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# Metals and Mining Rating Methodology

Corporates


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## 1. Introduction

This methodology details Scope Ratings' approach to rating metals and mining companies and complements the General Corporate Rating Methodology.

Metals and mining companies are entities that generate most of their revenue and cash flow from one or more of the following activities: the mining of metals and minerals; the collection and recycling of scrap for metal production; the smelting and refining of metals; the processing of metals into semi-finished, finished or engineered metal products; as well as the distribution and physical trade in metals and minerals. These criteria are applicable globally.

**Key changes to the methodology**

This proposed methodology update contains the following adjustments:

- Renaming the ratio that is currently called Return on Capital Employed, to Return on Assets, to more clearly reflect the components utilized to calculate the ratio, as well as its main purpose
- Editorial changes

## 2. The metals and mining industry

Metals and mining companies rated under these criteria can be broadly divided into five categories. It is common for companies to be vertically integrated and appear in more than one of the below segments.

**Mining**

Mines typically have a very long lifespan from initial prospecting to development and extraction and finally, to reclamation and restoration of the mine. A new mining project can easily take over 10 years from the discovery of an ore deposit to commissioning. Mining is a capital-intensive process, and the extraction and processing of metals and minerals containing ore from the earth's crust is typically done through either open pit or underground mines, together with adjacent ore processing facilities. The economics of a mine depends largely on the ore grade and the presence of valuable by-products in the ore; the size and depth of the ore body; the presence of water, electricity, and transportation systems near the mine; as well as tax and royalty regimes. A mining company is normally fully exposed to the price of its commodity, although the price impact in the short term can be hedged in the futures market or through off-take agreements.

**Smelting and refining**

Smelting and refining can take place either close to the mine, in areas with abundant and cheap sources of electricity (e.g. hydropower) or close to the end-markets of the refined commodity. Aluminium smelters are typically located close to the source of electricity due to the high power-intensity of the refining and smelting process. Steel plants are usually located either close to sources of iron ore or steel scrap, or close to end-markets. Like in mining, revenue and earnings can be volatile in smelting and refining, although margins are lower and less volatile than for pure-play mining companies. The age and technology of both plant and equipment can have a significant impact on costs in this segment. In some cases, producing metal from scrap can have advantages (cost, flexibility) over the production of primary metal.

**Metal processing**

The processing of metal is a margin business that typically takes place close to the end-market of the product or is integrated with a steel mill, for example. Metal processors normally produce output to order and can manage the price risk exposure through contracts with suppliers and customers or through hedging. Margins are therefore low, but relatively stable. Volume risk can be mitigated through long-term supply contracts for some products, whilst other are spot-traded. Margins are typically higher for value-added products, such as alloyed or engineered products.

**Distribution and trading**

A large part of the globally traded metal is bought and sold via intermediaries. Whenever possible, metal producers, however, prefer to develop relationships directly with end-customers, thereby generating more stable business and higher prices and margins. Some of the major steel producers have their own distribution businesses that sell both own and third-party

products. Whereas a distributor will hold significant stocks of metal, a pure trader typically only holds pre-sold or hedged inventory. The trader normally enters into back-to-back trades between suppliers and customers of metals and minerals, and may also arrange the financing and transportation of the material from the supplier to the customer. Distributors and traders may own logistics assets (warehouses, storage facilities, vessels, vehicles, etc.) that allow them to generate additional value. The trader is rarely exposed to price risk (apart from basis risk) but remains exposed to operational and counterparty risks. Margins are therefore very thin, but stable (unless the trader takes speculative positions).

**Scrap collection and recycling**

These businesses are normally located in areas of high consumption of metals that offer a large and consistent supply of scrap, predominantly steel, copper and aluminium. Some steel and aluminium producers have their own captive scrap collection and recycling business to cover their need for raw materials. Some countries generate more scrap than they consume, such as Germany, the Netherlands, and the European Union as a whole, making them large exporters of scrap.

Metals and minerals are generally considered commodity products with limited differentiation and in which brands are non-existent. Producers may still compete based on reliability of supply and short delivery times. Ores differ based on their metal content. Processed metal products can be differentiated, with alloyed and engineered products commanding significant premiums to commodity grades. Certain industries require very high precision in the composition of materials and the reliability of supplies, such as aviation or automotive, and therefore have strict pre-qualification requirements for their suppliers.

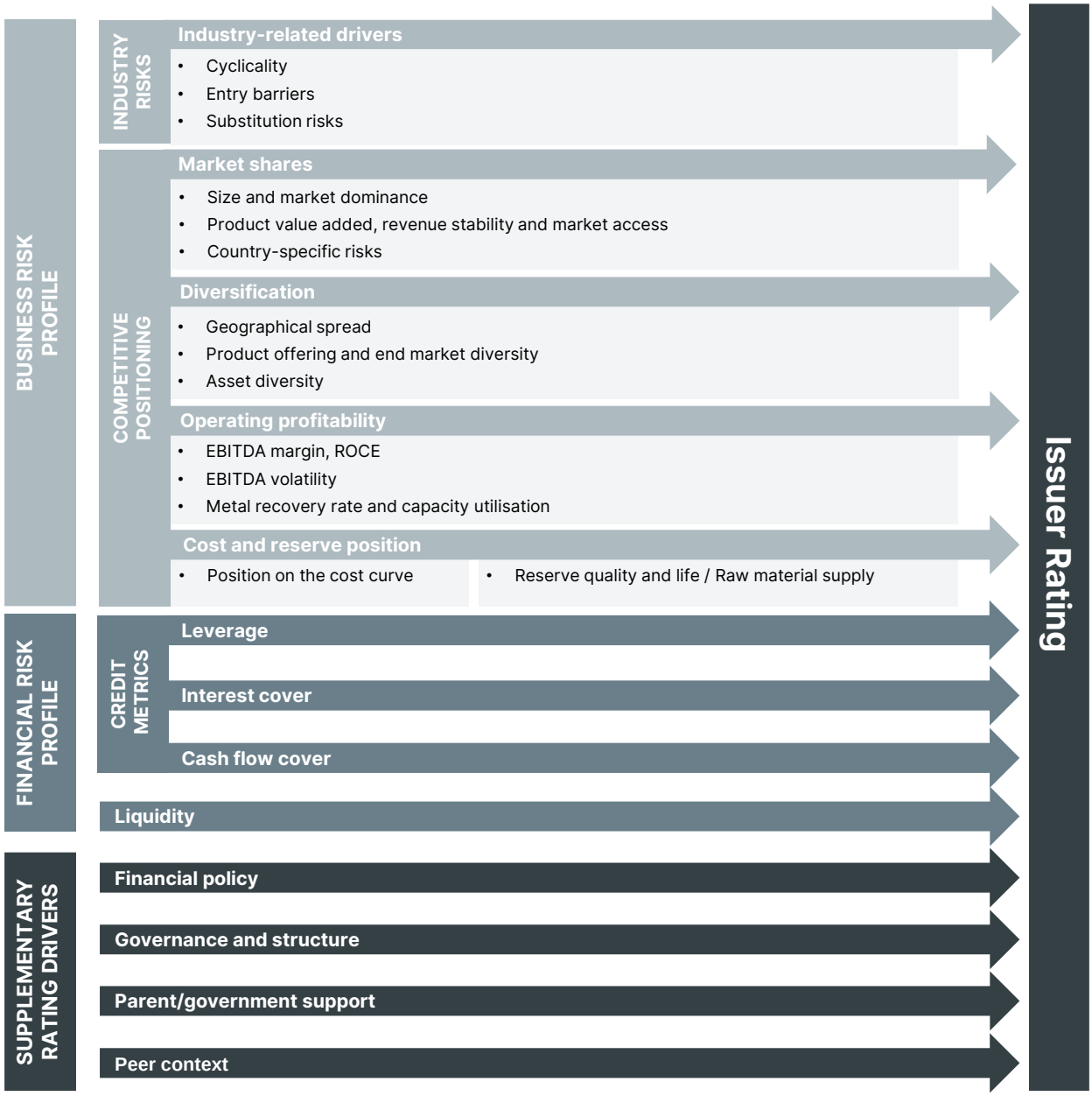
Cost position is central to success in the industry. A strong balance sheet and liquidity position are important to manage cyclical swings and the long lead time to develop new mines and processing plants. Size and diversity are additional key rating drivers, providing economies of scale and helping to mitigate single-asset and country risks.

Industry concentration is higher upstream (mining, smelting and refining) than downstream, but with minor price-setting capacity even by the largest producers due to the commoditised nature of the industry.

## 3. Rating Drivers

We apply our rating methodology for metals and mining corporates as outlined in Figure 1. The rating analysis specific to this sector addresses factors common to all industries such as management, liquidity, legal structure, governance and country risks. The following business risk and financial risk indicators are non-exhaustive and may overlap; some may not apply to certain corporates. We may add issuer-specific rating factors, and a company's business model is decisive for the applicable indicators. No rating driver has a fixed weight in the assessment. Please refer to the General Corporate Rating Methodology for more detail.

**Figure 1: General rating grid on metals and mining corporates**



## 3.1 Business risk profile assessment

### 3.1.1 Industry-related drivers

The metals and mining industry is highly cyclical, with significant volatility in revenue, earnings, cash flow and leverage metrics over a cycle. The industry faces significant entry barriers as it is highly capital-intensive (with significant variation across the value chain). Technology, product quality, reliability of supplies, customer acceptance, strict environmental standards and regulatory approvals also contribute to these entry barriers.

Three elements constitute our assessment of the industry fundamentals of metals and mining corporates:

1. Cyclicality
2. Entry barriers
3. Substitution risks

**Cyclicality**

The metals and mining industry is highly cyclical. The demand for products is closely linked to general economic growth rates. Many end-user segments for metals and mining products are cyclical, including automotive, capital goods, building materials, and engineering and construction. The materials are used to a large extent in the production of discretionary consumer and capital goods. Lead times for new investments in metals and mining processing facilities are very long, which tends to add to overcapacity at cyclical lows and product shortages at cyclical highs. This amplifies the industry cyclicality and results in high volatility in market prices for metals and minerals over an economic cycle. Minor metals that are derived only as a by-product in the mining of major metals can experience extreme price swings, since the supply of these metals is dependent on the pace of mining of another metal and does not itself adjust to the demand. Macroeconomic developments also drive changes in exchange rates, energy prices and freight rates, all of which can have a significant effect on the cost position and profit margins of a metals or mining processing operation. The impact of industry cyclicality will be higher upstream than downstream, given the higher investment requirements and longer investment lead times in mining.

**Entry barriers**

The industry's high capital-intensity and long lead times for new investments provide for substantial barriers to entry, particularly in the upstream segments. High-grade mine resources are also increasingly scarce and often located in remote areas, lacking in electricity, water or skilled labour, and in countries or regions with a high country risk (political instability, less developed legal and regulatory systems, etc.).

Entry barriers to metal processing are generally a function of the technological complexity and value-added nature of the process, the importance of economies of scale, as well as quality assurance and just-in-time delivery. Trade barriers, such as tariffs, duties and anti-dumping legislation are also important when we assess country risk and entry barriers. Geographical proximity of a company's assets and its customers lowers the risk of trade barriers and the cost of transportation.

Consequently, we assess entry barriers as medium (upper end) for the industry as a whole.

**Substitution risk**

Substitution risk levels differs from product to product, with plastic replacing glass and metal in packaging, aluminium replacing steel in motor vehicles, thermal coal giving way to cleaner fuel alternatives, palladium increasingly replacing platinum in catalytic converters, for example. The substitution risk is considered low for the industry as a whole, however, with most metals and minerals seeing a growth in demand over the long term.

The increasing focus on sustainability has significant implications for the industry and the risk of substitution. Certain products, such as thermal coal or uranium, are becoming less likely to be mined, whilst others, such as metals and minerals used in renewable energy technologies or natural building materials, are likely to see increased demand. Metals and minerals are also likely to be sourced closer to end-markets, given the high cost and negative environmental impact of transporting products over long distances. Common building environmental certifications, such as BREEAM, require that stones are sourced from quarries close to the construction site. Technologies are also evolving, providing more efficient and

environmentally friendly ways of mining and refining metal, such as mining and processing mechanisation and digitalisation, inert anode technology in the production of aluminium, and the use of dry tailings technology to avoid tailings dam disasters.

**Figure 2 – Scope's industry risk assessment for the metals and mining industry**

| Cyclicality \ Entry barriers | Low | Medium | High |
|---|---|---|---|
| High | CCC/B | B/**BB** | BB/BBB |
| Medium | B/BB | BB/BBB | BBB/A |
| Low | BB/BBB | BBB/A | A/AA |

Source: Scope Ratings

### 3.1.2 Competitive positioning

We assess the competitive position of metals and mining companies by examining the following business risk drivers:

1. Market position
2. Diversification
3. Profitability and operating efficiency
4. Cost and reserve position

Our assessment of each business risk driver is shown in Figures 3 to 6. The main default drivers (cost and reserve position; profitability and operating efficiency) have a more granular assessment at the lower end of the rating scale than the other two risk drivers (market position and diversification).

**Market shares**

A strong market share in a particular metal or product category is seen as positive but given the commoditised nature of the industry, even the largest players are price-takers. Benefits of a strong market share typically include economies of scale, greater flexibility to adjust overall production and capacity to fluctuations in demand, better control over distribution channels, greater purchasing power with key suppliers, greater capacity to invest in R&D and to capture organic or inorganic growth opportunities. Smaller companies may still have a strong regional or niche market position or may be better able to serve nearby customers with smaller batches of specialised products in a timely manner.

**Figure 3 – Market shares by rating category**

| | A and above | BBB | BB | B and below |
|---|---|---|---|---|
| Turnover | > EUR 10bn | EUR 1bn to EUR 10bn | EUR 100m to EUR 1bn | < EUR 100m |
| Market dominance | Top five global producer in chosen metals, market dominance | Top 20 global producer in chosen metals, or strong global niche market position or regional market dominance | Dominant local market position, or small player in global market | Domestic/local player |
| Product value-added* | High share of specialised or high value-added alloyed or engineered products | | Basic commodity products or low value-added | |
| Revenue stability and market access | High share of long-term customer contracts, with cost pass-through mechanisms where necessary. Large orderbook (>1 year of production) | | Mostly spot market sales | |
| | Mines or processing plants close to end-markets, often within the same country or customs union; good transport links to end-markets; direct customer relationships; own distribution or retail network, or branded products | | Mines and processing plants far from end-markets and subject to import restrictions in the destination countries; transport links are constrained, unreliable or subject to significant swings in freight costs over a cycle; high dependency on distributors | |
| Regulatory, legal and political risk | Neutral: assets mostly located in low-risk regions/countries (for example, the European Union, the United States, Canada or Australia) | | Negative: assets located in high-risk countries/regions | |

* Relevant to steel and aluminium production and metals processing where value is added to the material through alloying, rolling, extrusion, heat treatment, coating, etc. Source: Scope Ratings

Higher value-added or customised products typically provide higher margins, lower competition, stronger and more durable customer relationships. Some industries and product segments with high requirements in terms of product quality and reliability of supply require suppliers to meet strict pre-qualification requirements. These segments' suppliers may benefit from long-term contracts, higher margins and greater stability in demand. The level of value added is normally measured by comparing revenue per tonne of producers of similar products.

Captive distribution companies or trading businesses help with market access. Direct customer relationships are beneficial since they lead to higher margins and deeper, more stable and longer customer relationships.

Regulatory, legal and political risks can be important rating factors for metals and mining companies, particularly for entities exposed to a single country. Our assessment focuses on the stability of political systems and institutions; the sophistication and transparency of legal systems and regulatory frameworks; trade policy and the history of trade disputes and barriers; transparency and predictability around tax and royalty regimes; workforce unionisation; the history of labour disputes and strike action; economic prosperity (GDP/capita); and growth prospects. This rating factor is scored neutral or negative, with a neutral assessment indicating no material risk factors, or sufficient geographic diversification to mitigate country-specific risks. We assess country risk based on World Bank data (see Governance Risk under Sovereign Rating Methodology) and our observations of risks facing an issuer. The level of rating impact is determined by the likelihood of the risks materialising, the damage they could inflict on the business, and the disparity between the issuer rating with and without such risks materialising.

**Diversification**

We assess diversification in the metals and mining industry across three dimensions: i) geography; ii) product offering and end-markets; and iii) assets.

**Figure 4 – Diversification by rating category**

| | A and above | BBB | BB | B and below |
|---|---|---|---|---|
| Geographical | No single country accounting for more than one-third of earnings* | No single country accounting for more than half of earnings | Operations in more than one country, but high dependency on a single jurisdiction | Single country operator |
| Product offering and end-markets | Highly diversified product slate. No single metal or mineral accounts for more than one-third of earnings*. High end-market diversity | Producer of several metals or minerals with different end-markets. No single metal accounts for more than half of earnings | Producer of at least two metals or minerals with different end-markets | Single metal/mineral producer or refiner |
| Assets | No single mine or processing plant accounts for more than one-third of earnings* | No single mine or processing plant accounts for more than half of earnings | Multiple mines or processing plants, but with high dependency on a few assets | Single mine or processing plant operator |

* Measured by EBIT, EBITDA or net profit. In case a split by earnings is not available, we can also use revenue or asset value. Source: Scope Ratings

The location of a company's assets is central to assessing geographical diversification. Country risk is typically high in the mining industry, and this risk can be effectively mitigated through diversification across multiple countries. The imposition of trade barriers or changes in taxation or royalty regimes can happen overnight and significantly change the economics of a metals and mining company.

Diversification across multiple metals is also beneficial, since this provides more options in managing the asset mix over time by investments focused on metals with the greatest long-term growth potential. The price of most metals tends to follow economic cycles, however, so diversity is less effective in reducing portfolio cyclicality.

Customer concentration is rarely an issue for large global metals and mining companies but can be a negative rating factor for smaller regional players, where the competitive advantage lies in proximity to clients. End-market diversity can be important since economic cycles may impact different industries in different ways. For example, Covid-19 has driven down the demand for new cars and airplanes, but less so for metals used in the food, pharmaceutical and construction industries. Overreliance on any one end-market or client will therefore be seen as a potential risk factor. Customer diversity is considered a supplementary rating factor since this information is not always readily available.

Asset diversity is very important, since operational issues with one single mine or processing plant are quite common in the industry.

**Operating profitability**

We use EBITDA margin as the primary measure of profitability and operating efficiency for metals and mining companies. However, since the level of the EBITDA margin vastly differs for the different activities that metals and mining companies undertake (given different levels of capital-intensity), we also look at the return on assets (ROA) to facilitate a comparison across the entire spectrum of companies covered by this methodology. We assess the volatility in EBITDA, which is primarily driven by fluctuations in prices and volumes; foreign exchange rates; and the cost of fuel, chemicals and other raw materials used in the mining or production process. Our analysis also considers hedging activities to mitigate some of this volatility. We favour variable cost structures (such as a steel mini-mill versus a blast furnace operation), the ability to adapt to market conditions during downturns, as well as the ability to continuously reduce operating costs through productivity measures. Average volatility has a neutral impact on the overall profitability and operating efficiency assessment, whereas very high or low volatility compared to industry peers may result in a one-notch upward or downward adjustment of the score.

**Figure 5 – Operating profitability and operating efficiency by rating category**

| | A and above | BBB | BB | B | CCC and below |
|---|---|---|---|---|---|
| Mining^ | > 35% | 25 to 35% | 15 to 25% | < 15% | Recurring EBITDA insufficient to cover maintenance capex and interest payments |
| Smelting and refining^ | > 15% | 10 to 15% | 6 to 10% | < 6% | |
| Processing^ | > 10% | 7 to 10% | 4 to 7% | < 4% | |
| Distribution^ | > 4% | 3 to 4% | 2 to 3% | < 2% | |
| EBITDA volatility* | Below average | | Above average | | Top 5% |
| ROA** | > 9% | 6 to 9% | 3 to 6% | 0 to 3% | < 0% |
| Operating efficiency | Neutral: modern plant and equipment, power stations, transportation infrastructure, etc; high standards in terms of efficiency, environmental footprint and health and safety; tried and tested mining and processing methods | | Negative: aged plant and equipment, power stations, transportation infrastructure, etc., which require significant investment to maintain adequate standards in terms of efficiency, environmental footprint and health and safety | | Very negative: plant and equipment at the end of their economic life |

^ EBITDA margin.

* Measured by the coefficient of variance.

** ROA is defined as Scope-adjusted EBIT divided by total assets. Scope typically considers a long-term average (five years or more) when assessing profitability measures. Source: Scope Ratings

Operating efficiency is measured by the age of the plant and equipment, the technology used in ore and metal processing and the level of mechanisation in the mining process; it can be quantified in terms of capacity utilisation of plant and equipment or ore/metal recovery rates. Reliable plant and equipment operating at a high level of capacity utilisation as well as high recovery rates in ore processing will result in a high score in this assessment. Complex ore bodies can require frequent and costly adjustments or modifications to ore-processing equipment, which may negatively affect recovery rates,

production volumes and mine economics. Underground mining is more complex and expensive than open-pit mining, and more at risk of unforeseen geological conditions, operational disruption or mine accidents. Larger and more diverse companies typically have a greater flexibility in operations and have the option of temporarily closing some plants and furnaces when demand is lower and restarting the facilities when demand recovers. This rating factor is scored neutral, negative or very negative, with a neutral assessment indicating no material risk factors or sufficient asset diversification to mitigate asset-specific risks. A negative assessment will typically lower overall profitability and operating efficiency assessment by at least one notch and a very negative assessment by several notches. When determining the number of notches, we consider the extent to which the weak operating efficiency is already reflected in the other profitability metrics.

Metals and mining operations with good environmental, health and safety standards are often synonymous with high efficiency.

**Cost and reserve position**

**Figure 6 – Cost and reserve position by rating category**

<table>
<tr><th></th><th>A and above</th><th>BBB</th><th>BB</th><th>B</th><th>CCC and below</th></tr>
<tr><td>Position on cost curve*</td><td>First quartile</td><td>Second quartile</td><td>Upper third quartile</td><td>Lower third or upper fourth quartile</td><td>Lower fourth quartile</td></tr>
<tr><td>Reserve life**</td><td>> 20 years</td><td>10 to 20 years</td><td>5 to 10 years</td><td>2 to 5 years</td><td>< 2 years, and low replacement ratio</td></tr>
<tr><td>Reserve quality**</td><td colspan="2">Mines are mostly surface or open pit. Reserves are uniform with stable ore grades and geology, well understood, and unlikely to require change in extraction method over time. Reserves are largely developed. Good track record in reserve replacement</td><td colspan="2">Mines are mostly deep underground and reserves are complex, not well understood and/or may require change in mining method and/or processing plant and equipment over time. Reserves are largely undeveloped.</td><td>Very high cost and complex reserves</td></tr>
<tr><td rowspan="2">Raw material supply</td><td colspan="2">Reliable and readily available feedstocks and other raw materials, including electricity, water, and chemicals. No over-dependency on any one supplier</td><td colspan="2">Unreliable or costly supply of feedstocks and other raw materials, including electricity, water, and chemicals. Water or electricity supply may be subject to meteorological conditions</td><td rowspan="2">Very high risk of disruption to critical feedstocks</td></tr>
<tr><td>Fully integrated from mining to refining and processing. Captive power supplies</td><td>Significant backward integration</td><td>Partial vertical integration, part of ore supplied from own mines or scrap sourced through own network</td><td>Limited or no vertical integration, with high reliance on third-party vendors for key inputs</td></tr>
</table>

* The cost curve shows cost per tonne of production on one axis and cumulative quantity of production on the other. The cost curve may sometimes be based on incomplete data and estimates. When a cost curve is not available, this assessment is substituted by the profitability assessment.

** Relevant only to mining. Source: Scope Ratings

Given the commoditised nature of the metals industry, cost and reserve position are normally the most important rating drivers for metals and mining companies. The cost position of a mine depends largely on the ore grade and presence of valuable by-products in the ore; the size (mine life); the depth and complexity of the ore body; the presence of water, electricity, and transport systems near the mine; as well as tax and royalty regimes. The cost position in smelting, refining or processing of metals is more a function of the age and technology of the plant and equipment, location, access to cheap energy and other raw materials including the ore.

Reserve life is important in mining, since this is a measure of the sustainability of cash flow over the long term. When considering reserve life, we focus on proven and probable reserves. It is also important to understand the cost position of the reserves since this will impact future profitability, and the extent to which reserves are developed since undeveloped reserves require capital expenditure outlays and time to bring to production. The remaining life and likelihood of the renewal of permits and licenses can also be a consideration.

Ore bodies are not always uniform and well surveyed. This can result in surprises, such as sudden changes in ore grades and characteristics, which may require costly changes in mining or ore-processing methods, or in a worst-case scenario render a mine uneconomical.

Many metals and mining companies rely on a single utility provider for their entire power or water supply. In these situations, it is critically important to maintain a good working relationship with the supplier, as the stability of the mining operations or of the processing plant depends on the utility supply. Similarly, a processing plant may be configured to process a very specific ore grade, without which the plant may be rendered worthless.

A vertically integrated operator has greater control over the value chain from mining to distribution. This can reduce many risk factors, for example, those related to ore or power supply, processing and market access.

#### 3.1.3 Financial risk profile

Our assessment of a metal and mining company's financial risk profile follows the general guidance in our General Corporate Rating Methodology. We focus on recent and forward-looking financial data. Key parameters include leverage, interest cover and cash flow. Liquidity is also assessed and is central to our analysis of non-investment grade issuers.

The financial risk profile indicates a company's financial flexibility and viability in the short to medium term. A company with a strong financial risk profile is more likely to be resilient to economic downturns, adverse industry dynamics, unfavourable regulation or an unexpected loss of a revenue source. The ability to retain financial flexibility during an economic downturn is a rating driver for metal and mining companies as it indicates an ability to invest at all phases of the economic cycle.

#### 3.1.4 Credit metrics

Our general assessment of credit metrics (leverage, interest cover and cash flow cover) is outlined in our Corporate Rating Methodology.

Given the strong cyclicality in the metals and mining industry and the significant volatility in earnings and cash flow over a commodity price cycle, we are mindful of the phase in the cycle when assessing credit metrics. The credit metrics outlined in the Corporate Rating Methodology provide an indication of ratios that are expected to be maintained in a mid-cycle scenario under normal market conditions. We often take guidance from a company's 'over the cycle' leverage targets when assessing financial ratios and consider long-term average (five years or more) credit metrics. We determine where we are in the price cycle by observing long-term price trends, the profitability of producers across the cost curve at a given point in time, as well as futures prices.

We will normally treat metal-streaming facilities as accounted for under International Financial Reporting Standards, with any financial liability or prepayment added to Scope-adjusted debt.

#### 3.1.5 Liquidity

Our general liquidity assessment is outlined in the General Corporate Rating Methodology.

For metals and mining companies with large metals derivative books, we assess the risk to liquidity of large margin calls triggered by commodity price swings. For liquidity to be assessed adequate, liquidity sources need to also cover margin calls under a commodity-price stress scenario.

### 3.2 Supplementary rating drivers

#### 3.2.1 Financial policy

Our assessment of financial policy as part of the supplementary rating drivers is described in the General Corporate Rating Methodology.

#### 3.2.2 Parent /government support

Some metals and mining companies are owned and controlled by a government or government-related entities (wholly or partially). In these cases, the rating may be influenced positively or, less commonly, negatively by actual or potential interventions by its shareholders. This can manifest positively through more conservative financial policies and lower shareholder distributions than what is common for privately owned entities and would be reflected in the financial risk or financial policy assessments. Less often, a rating may be uplifted based on potential extraordinary support from its shareholders in the form of equity injections or liquidity support, if and when needed.

Our assessment of parent support is described in the General Corporate Rating Methodology. When assessing the credit quality of a metals and mining that may benefit from government support, we incorporate the sovereign's or sub-sovereign's capacity and willingness to bail out a utility in financial distress, as laid out in Scope's rating methodology for Government Related Entities.

#### 3.2.3 Peer context

Our assessment of peer context as part of the supplementary rating drivers is described in the General Corporate Rating Methodology.

#### 3.2.4 Governance and structure

Our assessment of governance and structure as part of the supplementary rating drivers is described in the General Corporate Rating Methodology.

### 3.3 Environmental, social and governance (ESG) assessment

Credit-relevant environmental and social factors are implicitly captured in the rating process, while corporate governance is explicitly captured at the 'governance and structure' analytical stage (see 3.3.4).

The rating analysis focuses on credit quality and credit assessment drivers. An ESG factor is only credit-relevant when it has a discernible and material impact on the issuer's cash flow, and, by extension, its overall credit quality.

ESG factors are particularly important to the metals and mining industry because of their significant impact on the environment and hazardous working conditions. Energy transition is also having a significant impact on the supply-demand balance of metals and minerals.

Credit-relevant ESG factors can directly and indirectly affect all elements of the business risk profile, financial risk profile and supplementary rating drivers. This is in contrast to ESG ratings, which are largely based on quantitative scores on various rating dimensions.

The General Corporate Rating Methodology provides further detail on how ESG factors and supplementary rating drivers are incorporated in the credit analysis.

## 4. Issuer rating

The final issuer rating is based on our analysis of the business risk profile, financial risk profile and supplementary rating drivers. The rating committee decides the relative importance of each rating driver. The business risk profile and financial risk profile are generally weighted equally for companies perceived as crossovers between investment grade and non-investment grade. The business risk profile is typically emphasised for investment-grade companies, while the financial risk profile is mostly the focus of ratings assigned to companies that are perceived as having high yield credit profiles. However, the latter also depends on the financial risk profile. Less focus is granted to strong financial risk profiles of companies showing a weak/vulnerable business risk profile (in the B or low BB category) since for such companies, the financial risk profile is subject to higher volatility. This takes into account that the credit rating of companies with business risks that reflect weak or moderate credit quality should not be bolstered by a temporary strong financial risk profile. Hence, the weighting between the business risk and financial risk profiles is adapted to each issuer's business model and market(s).

## 5. Additional methodology factors

For more details on our rating Outlooks for corporate debt ratings, long-term and short-term debt ratings, the recovery analysis, instrument ratings and rating categories, refer to the General Corporate Rating Methodology.

# 6. Appendix

## 6.1 Definition of financial items applicable only to the metals and mining industry

The General Corporate Rating Methodology defines in detail the indicators used in our financial risk profile assessments.

| ROA (%) | |
|---|---|
| Profitability measure | |
| $\frac{\text{Scope-adjusted EBIT}}{\text{Total assets}}$ | This ratio measures how efficient a company is at generating earnings from its assets. It is a useful measure since it allows comparison between companies with varying business mixes and capital intensity (e.g. upstream vs downstream vs. trading/distribution).<br><br>Total assets are normally used as reported, whereas EBIT may be adjusted for significant, exceptional and non-recurring items. |

## 6.2 Commodity trading

For metals and mining companies engaged in commodity trading activities at a material level (>20% of EBITDA), we also assess the price, credit and operational risk exposure that this activity entails. A favourable assessment would entail back-to-back trading with low price risk (other than basis risk) evident through low earnings volatility; a focus on physical trading; a credit risk systematically monitored and managed by letter of credit; credit insurance; non-recourse sale of receivables or similar; and a track record of low credit losses and few operational risk incidents. An unfavourable assessment would entail significant proprietary trading with unhedged price risk exposures evident in material earnings volatility and/or value at risk; a track record of significant credit losses; and frequent and/or material operational risk incidents.

For a favourable assessment we would also expect the company to have information systems that record trades and mark open positions to market (ideally in real time) and allow for aggregate risk exposures to be effectively monitored using for example value at risk, complemented by stress testing and/or sensitivity analysis. A large trader would be expected to have an independent risk management organisation, with necessary skill, tools and authority to effectively monitor and enforce trading rules, risk limits and guidelines. A positive assessment is more likely under a clear separation between front and back-office functions and clear risk limits for individual business units and the group, and a culture and track record of adherence to the rules and guidelines.

For companies that engage in significant trading in third party liquid physical commodities, we will typically deduct up to 80% of the related inventories from its adjusted debt, provided all the following conditions are met:

- The commodities are pre-sold or hedged (i.e. not subject to price risk); and
- The commodities are not for own processing/use; and
- The commodities are relatively liquid; and
- The commodities are intended to be liquidated within 30 days.

The level of adjustment depends on the liquidity of the commodities in question and the level of flexibility we consider the company has in reducing trading volumes, without compromising its business franchise.

## 6.3 Related documents

For more information, please refer to the following documents:

- General Corporate Rating Methodology
- Government Related Entities Rating Methodology
- Rating Definitions

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