default of an issuer’s debt) is the basis for rating specific instruments of an issuer, where applicable. DBRS uses a hierarchy in rating long-term debt that affects issuers that have classes of debt that do not rank equally. In most cases, lower-ranking classes would receive a lower DBRS rating. For more detail on this subject, please refer to the general rating information contained in the DBRS rating policy “Underlying Principles.”
• For a discussion on the relationship between short- and long-term ratings and more detail on rating factors, please refer to the DBRS policy “Short-Term and Long-Term Rating Relationships” and DBRS Criteria: Commercial Paper Liquidity Support Criteria for Corporate Non-Bank Issuers.
• The existence of holding companies can have a meaningful impact on individual security ratings. For more detail on this subject, please refer to the criteria Rating Holding Companies and Their Subsidiaries.
• Guarantees and other types of support are discussed in DBRS Criteria: Guarantees and Other Forms of Explicit Support.
• For further information on how DBRS evaluates corporate governance, please refer to DBRS Criteria: Evaluating Corporate Governance.
• Please refer to DBRS Criteria: Financial Ratios and Accounting Treatments – Non Financial Companies for definitions of, and common adjustments to, these ratios.