

# Rating Methodology

# Moody's Global Corporate Finance

May 2009

## Global Mining Industry

### Summary

This rating methodology outlines Moody's approach to assessing credit risk in the global mining industry. It replaces the Global Mining Industry Rating Methodology that was published in September 2005. While reflecting similar core principles as the September 2005 methodology, this updated framework incorporates refinements that better reflect the changing landscape in and dynamics of the global mining industry, and the way Moody's applies its industry methodologies.

The goal of this report is to help issuers, investors and other interested market participants understand how Moody's assesses credit risk for companies in the mining industry and to explain how key quantitative and qualitative risk factors map to specific rating outcomes. Our objective is for users to be able to estimate the likely credit rating (senior unsecured rating for investment-grade and Corporate Family rating for speculative-grade issuers) for a mining company within two alpha-numeric rating notches.

Moody's analysis focuses on the following six key rating factors that are central to the assignment of ratings for companies in the global mining sector. These six factors encompass 9 specific elements (or sub-factors), each of which maps to specific letter ratings (see Appendix A). The six factors, which will be detailed in this report, are as follows:

1. Reserves
2. Cost Efficiency & Profitability
3. Financial Policies
4. Financial Strength
5. Business Diversity & Size
6. "Other" Liabilities Adjustments

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In Appendix B we have included a detailed rating grid for the sample companies included in this methodology. For each company, the grid maps the key rating factors and sub-factors and shows the indicated alpha-numeric rating that is calculated from the overall combination of factors. We also include discussions of “outliers” – companies whose rating for a specific sub-factor differ by two or more broad rating categories from the actual rating, as companies will not always perform consistently with their overall rating on every sub-factor.

The purpose of the rating grid is to provide a reference tool that can be used to approximate credit profiles within the mining sector. The grid provides summarized guidance on the factors that Moody's believes are most important in assigning ratings to the sector. The grid represents a summary that does not include every rating consideration and does not fit every business model equally well. In addition, our mapping uses historical financial results to illustrate the grid while our ratings also consider forward looking expectations. As such, the grid-indicated rating is not expected to always match the actual rating of each company. The text of the rating methodology provides insights on the key rating considerations that are not represented in the grid, as well as the circumstances in which the rating effect for a factor might be significantly different from the weight indicated in the grid. Further, it must be recognized that ratings are prospective opinions on future credit risk. Financial transactions, including acquisitions that alter a firm's capital structure, liquidity profile and cash flows, continue to be major influences on Moody's ratings.

Readers should also note that this methodology does not attempt to provide an exhaustive list of every factor that can be relevant to mining company ratings. For example, our analysis covers factors that are common across all industries (such as ownership, management, liquidity, legal structure in the corporate organization, corporate governance) as well as factors that can be meaningful on a company specific basis (such as Other Postretirement Employee Benefits (OPEB), litigation exposure and environmental obligations). Because this methodology applies globally, it is necessarily general in some respects and is not intended to be an exhaustive and country-specific discussion of all factors that Moody's analysts consider in every mining company rating. Regulatory and permitting requirements, royalty payments, taxes and accounting, to highlight some key areas, can vary widely from country to country. Moody's rating approach considers such differences and at the same time allows for qualitative evaluation of these factors as well as other factors that cannot be easily presented in grid format.

There are two differences in this methodology versus the September 2005 methodology. We have used three-year average historical performance on a trailing 12 month basis for illustrative purposes; the 2005 framework utilized five-year historicals. We have used only the “Moody's” weighting; the 2005 methodology presented both an “equal” weighting and “Moody's” weighting. The “Moody's” weighting gives twice as much weight to the Business Diversity and Size factor as companies of larger size and scale of operations generally have better diversity and lower dependence on any one particular segment.

This publication includes the following sections:

- About the Rated Universe: overview of the rated mining industry universe
- About this Rating Methodology: description of our rating methodology, including a detailed explanation of each of the key factors that drive ratings
- Assumptions and Limitations: comments on the rating methodology's assumptions and limitations, including a discussion of other rating considerations that are not included in the grid

In the appendices, we also provide tables that illustrate the application of the methodology grid to the 20 representative rated mining companies with explanatory comments on some of the more significant differences between the grid-implied rating and our actual rating (Appendix C), a brief industry overview (Appendix D), and a discussion of key rating issues for the mining industry over the intermediate term (Appendix E).

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### About the Rated Universe

This methodology pertains to companies engaged in the mining, smelting and refining of base and precious metals, other industrial metals and coal. The major aluminum companies are actively engaged in packaging and manufacturing businesses as well, and are the only mining companies that are fully integrated with both upstream and downstream operations. The rated companies differ significantly with respect to levels of commodity diversification, geographic diversification of mines and operations, and cost and production profiles. These characteristics and whether exposure is to emerging or developed country market risk can contribute to greater rating disparity than quantitative measurements might imply.

Moody's rates 36 mining companies globally with an aggregate of nearly \$128 billion of rated debt.

Geographically,

- 61% of the rated issuers are based in the Americas
- 22% are based in Europe, and
- 17% are based in Australia/Asia.

Roughly 44% of the rated mining companies are rated investment grade. Recent years have seen significant changes in the composition of the rated universe due to acquisition activity in the sector, contributing to downward rating migration, and new issuers. While ratings in the sector range from A1 to Caa3, the global median rating is currently Ba1 with investment-grade ratings clustered in the mid-Baa range and speculative-grade ratings centered in the lower-Ba range.

The rating grids used for illustrative purposes in this methodology cover 20 of the rated mining companies and were selected to represent a wide range of credit ratings, size, operating characteristics and geographic locations. These 20 companies listed in Appendix B and Appendix C comprise roughly \$123 billion or approximately 96% of the debt of mining issuers rated by Moody's.

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Company	Sr. Unsecured or Corporate Family Rating*	Commercial Paper/Speculative Grade Liquidity**	Outlook	Domicile	Approximate Rated Debt (\$ Millions)***
BHP Billiton	A1	Prime-1	Stable	Australia	\$13,375
Corporacion Nacional del Cobre de Chile	A1		Positive	Chile	\$3,335
Alcoa of Australia Limited	Baa1		Stable	Australia	\$ -
Anglo American plc	Baa1	Prime-2	Negative	United Kingdom	\$6,725
Barrick Gold Corporation	Baa1		Stable	Canada	\$7,525
Minera Escondida Limitada	Baa1		Stable	Chile	\$ -
Rio Tinto Group	Baa1	Prime-2	Review DG	United Kingdom	\$39,218
Companhia Vale do Rio Doce - Vale	Baa2		Stable	Brazil	\$9,589
Newmont Mining Corporation	Baa2		Stable	United States	\$1,000
Norsk Hydro ASA	Baa2		Negative	Norway	\$ -
OJSC MMC Norilsk Nickel	Baa2		Stable	Russia	\$500
Xstrata plc	Baa2		Negative	United Kingdom	\$8,550
Alcoa Inc.	Baa3	Prime-3	Stable	United States	\$12,999
Minera Mexico, S.A. de C.V	Baa3		Review DG	Mexico	\$56
Newmont USA Limited	Baa3		Stable	United States	\$1,309
Southern Copper Corporation	Baa3		Review DG	United States	\$1,200
Freeport-McMoRan Copper & Gold Inc.	Ba1	SGL-1	Stable	United States	\$7,840
Peabody Energy Corporation	Ba1	SGL-1	Stable	United States	\$5,225
Vedanta Resources Plc	Ba1		Stable	United Kingdom	\$1,850
Adaro Indonesia PT & Indon. Bulk Terminal PT	Ba2		Stable	Indonesia	\$ -
CONSOL Energy Inc.	Ba2		Stable	United States	\$250
Foundation Coal Corporation	Ba2	SGL-1	Negative	United States	\$300
Arch Coal, Inc.	Ba3		Negative	United States	\$961
Drummond Company, Inc.	Ba3		Negative	United States	\$1,100
PT Aneka Tambang (Persero) Tbk (Antam)	Ba3		Stable	Indonesia	\$410
Teck Cominco Limited	Ba3	SGL-4	Negative	Canada	\$1,200
Alpha Natural Resources Inc.	B1	SGL-1	Stable	United States	\$608
Berau Coal (P.T.)	B1		Stable	Indonesia	\$325
Massey Energy Company	B1		Stable	United States	\$792
New World Resources N.V.	B1		Stable	Netherlands	\$402
Walter Industries, Inc.	B2		Stable	United States	\$800
Bemax Resources Ltd	B3		Negative	Australia	\$175
Griffin Coal Mining Company Pty Ltd	B3		Negative	Australia	\$475
Stillwater Mining Company	Caa1		Negative	United States	\$30
International Coal Group, Inc.	Caa2	SGL-4	Negative	United States	\$175
James River Coal Company	Caa3	SGL-4	Negative	United States	\$150

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## About this Rating Methodology

Moody's global mining industry rating methodology consists of the six sections listed below. The first three sections pertain to the rating factor discussions. The fourth section (Mapping Issuers to the Grid and Discussion of Grid Outliers) is in Appendix C. The last two sections follow the rating factor discussions.

### 1. Identification of the Key Rating Factors

The grid in this rating methodology focuses on five broad rating factors and weightings. The five broad factors are further broken down into 10 sub-factors.

#### Rating Factor / Sub-Factor Weighting

Broad Rating Factors	Broad Rating Factor Weighting	Rating Sub-Factor	Sub-Factor Weighting
RESERVES	8%	Reserves (# of Years)	8.33%
COST EFFICIENCY & PROFITABILITY	17%	EBIT Margin (3 year average)	8.33%
		Return on Average Tangible Assets (3 year average)	8.33%
FINANCIAL POLICIES	17%	Debt/Capital (most recent year-end)	8.33%
		Debt / EBITDA (3 year average)	8.33%
FINANCIAL STRENGTH	25%	EBIT/Interest (3 year average)	8.33%
		CFO-Div/Debt (3 year average)	8.33%
		FCF / Debt (3 year average)	8.33%
BUSINESS DIVERSITY & SIZE	33%	Business Diversity Score	16.67%
		Net Consolidated Sales (\$USD billions) (most recent year-end)	16.67%
"OTHER" LIABILITIES ADJUSTMENTS	n/a	"Other" Liabilities to Book Equity	n/a
Total	100%		100%

### 2. Measurement of the Key Rating Factors

We explain the measurements we use to assess performance on each of the rating factors and sub-factors. We explain the rationale for using specific rating factors and provide insights on the way these are applied in the rating decision process. Much of the information used in assessing performance for the sub-factors is found in or derived from the company's financial statements; others are calculated using data gathered from various sources, and observations and estimates by Moody's analysts.

Moody's ratings are forward looking and incorporate our expectations of future financial and operating performance. We use both historical and projected financial results in the rating process. Historical operating results help us understand the pattern of a company's performance and how it compares to its peers. Historical data also assists us in, among other things, looking through earnings volatility and evaluating whether projected future results are realistic. We utilize historical data herein to illustrate application of the rating methodology grid. Specifically, unless stated otherwise, the mapping examples use trailing twelve month financial information to determine the three-year averages. The statement periods may not be identical for all issuers.

All of the quantitative credit metric measures incorporate Moody's standard adjustments<sup>1</sup> to the income statement, statement of cash flows, and balance sheet for off-balance sheet accounts receivable securitization programs, under-funded pension obligations and recurring operating leases, among other items.

<sup>1</sup> For additional information on Moody's standard adjustments, please see "Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations – Part I: Standardized Adjustments to Enable Global Consistency for US and Canadian GAAP Issuers", February 2006; "Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations – Part II: Standardized Adjustments to Enable Global Consistency for Issuers Reporting under International Financial Reporting Standards (IFRS)", February 2006; "Moody's

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### 3. Mapping Factors to Rating Categories

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After identifying the measurement criteria for each sub-factor, we provide a chart that maps the sub-factors to specific alpha rating categories (Aaa, Aa, A, Baa, Ba, B, or Caa).

### 4. Mapping Issuers to the Grid and Discussion of Grid Outliers

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In this section (Appendix B), we provide a table showing how each company maps within the specific sub-factors. The weighted average of the sub-factor ratings produces a grid-indicated rating for each broad factor. We also highlight companies (Appendix C) whose grid-indicated performance on a specific factor or sub-factor is higher or lower by two or more broad rating categories from the actual rating and discuss general reasons for such outliers within a given factor or sub-factor.

### 5. Discussion of Assumptions, Limitations and Other Rating Considerations

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This section discusses limitations in the use of the grid to map against actual ratings as well as limitations and key assumptions that pertain to the overall rating methodology.

### 6. Determining the Overall Grid-Indicated Rating

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To determine the overall grid-indicated rating, the indicated rating category for each sub-factor (i.e., Aaa, Aa, A, Baa, Ba, B or Caa) is converted into a numeric value based upon the scale below.

Aaa	Aa	A	Baa	Ba	B	Caa
6	5	4	3	2	1	0

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The numerical score for each sub-factor is multiplied by the weight for that sub-factor with the results then summed to produce a composite weighted factor score. The composite weighted factor score is then mapped back to an alphanumeric rating based on the ranges in the grid below.

Composite Rating	
Indicated Rating	Aggregate Weighted Factor Score
Aaa	$x \geq 5.5$
Aa1	$5.2 \leq x < 5.5$
Aa2	$4.8 \leq x < 5.2$
Aa3	$4.5 \leq x < 4.8$
A1	$4.2 \leq x < 4.5$
A2	$3.8 \leq x < 4.2$
A3	$3.5 \leq x < 3.8$
Baa1	$3.2 \leq x < 3.5$
Baa2	$2.8 \leq x < 3.2$
Baa3	$2.5 \leq x < 2.8$
Ba1	$2.2 \leq x < 2.5$
Ba2	$1.8 \leq x < 2.2$
Ba3	$1.5 \leq x < 1.8$
B1	$1.2 \leq x < 1.5$
B2	$0.8 \leq x < 1.2$
B3	$0.5 \leq x < 0.8$
Caa1	$-0.5 < x < 0.5$

For example, an issuer with a composite weighted factor score of 3.0 would have a Baa2 grid-indicated rating. We used a similar procedure to derive the grid-indicated factor ratings in the tables embedded in the discussion of each of the four broad rating factors.

## The Key Rating Factors

Moody's analysis of mining companies focuses on five broad factors:

- Reserves
- Cost Efficiency & Profitability
- Financial Policies
- Financial Strength
- Business Diversity & Size
- "Other" Liabilities Adjustments

## Notes on Measurement Criteria

The sub-factors used in the tables accompanying the following rating factors use, unless otherwise indicated, historical results for the most recent three years on a trailing twelve month average (incorporating Moody's standard adjustments) to illustrate application of the methodology framework. A company's historical debt to EBITDA leverage ratio, for example, can be a lagging indicator as it does not reflect planned capital structure changes or changes in factors which drive earnings performance. Moody's ratings are forward looking and, where appropriate, anticipate likely future changes to metrics based on assumptions regarding future earnings, acquisitions, cash distributions to shareholders or, more positively, anticipated debt reduction funded from free cash flow and divestiture proceeds.

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### Rating Factor 1: Reserves (8% weight)

#### Why it Matters

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Reserves are the lifeblood of a mining company's longevity and viability and have perhaps the single most significant impact on a mining company's success. An accessible supply of high grade reserves provides an operating base that can be economically developed without the expense of finding and developing or acquisition costs. Key factors affecting reserve quality include grade and recovery rates, size, indicated life, location and whether reported reserves are associated with existing mining operations or would require greenfield development. Grade and recovery rates are the most important determinants of quality and are ultimately reflected in a given mine and company's operating performance. The underlying metallurgy of a deposit is also a significant factor impacting recovery rates and both development and operating costs. The physical location of reserves is also an important factor as this brings into consideration a number of variables, including surface vs. underground mining, altitude, nearness to existing infrastructure, and political, regulatory and permitting issues, among others.

It is difficult to quantify and rank reserve quality on a direct basis or across different metals, especially when comparing companies that produce different metals. We also realize that certain ore bodies may be very predictable and that the cost of proving up reserves may be unnecessary and costly – this applies more particularly to gold companies. Therefore, proven and probable reserves may understate the geologic reality. In its analysis, Moody's also considers a company's underlying price used to determine its reserve position and cost assumptions to gauge potential for future reserve revisions.

Ultimately, reserve quality is reflected in a given company's earnings performance and production sustainability, measures which are reflected in several other categories in this methodology, including Cost Efficiency and Profitability, Financial Policies, and Financial Strength.

Moody's also pays attention -- particularly with lower rated coal companies -- to the amount of reserves associated with producing operations. It is not uncommon for companies to have a significant amount of reserves, but in locations that require costly greenfield development that may be beyond the current means of any particular company.

#### How We Measure It For the Grid

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##### Indicated Life

Most recent year's proven and probable reserves divided by most-recent year's annual production (weighted by average sales for multi-metal companies unless relevant information is disclosed per metal).

We generally do not include in this calculation those reserves for any commodity that represent less than 15% of sales, in which case the sales of these commodities are excluded in determining the weighting. For example, if a company operates in four commodities (gold, copper, iron ore, and cobalt) and derives 40%, 35%, 20%, and 5% of sales from each, respectively, we would ignore the cobalt and make the respective sales weighting .42 for gold, .37 for copper, and .21 for iron ore. If the respective indicated reserve lives are 6, 25, and 40 years, the weighted average life would be 20.2 years.

A company with co-products in the same ore body is unlikely to have its proportion of metals in the total reserves match with current production. Therefore, the indicated life is calculated using a similar approach to that for a multi-metal company as above.

As is common in the industry, aluminum companies do not report their bauxite reserves, which are considerable. Reserves for the aluminum companies are excluded as a factor from the methodology.

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## Factor 1: Reserves (8%)

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
Reserves (# of Years)			>20	≥15 ≤20	≥10 ≤15	<10		8.33%

A chart that illustrates grid mapping results for Factor 1 and a discussion of outliers is included in Appendix C.

## Rating Factor 2: Cost Efficiency & Profitability (17% weight)

### Why it Matters

Relative cost position is a critical performance factor for any commodity company as prices often decline in a typical business downturn to the point where only producers with first and second quartile cash costs are profitable. Further, with low levels of financial leverage, low cost producers will not only be better positioned to survive in a downturn, but will also be better positioned to use their operating leverage to grow and strengthen their portfolios of mines and reserves when opportunities arise. Given the industry characteristics of underlying pricing volatility, limited producer pricing power, sensitivity to underlying economic conditions, and vulnerability to input cost fluctuations, elements that are within a company's ability to manage, or not as the case may be, such as cost structure and operating efficiency, are important considerations in the rating analysis. Again, the quality of reserves and recovery rates are important factors in this equation.

### How We Measure It For The Grid

#### EBIT Margin

This sub-factor is measured as the three-year average of annual EBIT (using Moody's standard adjustments) divided by the three-year average of annual revenue. EBIT is adjusted to remove equity income and income from non-wholly-owned subsidiaries and joint ventures for which the company does not have full access to its proportionate share of cash. Dividends received from such entities are added to EBIT. EBIT does include recurring "other" income and expense and excludes non-recurring "other" income and one time non cash charges.

EBIT is a critical measurement for analyzing the underlying operational profitability of a mining company's profitability over time. The use of EBIT margin and not EBITDA margin is an important indicator of a company's ability to generate operating profit after the costs of mine maintenance and development, as represented by its annual depreciation charges. Experience indicates that while a mining company's capital expenditures are often lumpy, it will generally need to "spend" its depreciation over time as it maintains and develops new mines.

While Moody's looks to maintain some stability in ratings in different operating and economic environments and considers the historical trends over the prior three years, expectations for performance over the next two to three years, based upon trends and economic conditions, are a critical component in the rating process.

#### Return on Average Tangible Assets

The three-year average of annual EBIT divided by the three-year average of tangible assets. This measurement adds further dimension by providing an indication of the efficiency of assets employed and a company's ability to generate meaningful returns from its asset base in different price environments. Given the capital-intensive nature of the industry, this ratio provides a further indication of the ability to generate meaningful returns from the asset base. Tangible assets are defined as total assets less goodwill and other intangibles.

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## Factor 2: Cost Efficiency &amp; Profitability (17%)

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
EBIT Margin (3 year average)	≥ 30%	≥ 22.5% < 30%	≥15% < 22.5%	≥ 7.5% < 15%	≥2.5% < 7.5%	≥ 0% < 2.5%	< 0%	8.33%
Return on Average Tangible Assets (3 year average)	≥ 20%	≥ 15% < 20%	≥ 10% < 15%	≥ 5% < 10%	≥ 2.5% < 5%	≥ 0% < 2.5%	< 0%	8.33%

A chart that illustrates grid mapping results for Factor 2 and a discussion of outliers is included in Appendix C.

## Rating Factor 3: Financial Policies (17% weight)

## Why it Matters

Moody's views a company's financial policies as a critical component in the rating process for mining companies as they provide insight into management's philosophy regarding the company's capital structure and the financial risk under which it is willing to operate. Our analytical process focuses on the use of debt in the capital structure, shareholder policies including dividends and share repurchases, funding requirements for capital expenditures, and how acquisitions have been financed. In the recent robust years for the mining industry, there has been significant acquisition activity as well as company's instituting or increasing share repurchase programs. Leverage ratios help measure the degree to which a company has borrowed against its future operating earnings and cash flow. Stronger ratios indicate greater flexibility to weather cyclical downturns as well as the ability to reinvest in the business, either through organic growth or acquisition. It is Moody's view that, over time, the amount of leverage with which a company operates is a choice, and therefore a direct result of its financial policy.

The strategy of maintaining a strong balance sheet in a cyclical industry versus shareholder returns and leveraging for acquisitions is an important consideration in the rating process. In addition to quantitative factors, various qualitative considerations such as debt maturity profile and the lumpiness of payments due in any given year are also considered in the analysis of financial policies. Ratios used in this area are felt to be important credit metrics and further provide an indication of a company's financial flexibility. The more modest a company's debt levels, the greater the financial flexibility it has for coping in the industry's valleys. In analyzing these ratios, Moody's looks not only at the ratio but the absolute level of debt. The debt to EBITDA ratio, while a useful metric, can improve on strengthening in earnings, but the company could still be vulnerable to deterioration in its leverage position in a down metals environment absent a reduction in absolute debt levels.

The methodology uses two leverage ratios: debt to capital and debt to EBITDA. These serve to demonstrate the overall level of debt employed in the capital structure as well as the level by which debt may exceed the earnings generation capability of the company. Given industry price volatility, and the swings experienced in cash-flow generation, mining companies are unable to bear the high degree of financial leverage that might be tolerated in other industries in which cash-flow generation is more predictable and stable.

## How We Measure It For The Grid

## Debt / Capital

The debt to capital ratio is based on the most recent fiscal year. The discussion of this ratio will also incorporate analysis of an issuer's funding sources and debt maturity profile, target capitalization levels and performance against such targets as well as a company's acquisition history and philosophy on share repurchases and special dividends.

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While debt to capital is not an ideal measure, it is a simple way to compare the capital structures of companies operating within an industry, and provides some insight into a company's financial policies. It is also a ratio frequently used by companies to dimension the range of leverage in which they look to operate, thereby providing an idea of risk tolerance. It is also a helpful measurement for the mining industry as it provides a sense of the underlying capital strength of a company to weather a downturn.

### Debt to EBITDA

Debt to EBITDA is measured by a three-year average of debt to a three-year average of EBITDA. It is a measure that balances the above debt to capitalization ratio with the measurement of a company's ability to cover debt with cash flow in various price environments.

These two ratios are presented on a gross debt basis. Moody's does take into consideration the amount of cash on hand and considers the ratios on a net debt basis as well. However, cash balances often reflect working cash, which needs to remain in the business. Additionally, cash balances are at times built-up in anticipation of upcoming capital expenditure programs, scheduled debt amortization or during a strong metal price environment. In all of these circumstances, it may make sense to consider gross debt only.

Some companies may maintain higher cash balances on a more permanent basis, which may be linked to tax considerations or to a higher caution on the availability of funding in the bank or bond markets. Thus, considering only gross debt may not reflect the true financial strength of such companies and Moody's may, in these cases, focus on net debt.

Consistent with Moody's standard adjustments, we adjust financial statements for operating leases (applying a 5x rent amount), unfunded pension liabilities, hybrid securities and other standard adjustments. Consistent with our approach to adjust full sets of financial statements, we adjust the components of capitalization for these same items.

### Notes on Measurement Criteria

With respect to adjustments to debt for pension obligations<sup>2</sup>, many U.S. companies operate with underfunded pension plans and show the net liability on their balance sheet whereas companies that operate in jurisdictions that have unfunded plans, such as in Germany, show the entire liability on their balance sheet. In accordance with Moody's rating methodology, Moody's treats the underfunded portion of pension obligations of U.S., UK and Canadian companies as debt. For certain other jurisdictions, such as Germany, unfunded pension obligations are adjusted to simulate a funding for those liabilities.

### Factor 3: Financial Policies (17%)

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
Debt/Capital (most recent year-end or LTM period)	< 20%	≥ 20% < 30%	≥ 30% < 40%	≥ 40% < 50%	≥ 50% < 75%	≥ 75% < 85%	≥ 85%	8.33%
Debt/EBITDA (3 year average)	< 1.25x	≥ 1.25x < 1.75x	≥ 1.75x < 2.5x	≥ 2.5x < 3.5x	≥ 3.5x < 4.5x	≥ 4.5x < 6.0x	≥ 6.0x	8.33%

A chart that illustrates grid mapping results for Factor 3 and a discussion of outliers is included in Appendix C.

## Rating Factor 4: Financial Strength (25% weight)

### Why it Matters

Companies in the capital intensive and cyclical mining industry need to generate sufficient earnings and cash flow to cover their significant maintenance and development capital expenditures, in addition to dividends, interest expense and debt amortization. The level of EBIT and cash generation dictate a company's ability to service debt, reinvest in its business and access capital markets in a range of economic and competitive environments. Free cash flow measures the company's ability to fund acquisitions, strategic investments,

<sup>2</sup> Ref: Rating Methodologies: "Analytical Observations Related to U.S. Pension Obligations", January 2003, "Analytical Observations Related to "Underfunded" Pension Obligations when using UK and IAS GAAP", May 2003

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repurchase stock and repay debt. The ratios used are viewed as important in a capital intensive industry such as mining. The three key indicators we use to measure financial strength are the margin by which a company covers its interest expense and the amounts of both cash from operations less dividends and free cash flow that are available relative to debt. The differential in the cash from operations less dividends and free cash flow ratios directly reflects a company's capital expenditures and therefore its ability to manage its ongoing maintenance and development capex programs. The free cash flow ratio reflects a company's ability to manage scheduled and voluntary debt reduction, additional growth capital expenditures and other extraordinary items that may arise. Interest and cash flow based coverage ratios provide an indication of financial strength and flexibility and are an important component of Moody's rating analysis in the mining sector.

### How We Measure It For The Grid

#### EBIT / Interest

This measure takes a three-year average of EBIT to a three-year average of interest expense. The ratio is seen as an indication of a company's ability to service its debt obligations out of earnings generation. EBIT is adjusted for non-recurring and unusual charges. EBIT is believed to be a better measure than EBITDA for the mining industry due to the capital intensive nature of the industry and the need to "spend" depreciation over time on maintenance and development capital expenditures, giving rise to the need to cover interest expense with earnings (EBIT).

#### Cash from Operations minus Dividends / Debt:

This sub-factor looks at a three-year average of cash from operations less dividends to a three-year average of debt and is an indicator as to a company's ability to cover all of its basic cash obligations, including working capital and dividends.

#### Free Cash Flow (FCF) / Debt

This sub-factor uses a three-year average of free cash flow, i.e., cash from operations minus dividends minus capital expenditures to a three-year average of debt. This is a key measure in determining a company's ability to cover ongoing cash requirements, including maintenance and development capital expenditures. The positive or negative cushion produced by this ratio speaks to a company's ability to cover scheduled debt amortization with internally generated funds and addresses its flexibility to maintain or advance its competitive position through growth capital expenditures or alter its capital structure through voluntary debt reduction.

For the mining industry, Moody's uses metrics that evaluate cash flow and the relationship of debt to cash flow after working capital due to the significant impact working capital movements can have on a company's financials. These measurements look to determine the level of cash generation remaining after dividends, which are viewed as only partially discretionary. They also look to determine the level of cash available to cover capital expenditures, where there may be some discretion for adjustment in a particular year, and where cash can be applied to debt obligations. Reflective of the capital-intensive nature of the industry and reinvestment requirements to maintain productivity, Moody's views free cash flow to debt as a meaningful ratio since it indicates the amount of cash flow that is available to service debt. Moody's notes that gold and coal producers tend to less frequently generate free cash flow due to the greater need to reinvest in reserve development or reserve acquisition.

### Notes on Measurement Criteria

As described elsewhere in this report, EBIT and debt are adjusted and interest expense includes capitalized interest.

### Factor 4: Financial Strength (25%)

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
EBIT/Interest (3 year average)	≥ 12x	≥ 9x < 12x	≥ 6.5x < 9x	≥ 4.0x < 6.5x	≥ 2.5x < 4.0x	≥ 1.5x < 2.5x	< 1.5x	8.33%
CFO-Div/Debt (3 year average)	≥ 50%	≥ 40% < 50%	≥ 30% < 40%	≥ 20% < 30%	≥ 10% < 20%	≥ 5% < 10%	< 5%	8.33%
FCF / Debt (3 year average)	≥ 25%	≥ 17.5% < 25%	≥ 10% < 17.5%	≥ 6% < 10%	≥ 3% < 6%	≥ 0% < 3%	< 0%	8.33%

A chart that illustrates grid mapping results for Factor 4 and a discussion of outliers is included in Appendix C.

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## Rating Factor 5: Business Diversity & Size (33% weight)

### Why it Matters

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Business Diversity and Size are seen as having a symbiotic relationship in that large size tends to enable diversification and diversification leads to large size. The larger and more diversified companies tend to have reduced cyclicality and greater flexibility when it comes to the assignment of capital for new development properties. They also have greater flexibility to scale back or eliminate underperforming operations in difficult times. At the same time, in a positive metals or coal cycle, they can often quickly re-start shuttered capacity to take advantage of a favorable market on a relatively short-term basis. Business diversity is measured through five principal elements: Operational Diversity, Commodity Diversity, Regional Diversity, Nature of Products, and Market Share. These types of diversity are some of the most important business footprint elements considered in rating discussions and reflect some of the key challenges and risks facing mining companies from both an operational and market perspective. They also provide a clear picture of the scope and scale of the company.

### Business Diversity Components

**Operational Diversity:** This is a very important consideration in the rating building block. The best examples of the impact of this variable are single mine companies that could have their business shut down entirely or severely curtailed with a single negative operational event such as a pit wall failure or underground calamity. Single mine operations are also subject to increased business risk tied to political, environmental or regulatory events. Single pit or single underground mines with several distinct access points and/or mining areas would fare better during such operating disruptions in that some production might be able to continue. However, any political, environmental or regulatory event risks faced by these companies would not be mitigated in this circumstance. The greater the number of mines that make positive contributions to a company's cash flow the greater the operational diversity and the less the impact of any single operational event on a company's ability to generate cash flow.

**Commodity Diversity:** While different base metals and different types of coal (thermal and metallurgical) tend to move broadly together and follow economic cycles in the same manner they are also significantly affected by supply and demand imbalances that can impact each metal or coal type independently. Any mining company relying solely on a single metal or coal type is therefore subject solely to the vagaries of the market for that specific commodity and is therefore subject to greater price risk and volatility of cash flow. The greater the number of individual metals that comprise a meaningful portion of a company's cash flow the less susceptible the company will be to exaggerated cyclicality.

**Regional Diversity:** For base metal and gold companies, regional diversity tends to relate to the number of global regions in which a company operates. This usually equates to the number of continents on which it operates. Greater regional diversity is therefore a particularly important mitigant to political risk.

An additional positive factor for regionally diversified coal companies is the mitigation of market risk. Unlike base metal companies that produce pure commodities priced almost entirely in terminal markets, both thermal and metallurgical coal have many different properties and qualities, and are usually sold regionally and under contract, thus reducing the market concentration risk for regionally diversified coal companies. A coal company should derive at least one-third of its cash flow and or have a significant component of "likely-to-be-developed" reserves within a given region to be considered regionally diversified.

We note that for U.S. coal companies generally, regional diversity usually relates to the number of U.S. mining regions in which a company operates. These regions are defined as Central Appalachia, Northern Appalachia, the Illinois Basin, the Powder River Basin and the western bituminous region.

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**Nature of Products, Commodity vs. Value-Added:** This factor simply differentiates between those companies that produce commodities sold in terminal markets (base metals) and in bulk (coal, iron ore) from those companies that produce products with genuine value-added attributes and which command independently derived pricing.

The only companies that meaningfully benefit from value-added products are the largest aluminum companies, which command value-added pricing because of the integrated nature of their businesses, product range and markets served. With respect to coal, Moody's acknowledges that pricing is not of a pure commodity nature as different prices are paid for various coal qualities and coal is sold primarily under fixed price contracts. The underlying price of coal, however, is of a commodity nature and generally reflects pricing for the region in which it is produced. Additionally, Moody's acknowledges that some base metals (nickel in particular) receive a premium to terminal market pricing, but this usually amounts to no more than a cent or two per pound.

**Market Share:** This factor addresses a company's market position within its various metals or, in the case of aluminum, products, and its ability to have a significant impact within each segment from a supply standpoint. A company's industry position also affects its ability to survive industry consolidation and the likelihood of it being a consolidator or a consolidatee.

### Size

Size usually provides insight into a company's operational and regional diversity and market share. It also often reflects diverse and somewhat granular operations that could be sold as necessary to provide alternate liquidity, to exit weaker performing segments or to provide funding for debt reduction or significant growth capex in other segments. Other advantages that generally accompany both size and diversity include greater access to capital and a global presence that opens up opportunities to acquire and develop low-cost reserves, thereby reinforcing a virtuous cycle.

A moderate revenue base could be a limiting factor to the overall rating. For example, we map US\$0.5 billion to \$1 billion in revenues to a B rating category on this dimension. A more modest revenue base could restrict the business diversity factors (operational, commodity and regional diversity as well as market share) and prevent a company from achieving an overall Baa rating.

## How We Measure It For The Grid

### Business Diversity

We have made the measurements for business diversity as objective as possible, but in actuality we do use some subjective judgment and market insight. We quantify the business diversity scale by measuring the most important aspects of the various elements (e.g., number of mines for operating diversity) and assign numerical scores to each element. The individual scores for the five Business Diversity sub factors are then aggregated and this total Business Diversity score is then mapped to a rating category.

**Operational Diversity:** This is a simple tally of the number of mines a company operates. For instance, a single mine or plant receives a score of -4 whereas a company with multiple mines in multiple regions receives a +2. However, in considering the number of mines a company operates, we only include a mine if it represents a material portion of the company's business (e.g., in the case of a company that operates three mines, with two representing less than 10% of cash flow, we are likely to consider this to be a one mine company).

**Commodity Diversity:** This is a measurement of the number of metals produced by a given entity provided that the portion of cash flow derived from any given metal is greater than approximately 10% of the company's total cash flow.

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**Regional Diversity:** This is a measurement of the number of regions in which a company has a significant level of operations (greater than 10% cash flow contribution). This typically corresponds to presence on a single continent and represents an effective measurement of political risk, particularly if a number of mines are located in non-investment grade or unrated countries. For U.S. coal companies, however, a distinct region is considered to be one of the five principal U.S. coal producing regions.

**Nature of Products:** We assign a score of zero (0) if sales are primarily commodity and + two (2) if significant value-added exists. The only companies which typically can score a two in this sub-factor are integrated aluminum companies.

**Market Share:** Companies score a zero (0) if share is inconsequential (less than 10%) and a one (1) if the sector has few players.

### Size

Most recent annual revenues.

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## Factor 5: Business Diversity &amp; Size (33%)

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
Business Diversity Score	> 8	7 or 8	5 or 6	3 or 4	2	0 or 1	<0	16.67%

	Sub-Factor Numerical Score		Sub-Factor Numerical Score		Sub-Factor Numerical Score		Sub-Factor Numerical Score		Sub-Factor Numerical Score
<i>Operational Diversity</i>		<i>Commodity Diversity</i>		<i>Regional Diversity</i>		<i>Nature of Products</i>		<i>Market Share</i>	
a) Single mine or plant	-4	a) Majority of cash flow from 1 metal	0	a) Assets solely in one region	0	a) Sales are primarily commodities	0	a) Market share is inconsequential (<10%)	0
b) 2 to 5 mines in one region	0	b) Significant contribution from 2-5 metals/products	1	b) Assets in multiple regions	1	b) Add significant value over LME	2	b) Sector has few players	1
c) Multiple mines & multiple regions	2	c) Significant contribution from more than 5 metals/ products	3						

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
Net Consolidated Sales (\$US billions) (most recent year-end)	≥ \$25	≥ \$10 < \$25	≥ \$5x < \$10	≥ \$2 < \$5	≥ \$1 < \$2	≥ \$0.5 < \$1	< \$0.5	16.67%

## Rating Factor 6: "Other" Liabilities Adjustments

## "Other" Liabilities to Book Equity

Some companies have significant other liabilities. The presence and level of "other" or "legacy" liabilities and their associated costs can be a differentiating factor between companies and sectors. Legacy liabilities include OPEB, workers' compensation, reclamation (environmental) and other industry-specific costs such as compensation for health liabilities or injuries. It should be noted that financial statements are not adjusted to consider "other liabilities" as debt, and that the consideration of "other" liabilities to equity is a relative measure used to gauge the magnitude of a company's non-debt obligations to its book equity capital.<sup>3</sup>

## How We Measure It For The Grid

The output of this measurement is a deduction from the total score.

Reclamation and environmental liabilities are determined using the balance sheet amounts while OPEB, workers' compensation and other items are taken from the footnotes. For OPEB in particular, we use the off balance sheet amount, which usually exceeds the balance sheet amount and reflects the full exposure without adjustment for accounting "smoothing". When assessing these obligations, we may adjust reported figures in response to differences in accounting policies across companies, discount rates used, company-specific factors, and our assessment of how these liabilities may change over time. The cash flow impact of these liabilities is vitally important. The companies most affected by this measure are the old-line U.S. coal companies, some of which have significant legacy liabilities.

We use book equity for the denominator rather than total capital as it results in clear and meaningful ratios and does not aid the more highly leveraged companies whose ratios would be lowered by the use of total capital in the denominator.

<sup>3</sup> Moody's may, however, adjust financial statements for OPEB liabilities. Ref: Other Postretirement Benefits – Moody's Analytical Approach (December 2004)

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## Factor 6: "Other" Liabilities Adjustments

Sub-Factor:	Aaa	Aa	A	Baa	Ba	B	Caa	Weight
"Other" Liabilities to Book Equity (most recent year-end)	0% < 5%	≥5% < 10%	≥ 10% < 25%	≥ 25% < 50%	≥ 50% < 75%	≥ 75% < 100%	< 0% & ≥ 100%	n/a
Numerical Score Equivalent	0.0000	-0.0833	-0.1666	-0.2499	-0.3332	-0.4165	-0.4998	

## Rating Methodology Assumptions and Limitations, and Other Rating Considerations

The rating methodology grid incorporates a trade-off between simplicity that enhances transparency and greater complexity that would enable the grid to map more closely to actual ratings. The five rating factors in the grid do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the mining industry. In addition, our ratings incorporate expectations for future performance, while the financial information that is used to illustrate the mapping in the grid is mainly historical. In some cases, our expectations for future performance may be informed by confidential information that we cannot publish. In other cases, we estimate future results based upon past performance, industry trends, demand and price outlook, competitor actions and other factors. In either case, predicting the future is subject to the risk of substantial inaccuracy.

In choosing metrics for this rating methodology grid, we did not include certain important factors that are common to all companies in any industry, such as the quality and experience of management, assessments of corporate governance and the quality of financial reporting and information disclosure. The assessment of these factors can be highly subjective and ranking them by rating category in a grid would, in some cases, suggest too much precision in the relative ranking of particular issuers against all other issuers that are rated in various industry sectors.

Ratings may include additional factors that are difficult to quantify or that only have a meaningful effect in differentiating credit quality in some cases. Such factors include hedging philosophy (particularly relevant to gold companies), labor composition (union or non-union), productivity, financial controls and financial reporting issues, litigation, and emerging market risk, where ratings might be constrained by the uncertainties associated with the local operating, political and economic environment, including possible government interference. Ratings may also reflect circumstances in which the weighting of a particular factor will be different from the weighting suggested by the grid. For example, in some instances a company's approach is sufficiently extreme with regard to matters such as financial strategy and proclivity towards debt-financed acquisitions that the rating effect will be greater than what is indicated by the weighting in the grid for Factor 3, Financial Policies. We also evaluate the effect that features such as pay-in-kind (PIK) interest can have on free cash flow, although we acknowledge that PIK interest can provide important liquidity benefits and greater flexibility in managing fixed costs.

As an example of the limitations, ratings can be heavily affected by extremely weak liquidity that magnifies default risk but two identical companies might be rated the same if their only differentiating feature is that one has a good liquidity position while the other has an extremely good liquidity position. In the mining sector, a cyclical downturn (on top of secular pressure) can create significant stress on liquidity for some issuers, including diminished cushion under credit facility maintenance financial covenants. Liquidity pressure and concerns over financial covenant compliance may contribute to ratings for some mining issuers that are below the likely level that would exist in the absence of the liquidity pressure.

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### Conclusion: Summary of the Grid-Indicated Rating Outcomes

The methodology grid-indicated ratings map to current assigned ratings as follows (see Appendix B for the details):

- 5% or 1 company maps to its assigned rating
- 25% or 5 companies have grid-indicated ratings that are within two alpha-numeric notches of their assigned rating
- 70% or 14 companies have grid-indicated ratings that are more than two alpha-numeric notches from their assigned rating

Overall, the framework indicates that there are no companies whose grid-indicated rating is below their actual rating. As the financial metrics in the grid are based upon historical data, this reflects the unprecedented strength of the mining industry in recent years where robust demand, driven by China and other BRIC countries, and strong prices resulted in sharp improvement in earnings and cash flow for most companies in the sector, despite cost pressures. Aluminum companies are an exception to this trend in recent years. This historical data reflects performance over the peak of the metal price cycle, during which Moody's would expect companies to have grid-indicated ratings above their actual rating. It does not capture Moody's expectation that weakening in demand fundamentals and a material fall-off in commodity prices will result in contraction in earnings and cash flow leading to weaker credit metrics over the next several years, while the actual ratings incorporate this expectation. With the dramatic fall in prices since the middle of 2008 and weak demand levels globally, Moody's expects the grid-indicated ratings to move more in line with actual ratings.

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## Appendix A: Global Mining Industry Methodology Factor Grid

	Factor weight	Sub-factor contribution to total	Rating								
			Aaa	Aa	A	Baa	Ba	B	Caa		
<b>Factor 1: Reserves</b>	<b>8%</b>										
Reserves (# of Years)		8%			>20		≥15 ≤20		≥10 ≤15		<10
<b>Factor 2: Cost Efficiency &amp; Profitability</b>	<b>17%</b>										
EBIT Margin (3 year average)		8.33%	≥ 30%	≥ 22.5% < 30%	≥15% < 22.5%		≥ 7.5% < 15%		≥2.5% < 7.5%		≥ 0% < 2.5%
Return on Average Tangible Assets (3 year average)		8.33%	≥ 20%	≥ 15% < 20%	≥ 10% < 15%		≥ 5% < 10%		≥ 2.5% < 5%		≥ 0% < 2.5%
<b>Factor 3: Financial Policies</b>	<b>17%</b>										
Debt/Capital (most recent year-end or LTM period)		8.33%	< 20%	≥ 20% < 30%	≥ 30% < 40%		≥ 40% < 50%		≥ 50% < 75%		≥ 75% < 85%
Debt/EBITDA (3 year average)		8.33%	< 1.25x	≥ 1.25x < 1.75x	≥ 1.75x < 2.5x		≥ 2.5x < 3.5x		≥ 3.5x < 4.5x		≥ 4.5x < 6.0x
<b>Factor 4: Financial Strength</b>	<b>25%</b>										
EBIT/Interest (3 year average)		8.33%	≥ 12x	≥ 9x < 12x	≥ 6.5x < 9x		≥ 4.0x < 6.5x		≥ 2.5x < 4.0x		≥ 1.5x < 2.5x
CFO-Div/Debt (3 year average)		8.33%	≥ 50%	≥ 40% < 50%	≥ 30% < 40%		≥ 20% < 30%		≥ 10% < 20%		≥ 5% < 10%
FCF / Debt (3 year average)		8.33%	≥ 25%	≥ 17.5% < 25%	≥ 10% < 17.5%		≥ 6% < 10%		≥ 3% < 6%		≥ 0% < 3%
<b>Factor 5: Business Diversity &amp; Size</b>	<b>33%</b>										
Business Diversity Score		16.67%	> 8	7 or 8	5 or 6		3 or 4		2		0 or 1
Net Consolidated Sales (\$USD billions) (most recent year-end)		16.67%	≥ \$25	≥ \$10 < \$25	≥ \$5x < \$10		≥ \$2 < \$5		≥ \$1 < \$2		≥ \$0.5 < \$1
<b>Factor 6: "Other" Liabilities Adjustments</b>											
"Other" Liabilities to Book Equity (most recent year-end)	n/a	n/a	0% < 5%	≥5% < 10%	≥ 10% < 25%		≥ 25% < 50%		≥ 50% < 75%		≥ 75% < 100%
Numerical Score Equivalent			0.000	-0.0833	-0.1666		-0.2499		-0.3332		-0.4165
											-0.4998

## Global Mining Industry

## Appendix B: Methodology Grid-Indicated Ratings

Observation: On an individual factor basis, most companies map above their assigned rating with only 25% in the aggregate mapping to within 2 notches of their assigned rating. The upward rating bias of the grid indicated ratings reflects the robust demand and pricing environment over the 3 year historical time frame and is to be expected. The individual factor mappings on a historical basis represent performance at the peak of the cycle while the assigned ratings reflect Moody's expectations for performance over a period encompassing strong and weak market conditions. Further, ratings for companies such as OJSC MMC Norilsk Nickel, Vedanta Resources and PT Aneka Tambang consider these companies exposure to a more challenging and higher-risk operating environment and/or concentration in ownership.

	Moody's Weight	BHP Billiton	CODELCO	Anglo American	Barrick Gold	Rio Tinto	Vale	Newmont Mining	Norsk Hydro	OJSC MMC Norilsk Nickel	Southern Copper	Xstrata plc	Alcoa Inc.
Factor 1: Reserves (8%)	8%												
Reserves (# of years)		A	A	A	Baa	A	A	Baa	n/a	A	A	A	n/a
Factor 2: Cost Efficiency & Profitability (17%)	17%												
EBIT Margin (3 year average)		Aaa	Aaa	Aaa	Aa	Aaa	Aaa	Aa	Ba	Aaa	Aaa	Aa	Baa
Return on Average Tangible Assets (3 year average)		Aaa	Aaa	Aa	A	Aaa	Aaa	Baa	Ba	Aaa	Aaa	Aa	A
Factor 3: Financial Policies (17%)	17%												
Debt/Capital (most recent year-end or LTM period)		Aa	Baa	A	Aa	Ba	Aa	Aa	A	Aa	Aa	A	Baa
Debt / EBITDA (3 year average)		Aaa	Aaa	Aaa	Aa	Baa	Aa	Aa	Ba	Aaa	Aaa	A	A
Factor 4: Financial Strength (25%)	25%												
EBIT/Interest (3 year average)		Aaa	Aaa	Aaa	A	Aaa	A	A	Baa	Aaa	Aaa	Aa	Baa
CFO-Div/Debt (3 year average)		Aaa	Baa	Aaa	A	Aaa	Aa	Baa	Aaa	Aaa	Baa	A	Ba
FCF / Debt (3 year average)		Aaa	Caa	Aa	A	A	A	Caa	Aaa	Aaa	Caa	Aa	Caa
Factor 5: Business Diversity & Size (33%)	33%												
Business Diversity		Aa	Ba	Aa	Baa	Aa	Aa	Baa	A	Baa	Ba	A	A
Net Consolidated Sales (\$USD billions; most recent year-end or LTM period)		Aaa	Aa	Aaa	A	Aaa	Aaa	A	Aa	Aa	Baa	Aaa	Aaa
Factor 6: "Other" Liabilities Adjustments	n/a												
"Other" Liabilities to Book Equity (most recent year-end)		A	Aaa	Aaa	Aa	Aaa	Aaa	A	Aaa	Aaa	Aaa	Aaa	Baa
Grid-Indicated Rating		Aa1	A1	Aa1	A2	Aa2	Aa2	Baa1	A2	Aa2	A2	Aa3	Baa1
Current Rating		A1	A1	Baa1	Baa1	Baa1	Baa2	Baa2	Baa2	Baa2	Baa2	Baa2	Baa3

Notes:  
 Green: Positive outlier – grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual rating  
 Red: Negative outlier – grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual rating  
 Grid-Indicated ratings are based off of the last 3 years of publicly available financial data as of 4/2/09

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## Appendix B: Methodology Grid-Indicated Ratings (cont'd)

	Moody's Weight	Freeport-McMoRan	Peabody Energy	Vedanta Resources	CONSOL Energy	Arch Coal	PT Aneka	Teck Cominco	Alpha Natural Resources
<b>Factor 1: Reserves (8%)</b>	8%								
Reserves (# of years)		A	A	Baa	A	A	Ba	A	A
<b>Factor 2: Cost Efficiency &amp; Profitability (17%)</b>	17%								
EBIT Margin (3 year average)		Aaa	A	Aaa	A	Baa	Aaa	Aaa	Ba
Return on Average Tangible Assets (3 year average)		Aaa	Baa	Aa	A	Baa	Aaa	Aaa	A
<b>Factor 3: Financial Policies (17%)</b>	17%								
Debt/Capital (most recent year-end or LTM period)		Ba	Ba	A	Ba	Baa	Aaa	Baa	Baa
Debt / EBITDA (3 year average)		Aaa	Baa	Aa	Aaa	Baa	Aaa	A	Aa
<b>Factor 4: Financial Strength (25%)</b>	25%								
EBIT/Interest (3 year average)		Aaa	Ba	Aa	A	Ba	Aaa	Aaa	Ba
CFO-Div/Debt (3 year average)		A	Baa	A	Aaa	Baa	Aaa	Aaa	Aaa
FCF / Debt (3 year average)		A	Aa	Caa	Caa	Caa	Aaa	Aaa	Aaa
<b>Factor 5: Business Diversity &amp; Size (33%)</b>	33%								
Business Diversity		Baa	Baa	Baa	Ba	Baa	B	Baa	B
Net Consolidated Sales (\$USD billions; most recent year-end or LTM period)		Aa	A	A	Baa	Baa	B	A	Baa
<b>Factor 6: "Other" Liabilities Adjustments</b>	n/a								
"Other" Liabilities to Book Equity (most recent year-end)		Aaa	Baa	Aaa	Caa	A	Aaa	Aa	A
<b>Grid-Indicated Rating</b>		Aa3	Baa3	A2	Baa2	Baa3	A2	Aa3	Baa2
<b>Current Rating</b>		Ba1	Ba1	Ba1	Ba2	Ba3	Ba3	Ba3	B1

## Notes:

Green: Positive outlier – grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual rating

Red: Negative outlier – grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual rating

Grid-Indicated ratings are based off of the last 3 years of publicly available financial data as of 4/2/09

## Global Mining Industry

## Appendix C: Observations and Outliers for Grid Mapping

## Factor 1: Ratings Mapping

The following table details the mapping for the Reserves factor

Company	Sr. Unsecured or Corporate Family Rating	Reserves (# of years)	Reserves Indicated Rating Category
BHP Billiton	A1	20.0	A
CODELCO	A1	40.0	A
Anglo American	Baa1	33.0	A
Barrick Gold	Baa1	19.5	Baa
Rio Tinto	Baa1	25.0	A
Vale	Baa2	25.0	A
Newmont Mining	Baa2	16.0	Baa
Norsk Hydro	Baa2	n/a	n/a
OJSC MMC Norilsk Nickel	Baa2	23.0	A
Southern Copper	Baa2	20.0	A
Xstrata plc	Baa2	21.0	A
Alcoa Inc.	Baa3	n/a	n/a
Freeport-McMoRan	Ba1	21.0	A
Peabody Energy	Ba1	46.0	A
Vedanta Resources	Ba1	18.0	Baa
CONSOL Energy	Ba2	70.0	A
Arch Coal	Ba3	21.0	A
PT Aneka	Ba3	11.0	Ba
Teck Cominco	Ba3	20.0	A
Alpha Natural Resources	B1	26.0	A

## Notes:

*Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual*

*Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual*

## Factor 1: Observations and Outliers

The majority of favorable grid indicated ratings reflect the significant reserve life of companies with substantive coal reserves. While long reserve lives are a positive rating consideration, beyond a certain point they do not continue to have a positive impact on the rating as indicated by our rating category for an "A" grid indicated rating capping out at twenty years. The positive factor indication for these companies as well as Freeport-McMoRan Copper & Gold is offset by other factors and considerations that are more consistent with the overall ratings.

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## Factor 2: Ratings Mapping

The following table details the mapping for the Cost Efficiency and Profitability factor

Company	Sr. Unsecured or Corporate Family Rating	EBIT Margin* (%) (3-yr average)	EBIT Margin (%) Indicated Rating Category	ROA* (%) (3-yr average)	ROA (%) Indicated Rating Category
BHP Billiton	A1	39.4%	Aaa	29.2%	Aaa
CODELCO	A1	41.6%	Aaa	52.1%	Aaa
Anglo American	Baa1	33.6%	Aaa	18.7%	Aa
Barrick Gold	Baa1	29.6%	Aa	13.5%	A
Rio Tinto	Baa1	38.5%	Aaa	26.1%	Aaa
Vale	Baa2	44.5%	Aaa	22.0%	Aaa
Newmont Mining	Baa2	22.8%	Aa	8.8%	Baa
Norsk Hydro	Baa2	7.0%	Ba	3.7%	Ba
OJSC MMC Norilsk Nickel	Baa2	50.3%	Aaa	27.3%	Aaa
Southern Copper	Baa2	53.2%	Aaa	48.1%	Aaa
Xstrata plc	Baa2	28.6%	Aa	18.9%	Aa
Alcoa Inc.	Baa3	14.0%	Baa	12.3%	A
Freeport-McMoRan	Ba1	38.0%	Aaa	33.9%	Aaa
Peabody Energy	Ba1	17.2%	A	9.3%	Baa
Vedanta Resources	Ba1	34.4%	Aaa	17.2%	Aa
CONSOL Energy	Ba2	10.1%	A	50.9%	A
Arch Coal	Ba3	13.6%	Baa	9.9%	Baa
PT Aneka	Ba3	43.4%	Aaa	42.4%	Aaa
Teck Cominco	Ba3	40.0%	Aaa	21.7%	Aaa
Alpha Natural Resources	B1	6.8%	Ba	11.6%	A

## Notes

\*Averaged over the last three year-end periods

Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual

Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual

## Factor 2: Observations and Outliers

The favorable outliers for all sub factors reflect the exceptional strength in prices for most all metals in recent years and the operating leverage these companies have to high metal prices. Looking forward, we would expect all sub-factors to map more in line with ratings given the deterioration in metal markets, which Moody's expects to be prolonged.

## Global Mining Industry

## Factor 3: Ratings Mapping

The following table details the mapping for the Financial Policies factor

Company	Sr. Unsecured or Corporate Family Rating	Debt/Capital* (most recent yr-end or LTM period)	Debt/Capital Indicated Rating Category	Debt/EBITDA** (3-yr average)	Debt/EBITDA Indicated Rating Category
BHP Billiton	A1	24.2%	Aa	0.5x	Aaa
CODELCO	A1	44.3%	Baa	0.6x	Aaa
Anglo American	Baa1	38.0%	A	1.1x	Aaa
Barrick Gold	Baa1	22.8%	Aa	1.4x	Aa
Rio Tinto	Baa1	63.2%	Ba	2.6x	Baa
Vale	Baa2	28.6%	Aa	1.6x	Aa
Newmont Mining	Baa2	29.5%	Aa	1.6x	Aa
Norsk Hydro	Baa2	30.2%	A	3.7x	Ba
OJSC MMC Norilsk Nickel	Baa2	21.5%	Aa	0.6x	Aaa
Southern Copper	Baa2	26.6%	Aa	0.4x	Aaa
Xstrata plc	Baa2	38.0%	A	1.9x	A
Alcoa Inc.	Baa3	49.7%	Baa	2.4x	A
Freeport-McMoRan	Ba1	51.2%	Ba	1.1x	Aaa
Peabody Energy	Ba1	51.3%	Ba	2.9x	Baa
Vedanta Resources	Ba1	34.2%	A	1.4x	Aa
CONSOL Energy	Ba2	50.9%	Ba	1.2x	Aaa
Arch Coal	Ba3	49.1%	Baa	2.5x	Baa
PT Aneka	Ba3	16.2%	Aaa	0.4x	Aaa
Teck Cominco	Ba3	45.4%	Baa	2.4x	A
Alpha Natural Resources	B1	43.0%	Baa	1.6x	Aa

## Notes

\*As of 12/31/08 or most recent publicly available year-end period

\*\*Averaged over the last three year-end periods

Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual

Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual

## Factor 3: Observations and Outliers

Again, the strong metal price environment and demand growth experienced over the last three years has contributed to most companies mapping favorably in the sub-factors that comprise the financial policies factor, while others have strengthened within these measurements to be more in line with their rating. Many companies have taken advantage of the strong cycle to reduce debt and improve balance sheet strength, which is expected to provide more of a cushion than seen historically in the current downturn. However, with the cyclical downturn companies are expected to map more in line with their ratings, particularly the debt/EBITDA sub factor.

## Global Mining Industry

## Factor 4: Ratings Mapping

The following table details the mapping for the Financial Strength factor

Company	Sr. Unsecured or Corporate Family Rating	Interest Coverage * (3-yr average)	Interest Coverage Indicated Rating Category	CFO - Div to Debt* (3-yr average)	CFO - Div to Debt Indicated Rating Category	FCF/Debt* (3-yr average)	FCF/Debt Indicated Rating Category
BHP Billiton	A1	28.2x	Aaa	109.7%	Aaa	65.3%	Aaa
CODELCO	A1	27.5x	Aaa	41.7%	Baa	3.2%	Caa
Anglo American	Baa1	12.0x	Aaa	57.2%	Aaa	19.7%	Aa
Barrick Gold	Baa1	8.0x	A	39.2%	A	11.5%	A
Rio Tinto	Baa1	31.7x	Aaa	55.4%	Aaa	14.5%	A
Vale	Baa2	6.7x	A	46.8%	Aa	14.8%	A
Newmont Mining	Baa2	7.1x	A	20.4%	Baa	-35.0%	Caa
Norsk Hydro	Baa2	5.9x	Baa	125.4%	Aaa	104.7%	Aaa
OJSC MMC Norilsk Nickel	Baa2	18.8x	Aaa	93.7%	Aaa	36.7%	Aaa
Southern Copper	Baa2	25.5x	Aaa	26.6%	Baa	-2.8%	Caa
Xstrata plc	Baa2	9.2x	Aa	37.6%	A	18.2%	Aa
Alcoa Inc.	Baa3	5.4x	Baa	15.0%	Ba	-14.6%	Caa
Freeport-McMoRan	Ba1	14.9x	Aaa	36.1%	A	15.7%	A
Peabody Energy	Ba1	3.7x	Ba	20.0%	Baa	2.9%	B
Vedanta Resources	Ba1	10.6x	Aa	35.1%	A	-14.6%	Caa
CONSOL Energy	Ba2	8.4x	A	61.3%	Aaa	-6.5%	Caa
Arch Coal	Ba3	3.6x	Ba	26.6%	Baa	-9.0%	Caa
PT Aneka	Ba3	33.8x	Aaa	118.3%	Aaa	102.2%	Aaa
Teck Cominco	Ba3	22.2x	Aaa	82.7%	Aaa	60.8%	Aaa
Alpha Natural Resources	B1	3.4x	Ba	59.0%	Aaa	31.6%	Aaa

## Notes

\*Averaged over the last three year-end periods

Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual

Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual

## Factor 4: Observations and Outliers

Most metal companies grid indicated ratings, with the exception of the free cash flow/debt sub factor are two or more rating categories above their actual rating reflecting the upward bias from the strong price environment. Companies whose grid indicated ratings are two or more notches below their actual rating category in the free cash flow/debt sub factor have had sizable capital investment programs during the past three years.

## Global Mining Industry

## Factor 5: Ratings Mapping

The following table details the mapping for the Business Diversity & Size factor

Company	Sr. Unsecured or Corporate Family Rating	Business Diversity	Business Diversity Indicated Rating Category	Net Consolidated Sales* (\$USD billions; most recent yr-end or LTM period)	Net Consolidated Sales Indicated Rating Category
BHP Billiton	A1	7	Aa	\$55.50	Aaa
CODELCO	A1	2	Ba	\$17.00	Aa
Anglo American	Baa1	7	Aa	\$27.10	Aaa
Barrick Gold	Baa1	4	Baa	\$7.90	A
Rio Tinto	Baa1	7	Aa	\$54.30	Aaa
Vale	Baa2	7	Aa	\$37.40	Aaa
Newmont Mining	Baa2	4	Baa	\$6.20	A
Norsk Hydro	Baa2	5	A	\$15.90	Aa
OJSC MMC Norilsk Nickel	Baa2	3	Baa	\$17.50	Aa
Southern Copper	Baa2	2	Ba	\$4.90	Baa
Xstrata plc	Baa2	5	A	\$28.00	Aaa
Alcoa Inc.	Baa3	6	A	\$26.90	Aaa
Freeport-McMoRan	Ba1	4	Baa	\$17.80	Aa
Peabody Energy	Ba1	3	Baa	\$6.60	A
Vedanta Resources	Ba1	4	Baa	\$8.30	A
CONSOL Energy	Ba2	2	Ba	\$4.50	Baa
Arch Coal	Ba3	3	Baa	\$3.00	Baa
PT Aneka	Ba3	1	B	\$1.00	B
Teck Cominco	Ba3	3	Baa	\$6.50	A
Alpha Natural Resources	B1	0	B	\$2.60	Baa

## Notes

\* Revenue as of 12/31/08 or most recent year-end publicly available period

Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual

Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual

## Factor 5: Observations and Outliers

CODELCO is a notable negative outlier in the business diversity sub-factor. However, the size and scale of its mines and low cost position mitigate the low scoring. From a size perspective, all companies, particularly base metals and diversified mining companies are favorable outliers given the price strength of the last several years.

## Global Mining Industry

## Factor 6: Ratings Mapping

The following table details the mapping for the "Other" Liabilities Adjustments factor

Company	Sr. Unsecured or Corporate Family Rating	"Other" Liabilities to Book Equity (most recent year-end)	Numerical Score Equivalent	"Other" Liabilities to Book Equity Indicated Rating Category
BHP Billiton	A1	15.2%	-0.1666	A
CODELCO	A1	0.0%	0.000	Aaa
Anglo American	Baa1	0.0%	0.000	Aaa
Barrick Gold	Baa1	7.3%	-0.0833	Aa
Rio Tinto	Baa1	4.1%	0.000	Aaa
Vale	Baa2	4.6%	0.000	Aaa
Newmont Mining	Baa2	12.3%	-0.1666	A
Norsk Hydro	Baa2	0.0%	0.000	Aaa
OJSC MMC Norilsk Nickel	Baa2	0.0%	0.000	Aaa
Southern Copper	Baa2	0.0%	0.000	Aaa
Xstrata plc	Baa2	0.0%	0.000	Aaa
Alcoa Inc.	Baa3	28.6%	-0.2499	Baa
Freeport-McMoRan	Ba1	0.7%	0.000	Aaa
Peabody Energy	Ba1	36.6%	-0.2499	Baa
Vedanta Resources	Ba1	0.0%	0.000	Aaa
CONSOL Energy	Ba2	243.7%	-0.4998	Caa
Arch Coal	Ba3	20.6%	-0.1666	A
PT Aneka	Ba3	0.0%	0.000	Aaa
Teck Cominco	Ba3	8.5%	-0.0833	Aa
Alpha Natural Resources	B1	24.7%	-0.1666	A

## Notes

Green: Positive outlier-grid-indicated performance on a specific factor is at least two broad rating categories higher than the actual

Red: Negative outlier-grid-indicated performance on a specific factor is at least two broad rating categories lower than the actual

## Factor 6: Observations and Outliers

The weak grid indicated rating for CONSOL Energy is reflective of its large legacy liability position in absolute terms and its smaller equity base relative to comparably sized companies.

## Global Mining Industry

## Appendix D: Mining Industry Overview

The global mining industry comprises companies engaged in activities ranging from the mining, smelting, refining and preparation of a single metal or ore in a single location to those engaged in the production of multiple metals and ores on a global basis. The mining industry is, cyclical, highly competitive on a global basis, and for the most part exhibits minimal product differentiation, with a high degree of commodity product concentration. As noted, the major aluminum companies also engage in the global packaging and manufacturing (transportation and aerospace) businesses, in addition to the mining and refining of bauxite and alumina. Taken as a whole, mining issuers share a number of similar characteristics as follows:

**Commodity nature of business and resultant cyclicality:** Cash flows are cyclical for all industry companies. Economic cycles play a key role in this cyclicality for all industry participants, as do basic supply/demand fundamentals for underlying metals, which impact each metal separately. The larger, more diversified companies get some relief from the concentrated cyclicality of single metal companies, and the coal companies have some smoothing of cyclicality because of the rolling nature of their contracts, but this remains a significant risk factor for all industry participants.

**Capital intensity given need to replenish reserves and develop new properties:** Mining is a heavily capital intensive business given the need to maintain existing operations and to find and/or acquire and develop new reserves. A company's inability to manage this portion of its business on an ongoing basis to reduce the cyclicality of capital expenditures can, at times, have an adverse impact on the rating. The commitment to a solid capital structure is a key factor in enabling companies to manage this process.

**Susceptibility to rising input costs:** The impact of cyclicality on cash flows is compounded by the industry's heavy reliance on specific commodities (energy, steel, explosives, etc.), as well as by exposure to currency fluctuations, which principally affect labor costs. Together these comprise a significant component of a mining company's input costs. While underlying costs tend to move in the same direction as metals prices, they can affect overall margins, particularly when there are timing differences as the commodity cycle declines.

**Exposure to event risk:** Event risk can take many forms with mining companies, whether it is operational, political, or economic. This may include the risk of economic shock given the sector's end-market dependence on developing economies that occurs from time to time.

The mining industry has exhibited significant changes in recent years, driven by acquisitions and the emergence of China as a major consumer of base metals, copper, nickel and zinc in particular, and with an increasing production profile for aluminum. Over the 2005 through 2008 time frame, Chinese demand for copper has grown approximately 33% against world demand growth of about 9%, while demand for nickel has increased roughly 69% while world demand in 2008 was relatively flat to 2005 levels. The role of China in the landscape of the mining industry remains an integral component of the factors supporting growth and the robust pricing levels of recent years.

The current environment for mining companies is challenging for a number of reasons. At the macro level, nearly all end-use markets, particularly construction (residential and commercial) automotive, transportation, appliance, and electronics are lackluster on a global basis, although aerospace and power generation markets display some better demand attributes. In addition, prices for all metals have fallen precipitously since the middle of 2008 and are expected to remain at relatively weak levels through 2009 and into 2010. Absent resumption of more robust growth rates globally, and in China in particular, significant improvement in the performance of the mining industry is questionable over the next several years.

Consolidation has also changed market dynamics leading to increasingly global markets and reducing the number of players in the industry. This has however, also come with a price for many companies given the debt financed nature of most of these transactions and the resultant increased leverage and challenging debt maturity profiles.

## Global Mining Industry

### Appendix E: Key Rating Issues over the Intermediate Term

#### Recovery In Global Demand; China still a wild card

Given the weakness in virtually all end markets companies are expected to face ongoing challenges, particularly in nickel, aluminum and zinc, and to a somewhat lesser extent in copper, in generating levels of earnings and cash flow that allow for ongoing necessary reinvestment and growth. Most, if not all, of the growth in recent years has been driven predominately by demand from China. The sustainable level of metal demand by the BRIC countries will be a critical factor in growth in the sector.

#### New Reserve Development and Associated Capex

As minerals are depleting resources, the ongoing investment in exploration and development of reserves will continue to be a vital factor over the intermediate and longer term. With the current significant cutback in such expenditures in light of the global financial and economic crisis and the need to conserve liquidity, metal supply, with the likely exception of aluminum, could be constrained once demand levels strengthen. Given the length of time to bring new mines into production this could result in greater price volatility and higher prices over a short time frame. In addition, the associated capital costs at a time when prices and hence earnings and cash flow are still relatively weak, could result in a re-leveraging in the industry.

#### Increased Political Risk

More frequently, new quality ore bodies are located in emerging markets and in countries where mining regulations are untested or subject to change. This will also lead to potentially greater capital expenditures given the lack of infrastructure as well as potentially increased political and economic shocks.

#### M&A Activity to Return

Although current market conditions have resulted in the drying up of significant acquisition activity, as financial and business markets improve M&A activity is expected to return, particularly by companies with significant cash positions and good access to the debt and equity markets. The fall in valuations together with the likelihood of business failures or discrete asset sales to raise necessary liquidity will provide opportunities for further consolidation in the industry, particularly for companies looking to further diversify their commodity exposures.

#### Environmental Regulation and Costs to Increase

Governments across the globe are initiating or contemplating legislation and regulation focused on reducing emissions of green house gases such as carbon dioxide (CO<sub>2</sub>). Given that smelting is the most CO<sub>2</sub> emissions-intensive process in the production chain, especially for aluminum, the base metals industry is likely facing cost increases as legislation is enacted.

## Global Mining Industry

**Appendix F: Definitions****Key Definitions:****RESERVE LIFE** (most recent year)

Most recent year's proven and probable reserves divided by most-recent year's annual production, (weighted by average sales for multi-metal companies).

**EBIT MARGIN** (3-year average of EBIT to 3-year average of revenues)

**EBIT** = Pretax Income + Interest expense +/- other recurring income/expense - other non-recurring income/expense - income from JVs and associates + cash dividends received from JVs and associates.

**RETURN ON AVERAGE ASSETS** (3-year average)

ROA = 3-year average of annual EBIT Divided by average tangible assets (last two years).

**OTHER LIABILITIES TO EQUITY** (most recent year)

Other Liabilities = OPEB + worker's compensation + occupational disease liabilities (including off balance sheet portion of the liabilities) + reclamation and environmental liabilities (balance sheet portions only).

Other Liabilities to Equity = most recent year's other liabilities divided by most recent year's book equity.

**DEBT TO CAPITALIZATION** (most recent year)

Debt = ST debt + LT debt + guarantees + (using Moody's standard adjustments) operating leases + unfunded pension liabilities + securitizations + preferred shares & hybrids.

Capitalization = Debt + deferred taxes + Minority interest + Book equity, adjusted to include other adjustments to debt noted above

Debt to Capitalization = Most recent year's debt divided by most recent year's capitalization.

**DEBT TO EBITDA (3-year average)**

EBITDA = EBIT + DD&A.

Debt to EBITDA = 3-year average of annual year end debt divided by 3-year average of annual EBITDA.

**INTEREST COVERAGE (3-year average)**

Interest expense = Gross interest + Capitalized portion of interest.

Interest Coverage = 3-year average of annual EBIT divided by 3-year average of annual interest expense.

**CASH FROM OPERATION LESS DIVIDENDS to DEBT (3-year average)**

Cash flow from operating activities – common dividends – preferred dividends – minority dividends.

CFO – Dividends to Debt = 3-year average of annual retained cash flow after working capital divided by 3-year average of debt.

**FREE CASH FLOW TO DEBT (3-year average)**

Free Cash Flow = Cash from operations minus dividends minus gross capital expenditures.

FCF to Debt = 3-year average of annual free cash flow divided by 3-year average of debt.

## Global Mining Industry

## Moody's Related Research

### Industry Outlooks:

- Global Base Metals Industry Outlook – Six Month Update, April 2009 (116918)
- Global Base Metals Industry Outlook , October 2008 (112186)

### Special Comment:

- Global Macro-Risk Scenarios 2009-2010 – From Global Integration to Global Dis-integration?, December 2008 (113063)

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

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## Global Mining Industry

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