Rating Methodology

October 2005

Contact	Phone
New York	
Carol Cowan James O'Shaughnessy	1.212.553.1653
Jersey City	
Mark Gray Steve Oman	1.201.915.8300
Frankfurt	
Matthias Hellstern Michael West	49.69.707.30.700
London	
Elena Nadtotchi	44.20.7772.5454
Paris	
Eric de Bodard	33.1.53.30.10.20
Sydney	
Terry Fanous	61.2.9270.8100
Hong Kong	
Angela Choi	852.2916.1120
Tokyo	
Tomomichi Nagaoka Takahiro Morita	81.3.5408.4000
São Paulo	
Richard Sippli Luiz Tess	55.11.3443.7428

Global Steel Industry

Summary

This rating methodology sets forth the key analytical factors that contribute to Moody's ratings of companies in the steel industry globally. For purposes of this methodology, we have defined steel issuers as those companies involved in the production and sale of steel, either on a semi-finished or value-added basis. A number of companies are also active in distribution and trading of steel and other commodities, as well as non-related businesses.

The primary goals of this rating methodology are to help issuers, investors and other participants in the industry understand how Moody's assesses risk in steel companies and to enable our constituents to be able to gauge a company's ratings. This methodology is not an exhaustive treatment of all factors reflected in Moody's ratings, but it should enable the reader to understand the key considerations and financial ratios used by Moody's in the final rating determination.

This methodology focuses on the key operational and financial aspects that Moody's believes to be critical cornerstones to a company's performance and its ability to remain competitive and service its debt obligations.

There are four broad categories Moody's uses to examine credit risk and assign ratings in the global steel industry, with sub-factors that form important building blocks for many of the categories. These factors, which will be closely examined in this report, are as follows:

1. Business Diversity and Size
2. Cost Efficiency and Profitability
3. Financial Policies
4. Financial Strength

We have also included a section on "Other Considerations" that form part of the rating deliberation, such as corporate governance and emerging market risk, which, although difficult to quantify, can have a meaningful impact on ratings of steel issuers. Many of these factors are not unique to the steel industry but rather are applied across the corporate finance franchise.

Moody's Investors Service
Global Credit Research

In an effort to provide transparency, we have also included detailed rating grids, which map each key rating factor to specific ratings.

Finally, because no company will exactly match each dimension of the analytical approach, we also include a discussion of "outliers" - companies whose rating for a specific factor differs significantly from what its actual rating would otherwise imply.

Overview of the Rated Steel Industry

Moody's publicly rates 36 steel companies globally (long-term rating only) with an aggregate of nearly $30 billion in rated debt.

Geographically,

- 55% of the rated issuers are based in the Americas,
- 14% in Europe, and
- 31% in Asia.

Nearly two-thirds of the rated universe is considered below investment grade with the split between investment-grade and speculative-grade issuers at 36% and 64%, respectively.

The global median rating is currently Ba2 with investment-grade ratings clustered in the mid-Baa range and speculative-grade ratings gathered around the B1 rating level. Most of the speculative-grade issuers (17 out of 23) are in the Americas. Several issuers stand out with A ratings, and are distinguished by a) consistent free cash flow generation capability and low leverage in the case of Nucor, b) strong operating profile and market dominance in its home region in the case of POSCO, and c) strong franchise and value added product mix, backed by technological advantage, in the case of Nippon Steel.

The rating grids used for illustrative purposes in this methodology cover 20 of the rated steel companies, which were selected to represent a wide range of credit ratings, size, operating characteristics, and geographic locations. The representative companies listed below comprise roughly $24 billion, or 80%, of the debt of steel issuers rated by Moody's.

Representative Companies

	Senior Unsecured / Corporate Family Rating	Outlook	Country	Tons Shipped (millions)	Rated Debt ($USD millions)
Nucor Corporation	A1	stable	USA	17.8	$525
POSCO	A2	stable	Korea	29.2	$564
Nippon Steel Corporation	A3	positive	Japan	29.5	$3,163
JFE Holdings, Inc.	Baa1	positive	Japan	32.3	$4,656
Arcelor S.A.	Baa2	positive	Luxemburg	43.9	$3,038
Commercial Metals Company	Baa2	stable	USA	3.5	$370
ThyssenKrupp AG	Baa2	stable	Germany	17.2	$3,783
Carpenter Technology Corporation	Baa3	stable	USA	N/A	$458
IPSCO, Inc.	Ba1	positive	Canada	3.6	$200
California Steel Industries, Inc.	Ba2	stable	USA	2.1	$150
Steel Dynamics, Inc.	Ba2	stable	USA	3.4	$415
United States Steel Corporation	Ba2	stable	USA	21.8	$776
Corus Group PLC	Ba3	positive	England	19.7	$1,704
Comphania Siderurgica Nacional (CSN)	Ba3	stable	Brazil	4.7	$572
Gerdau Ameristeel Corporation	Ba3	stable	USA	5.9	$405
MMK (Magnitogorsk)	Ba3	positive	Russia	11.3	$300
Oregon Steel Mills, Inc.	Ba3	stable	USA	1.7	$305
AK Steel Corporation	B1	stable	USA	6.3	$1,000
Allegheny Technologies, Inc.	B1	stable	USA	0.6	$450
Severstal AO	B1	stable	Russia	12.8	$700

Industry Challenges and Rating Drivers:

The steel industry is mature, cyclical and highly competitive on a global basis. Global production exceeded 1.0 billion tons in 2004, driven by strong increases in production in China, and is expected to increase further in 2005, ranking steel volumes among the largest of all materials produced globally.

Companies within this sector have significant variations in scale of operations, both in terms of tons produced and revenues, ranging from Mittal Steel (not included in the representative sampling due to lack of historical figures), with production and revenues of 42.1 million tons and $22.2 billion, respectively, to companies such as Oregon Steel, with 2004 shipments and revenues of 1.7 million tons and $1.2 billion, respectively. In addition, all steel is not created equal, with significant variations in grade, properties, size and shape. In excess of approximately 3,500 grades of steel are produced and are sold into numerous markets, each of which have their own drivers and supply-demand fundamentals. Despite these substantive differences, issuers in the steel sector broadly share similar characteristics and face a number of common challenges, including:

- **Cyclical demand patterns and variability in earnings**

Steel exhibits a high degree of earnings variability. Steel's fortunes depend on general global economic conditions but it is particularly sensitive to the performance of the automotive, construction, durable equipment and other industrial products industries.

- **Exposure to volatile prices**

Steel prices have historically exhibited extreme volatility, reflecting the commodity nature of steel, the limited pricing power of producers, and supply/demand imbalances. This volatility can be exacerbated by import levels in a particular country. The large price fluctuations of recent years, from abysmal lows to historic highs, have been the single most important factor affecting financial performance of steel producers.

Global overcapacity and the diversion of production to other countries during times of economic weakness can also significantly affect price movements in specific steel markets. This has been a key factor behind volatility in the US markets, which tend to be the first port of call for products that cannot be sold elsewhere.

- **Vulnerability to raw material cost fluctuations**

Substantive cost increases for metallics and energy have affected all producers to varying degrees. Moody's believes that there has been a permanent increase in the industry's overall cost platform. With the continued increase in global steel production, particularly in China, availability of raw materials and development of scrap alternatives will command increased management attention.

- **Significant operating leverage**

Reflecting the high fixed costs of the industry, particularly for integrated producers, capacity utilization levels are important factors in the level of earnings generated, or losses incurred by companies in the sector. As with all commodity-based industries, steel companies are loath to reduce production. However, it has been argued that recent industry consolidation has increased producer discipline and, in the last year, there has been evidence that this is the case. The larger companies, at least, were quick to idle mills when steel demand weakened in early 2005.

Key Issues Looking Into the Next Decade

- **Ongoing global consolidation**

Global consolidation will continue to be a factor shaping the industry as companies seek to build size and product diversity and better position themselves to respond to demand and price fluctuations. This is expected to continue to result in greater discipline as to production levels and pricing patterns and could minimize the degree of performance deterioration on the downside. Consequently, improved stability in and strength of ratings could result.

- **Availability and cost of raw materials**

Moody's sees a potential changing footprint to the relationship between steel producers and raw material suppliers as they look to undertake mutually beneficial joint-venture agreements. To the extent greater certainty of supply and more stable costs result, earnings volatility could be reduced, thereby contributing to greater sustainability of improved financial metrics.

- **Excess capacity pressure**

  Although consolidation activity has contributed to a more disciplined approach to supply and demand situations, the continued development of new steel mills globally could cause the extreme volatility experienced in the past to continue, thereby potentially limiting the degree of upward rating movement within the industry.
- **Substitution of other materials**

  Intensity of steel usage remains vulnerable to substitution by other materials, particularly aluminum in the case of the automotive industry, a key consuming industry for steel.

In this Methodology

Moody's approach to rating companies in the steel industry incorporates the following steps:

1. IDENTIFICATION OF THE KEY RATING FACTORS

These are the key factors that Moody's considers to be major drivers in determining a rating for a company in the global steel industry.

1. Business Diversity and Size
2. Cost Efficiency and Profitability
3. Financial Policies
4. Financial Strength

In addition to the four major factors discussed in this report, Moody's considers other qualitative factors which either cannot be quantified or which cannot be quantified in a meaningful manner. These factors, however, may represent important and in some cases overriding considerations (e.g. emerging market risk, Other Postretirement Employee Benefit (OPEB) exposures). These factors are explained in the "Other Considerations" section.

2. MEASUREMENT OF THE FOUR KEY RATING FACTORS

Each of the four factors contains between two and four sub-factors, which comprise the components viewed as most important in assessing the credit quality of global steel issuers. In total, the four categories include eleven sub-factors and contain nine financial metrics. The factors are defined using any or all of the following approaches, as warranted:

- Quantitative: Financial assessments that can be derived from publicly available data (e.g. EBIT margin, revenues).
- Qualitative: An assessment based on rankings estimated by Moody's, or broader quantitative measures defined by Moody's in this methodology (e.g., number of operating locations, raw material position).

Moody's practice for measuring ratios is to use the past two or three years' actual results along with Moody's expectation for the next two or three years results, and to consider the average as well as the high and low points. This gives us a view of a company's ability to perform in both high and low price environments. For illustrative purposes in this methodology, we have used historical data only for each of the sample companies as a proxy for various price environments that Moody's would consider in ratings deliberations. However, some of the companies covered in this methodology do not have a five year history (namely, Arcelor, founded in 2002 through a three-way merger and Gerdau Ameristeel, founded two-years ago). We have therefore used four-year averages for Arcelor (including the proforma financials for 2001 and including large amounts for one-time impairment charges) and two-year averages for Gerdau Ameristeel.

Please note that for company-specific results listed in this publication we rely solely on public information, whereas actual rating decisions will also incorporate non-public data as applicable.

3. MAPPING TO THE RATING CATEGORIES

The methodology sets forth what Moody's believes to be appropriate ranges for broad rating categories from Aa to Caa for most of the sub-factors. Certain sub-factors, such as size, are capped at the A rating level to reflect Moody's view that significant advantages in these sub factors are not prevalent above the designated levels. The ranges represent, on average, our expectations for each rating category. Not every factor will map to the actual rating level and the rating represents an overall blend of the key factors.

4. ILLUSTRATING THE RATING METHODOLOGY

To better illustrate our global rating methodology, we have applied it to 20 representative global credits. For each company, we set forth the sub-factors within each main group and show how the indicated rating compares to the company's actual rating.

Companies whose rating is higher or lower by two or more rating categories are considered outliers and are so identified. Our observations will focus on those companies that fall outside their rating with comment as to geographic and other factors that may help to explain the difference.

Finally, for each of the sample companies, we map the aggregate of its ratings for each factor to an overall rating for that company, using equal weightings for each factor.

The Four Key Rating Factors

RATING FACTOR 1: BUSINESS DIVERSITY AND SIZE

Why it Matters

This factor includes two parts: the number of operating locations the company has and its size as measured by total revenues.

Operational Diversity: The number of locations in which a company operates, as well as the diversity of operations that can be performed within a single complex, is an important variable given the greater options afforded a more diversified company. Multiple locations lessen the impact of strikes, equipment failures, power outages and other operational event risks that could significantly curtail output. Companies with single or few mill sites have higher operational risk and would have lesser flexibility to continue to source customer orders, leading to reduced financial flexibility. Operational diversity is often accompanied by product diversity, which reduces reliance on a single product or end-market.

Size: Given the inherent cyclicality of the steel industry and price volatility, the revenue-generating capability of a company is a key variable in analyzing its overall market strength, importance to markets served, and staying power. Revenue size will essentially be driven by the operational diversity referred to above, but will also incorporate the nature of products produced, i.e., pure commodity, value-added or a blend. Given the general commodity-like nature of steel and its ability to be sold on a global basis, companies with a larger revenue base generally have greater flexibility to manage their businesses through differing price and demand scenarios.

How We Measure It

Operational Diversity: This is measured by taking a total of the company's distinct operating locations and includes operations that might fall outside the specific activity of making steel. In general, steel producers can be classified into two major types: integrated mills and mini-mills. The business platform of the integrated steel producers versus that of the mini-mills is one in which the integrateds generally produce several millions of tons in one large operating site with a number of distinct operations conducted within the complex while mini-mills tend to have lesser production capacity at individual sites but tend to have a number of sites within various regional locations.

To address this distinction and to reflect the diversity within an integrated site, Moody's methodology gives credit for the multiple individual mills that an integrated producer has at a single site while each individual mini-mill site counts as a discrete location. The total score maps to rating ranges from Aa to Caa, with greater than 20 locations equating to the Aa band. Generally speaking, Moody's sees no meaningful advantage once a company has more than 20 operating locations. Companies operating through three or fewer sites will fall within the B or below rating categories and, due to the high level of operational and event risk associated with the modest operational diversity may be limited in the level of rating that can be reached.

Size: This sub-factor is based on the latest year's revenues. Companies with $10 billion or greater in revenues will fall into the A category and, again, we have capped the high end of the rating to reflect Moody's view that revenues over $10 billion do not provide significant measurable advantages. The most recent period's revenue was used in order to be able to measure companies at the same point in time in the cycle and their overall position moving into the following year.

Factor Mapping

	Aa	A	Baa	Ba	B	Caa
I) Business Diversity and Size						
1. Operational Diversity	>20	11-20	6-10	4-5	2-3	1
2. Size (in $USD billion's)		>$10	$10-$3	$3-$1.5	$1.5-$.750	<$.750

Ratings Mapping

Business Diversity & Size	Rating	(1) Operational Diversity	Mapped Rating Category	(2) $USD Revenues (Fiscal 2004)	Mapped Rating Category
Nucor Corporation	A1	21	Aa	$11.377	A
POSCO	A2	21	Aa	$21.800	A
Nippon Steel	A3	21	Aa	$32.300	A
JFE Holdings	Baa1	21	Aa	$26.700	A
Arcelor	Baa2	21	Aa	$37.518	A
Commercial Metals	Baa2	6	Baa	$4.768	Baa
ThyssenKrupp	Baa2	21	Aa	$47.997	A
Carpenter Technology	Baa3	6	Baa	$1.314	B
IPSCO	Ba1	6	Baa	$2.453	Ba
California Steel	Ba2	1	Caa	$1.257	B
Steel Dynamics	Ba2	6	Baa	$2.145	Ba
U.S. Steel	Ba2	21	Aa	$13.969	A
Corus Group	Ba3	6	Baa	$17.794	A
CSN	Ba3	5	Ba	$3.692	Baa
Gerdau Ameristeel	Ba3	16	A	$3.010	Baa
MMK (Magnitogorsk)	Ba3	4	Ba	$4.829	Baa
Oregon Steel Mills	Ba3	3	B	$1.185	B
AK Steel	B1	18	A	$5.217	Baa
Allegheny Technologies	B1	4	Ba	$2.733	Ba
Severstal AO	B1	3	B	$6.648	Baa

= Positive outlier = Negative outlier

Observations

Operational diversity:

The notable favorable outliers here are ThyssenKrupp, Arcelor, U.S. Steel, Gerdau Ameristeel and AK Steel. In the case of both U.S. Steel and AK Steel, the mapping reflects the number of facilities through which they operate and the multiple production and finishing activities within the integrated mill sites, which provide a greater degree of operating flexibility. Gerdau Ameristeel, also a positive outlier for operational diversity, receives a high score due to its 15 regional mini-mills and many downstream operations. ThyssenKrupp's mapping reflects the diversity of its business operations and locations beyond those that are purely steel related (which comprise one large integrated plant for flat steel and five plants for stainless steel).

A negative outlier, California Steel typifies a company that operates a single-site facility. All of its processing operations are located at a single site in Fontana, California, and this operational concentration constrains the rating on this sub-factor to Caa. We note, however, that California Steel has several distinct mills at Fontana, a hot strip mill, a cold-rolled mill, two galvanizing lines, and an ERW pipe mill and this product diversity is positively considered in our rating. It is not unusual for even the small companies to have multiple mills as, over time, they add new capabilities and value-added products.

Size: Most companies map to, or better than, their rating category, which is reflective of the productive capacity and tons produced. U.S. Steel, Corus Group and AK Steel are favorable outliers by two or more rating categories, reflecting favorable product mix in the case of U.S. Steel and AK Steel. Carpenter Technology, with a June 30 fiscal year-end, stands out as an unfavorable outlier by two rating categories, reflective of its smaller production base and niche market operations in specialty markets such as stainless steel and alloys. These markets evidenced different timing in their recovery than the carbon steel industry did, both in terms of price and end-user demand, such as aerospace.

RATING FACTOR 2: COST EFFICIENCY AND PROFITABILITY

Why It Matters

Given the industry characteristics of underlying pricing volatility, limited producer pricing power, sensitivity to underlying economic conditions, and a relatively high fixed-cost base, particularly at the integrated producers; elements that are within a company's ability to manage, such as cost structure and operating efficiency, are important considerations in the rating analysis.

Factors that measure costs and operating efficiency help in assessing a company's ability to operate through economic downturns and its ability to not only continue servicing its debt, but meet other obligations, which can vary extensively on a geographic basis due to regulatory, environmental compliance and other differences. Here again, certain distinctions between production methods of the mini-mills and integrated producers must be kept in mind. Mini-mills melt scrap in electric arc furnaces, although certain mini-mill producers are using a larger mix of scrap substitutes and seeking to secure greater self sufficiency in raw material sources. Integrated producers, however, process iron ore, coke and other materials in blast and basic oxygen furnaces in order to produce molten steel. As a consequence, the cost structures as well as the efficiency of assets employed are important analytical considerations in determining the sustainability of performance.

In the evaluation of costs, Moody's also considers other liabilities, such as Other Postretirement Employee Benefit (OPEB) obligations and environmental liabilities to determine the magnitude of risk exposure such might represent. These can have meaningful cash outlay requirements and vary widely on a geographic basis. Based on a number of factors, there can be significant differences between unionized and non-unionized companies and producers in developed vs. developing countries, where, for example, different environmental standards might apply. OPEB liabilities are the major input in this factor and companies most impacted by this measurement are unionized steel companies in the US.

There are four sub-factors that Moody's focuses on when analyzing the cost efficiency and profitability of steel producers.

How We Measure It

EBIT Margin: A five-year average of annual EBIT divided by annual revenue. This is a critical measurement for analyzing the underlying operational profitability of a steel producer. While Moody's looks to maintain some stability in ratings in different operating and economic environments and considers the prior two to three years' results in combination with expectations for the next two years, this methodology uses, for illustrative purposes, the average EBIT to revenue ratio of the past five years as a proxy for performance through both peak and trough scenarios.

Return on Average Tangible Assets: A five-year average of annual EBIT divided by average tangible assets. This measurement adds further dimension by providing an indication of the efficiency of assets employed. Given the capital-intensive nature of the industry and the need to operate at high capacity utilization rates, this ratio provides a further indication of the ability to generate meaningful returns from the asset base. This ratio is also based upon a five-year average.

Percentage of "Other" Liabilities to Book Equity: The most recent year's other liabilities divided by book equity. Other liabilities are defined as OPEB, environmental and other off balance sheet items believed to be material.

Raw Material Costs: This sub-factor attempts to capture the degree to which a company is self-sufficient in its raw material requirements, or has contracts providing assurance to supply and price parameters. With the rapid escalation in all input costs impacting both integrated and mini-mill producers, this has become an increasingly important issue. In its methodology to determine where a company stands in this measure, Moody's evaluates a company's position in four key areas: coal, coke, iron ore, and scrap, and limits the ultimate outcome to four rating categories ranging from A to B. Integrated producers input requirements generally cover the four key areas mentioned with long term contracts fairly standard for coal, coke and iron ore, while the major input at mini-mills is scrap, typically a spot market. Companies dependent on the spot market for any given input score zero, with the exception of scrap where companies are able to pass through cost increases via the surcharge mechanism, in which case they score a two. Companies with long-term supply contracts receive a score of one per cost input and those which control greater than 50% of their requirements receive a score of two. The maximum score possible in this factor is 8.

Notes on Measurement Criteria

For comparative purposes, AK Steel's Ebit, EBITDA and book equity numbers are adjusted to reverse the impact of pension and other postretirement benefit "corridor charges ".

Other Liabilities to Book Equity:

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 an issuers non-debt obligations to its book equity capital.[1]

1. Moody's may, however, adjust financial statements for OPEB liabilities. Ref: "Other Postretirement Benefits-Moody's Analytical Approach" (December 2004)

Environmental liabilities are determined using the balance sheet amounts while OPEB 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". We include both the short- and long-term portions of these liabilities. When assessing these obligations, we may adjust reported figures in response to differences in accounting policies across companies, company-specific factors, and our assessment of how these liabilities may change over time. The cash-flow impact of these liabilities is vitally important.

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.

Factor Mapping

	Aa	A	Baa	Ba	B	Caa
II) Cost Position						
1. EBIT Margin	>20%	20-15%	15-7%	7-2.5%	2.5-1%	<1%
2. Return on Assets	>15%	15-10%	10-5%	5-2.5%	2.5-1%	<1%
3. Other Liabilities / Equity		<15%	15-30%	30-50%	50-75%	>75%
3. Raw Materials		7-8	4-6	3-1	0	

Ratings Mapping

Issuer	Rating	(3) EBIT Margin (5-yr avg)	Mapped Rating Category	(4) ROA (5-yr avg)	Mapped Rating Category	(5) "Other" Liabilities / Equity (Fiscal 2004)	Mapped Rating Category	(6) Raw Materials	Mapped Rating Category
Nucor Corporation	A1	9.0%	Baa	14.0%	A	0.0%	A	3	Ba
POSCO	A2	15.6%	A	13.4%	A	0.0%	A	6	Baa
Nippon Steel	A3	5.9%	Ba	4.6%	Ba	0.0%	A	6	Baa
JFE Holdings	Baa1	10.8%	Baa	7.7%	Baa	0.0%	A	6	Baa
Arcelor	Baa2	5.8%	Ba	6.3%	Baa	2.2%	A	3	Ba
Commercial Metals	Baa2	3.3%	Ba	8.1%	Baa	0.0%	A	2	Ba
ThyssenKrupp	Baa2	4.0%	Ba	5.3%	Baa	20.1%	Baa	4	Baa
Carpenter Technology	Baa3	6.8%	Ba	5.5%	Baa	21.0%	Baa	2	Ba
IPSCO	Ba1	9.7%	Baa	8.9%	Baa	0.0%	A	2	Ba
California Steel	Ba2	7.8%	Baa	13.2%	A	0.0%	A	1	Ba
Steel Dynamics	Ba2	14.3%	Baa	12.9%	A	0.0%	A	2	Ba
U.S. Steel	Ba2	1.6%	B	2.9%	Ba	60.1%	B	5	Baa
Corus Group	Ba3	-0.6%	Caa	0.1%	Caa	0.0%	A	3	Ba
CSN	Ba3	34.5%	Aa	15.8%	Aa	0.0%	A	2	Ba
Gerdau Ameristeel	Ba3	5.9%	Ba	9.0%	Baa	3.6%	A	2	Ba
MMK (Magnitogorsk)	Ba3	17.9%	A	28.0%	Aa	0.0%	A	5	Baa
Oregon Steel Mills	Ba3	4.1%	Ba	5.4%	Baa	8.7%	A	2	Ba
AK Steel	B1	1.9%	B	1.9%	B	192.4%	Caa	3	Ba
Allegheny Technologies	B1	-1.0%	Caa	-1.0%	Caa	116.1%	Caa	2	Ba
Severstal AO	B1	19.9%	A	26.8%	Aa	0.0%	A	5	Baa

= Positive outlier   = Negative outlier

Observations

EBIT Margin:

Most companies map unfavorably in this factor reflective of the extremely weak to negative earnings environment prevalent over the prior five year period. Arcelor, ThyssenKrupp and Corus's margins also reflect a degree of dilution from their steel distribution businesses, which have low but relatively stable margins and cash flows.

Return on Assets:

Again, this sub-factor indicates several unfavorable outliers, stemming from the poor earnings environment indicated above and the asset-intensive nature of the steel business. These include Corus and Allegheny Technologies, which map to an indicated Caa rating in this category and which have experienced several years of negative to breakeven

EBIT. Companies with relatively stable margins and low costs, i.e., that were consistently profitable through the lengthy down years of the industry from 2000 - 2003 perform well on this measure and many are positive outliers. This includes Ba and B rated companies such as California Steel, Steel Dynamics, Oregon Steel, MMK, CSN, and Severstal. As was the case with the EBIT margin, these last three are the top-ranked companies on this sub-factor, reflecting their low operating costs and earnings generation capacity and, hence, higher asset returns.

Other Liabilities / Equity:

Not surprisingly, the unfavorable outliers in this category are the US integrated steel producers U.S. Steel, AK Steel and Allegheny Technologies, principally due to high legacy OPEB obligations, while many of the European, Japanese, and US mini-mill companies generally do not have company-provided retiree benefit programs. Therefore, they have few OPEB liabilities and score relatively high on this sub-factor. Both US Steel and Allegheny Technologies have been able to negotiate favorable adjustments in their labor contracts and retiree health care plans, which should be beneficial to performance in this factor over the longer term.

Raw Materials:

U.S. Steel maps favorably due to its domestic self-sufficiency in iron ore, significant coke production, and contract positions. Nucor, a negative outlier by one rating category, reflects its reliance on the spot scrap market for most of its key input requirements. At the lower ratings levels, most companies tend to map to their rating category as the mini-mills benefit from surcharge pass-throughs on scrap, while integrated producers generally have medium-to-long-term supply contracts.

RATING FACTOR 3: FINANCIAL POLICIES

Why it Matters

A company's financial policies are a critical component in the rating process for steel 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, dividend policy including share repurchases, funding requirements for capital expenditures, and how acquisitions have been financed. Given the generally depressed conditions in the steel industry prior to 2004, share repurchases have not been prevalent; however, merger and acquisition activity has been considerable as the steel industry continues to consolidate to achieve greater scale of operations and product mix. 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 the most revealing credit metrics and further provide an indication of a company's financial flexibility based on cash flow to debt measurements. The more modest a company's debt levels, the greater the financial flexibility it has for coping in the industry's valleys.

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 exceeds the earnings generation capability of the company. Given industry price volatility, and the swings experienced in cash-flow generation, steel producers are unable to bear the high degree of financial leverage that might be tolerated in other industries in which cash-flow generation is more stable.

How We Measure It

Consistent with Moody's standard adjustments,[2] we adjust financial statements for operating leases (using Moody's modified present value approach), 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.

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.

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 helpful measurement for the steel industry as it provides a sense of the underlying capital strength of a company to weather a downturn.

Debt to EBITDA is measured by a five-year average, which is illustrative of performance through a high and low pricing environment. For those companies that had negative EBITDA in any given year or Debt/EBITDA greater than 10x, we have used a 10x factor for that particular year.

2. Ref: *"Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations - Part I" (July 2005)*

Notes on Measurement Criteria

For comparative purposes, AK Steel's Ebit, EBITDA and book equity numbers are adjusted to reverse the impact of pension and other postretirement benefit "corridor charges."

With respect to adjustments to debt for pension obligations[3], US companies operate with prefunded 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 under funded portion of pension obligations of US, UK and Canadian companies as debt[4]. For certain other jurisdictions, such as Germany, unfunded pension obligations are adjusted to simulate a funding for those liabilities.[5]

The leverage ratios are calculated on a gross debt basis, in other words we do not net cash against debt when calculating the ratio. However, Moody's does take into consideration the level of cash maintained by a company and in certain instances will consider the ratios on a net debt basis. This would be more typical when a company maintains cash levels comfortably in excess of working cash requirements as part of a strategic philosophy of its management of debt and cash positions. This tends to be more prevalent in Europe, which may stem from tax considerations or a higher level of caution regarding the availability of funding in the bank or bond markets. While the maintenance of large cash balances is also prevalent in certain South American countries such as Brazil, reflective of the volatility of the currency and economic markets, Moody's views this as necessary liquidity support given the general absence of committed bank facilities.

Factor Mapping

	Aa	A	Baa	Ba	B	Caa
III) Financial Policies						
1. Debt / Capital	<30%	30-40%	40-50%	50-75%	75-90%	>90%
2. Debt / EBITDA	<1.5X	1.5-2.5X	2.5-3.5X	3.5-4.5X	4.5-6X	>6.0X

Ratings Mapping

Issuer	Rating	(7) Adj Debt / Total Capital (Fiscal 2004)	Mapped Rating Category	(8) Adj Debt / EBITDA (5-yr avg)	Mapped Rating Category
Nucor Corporation	A1	20%	Aa	1.0X	Aa
POSCO	A2	21%	Aa	1.7X	A
Nippon Steel	A3	52%	Ba	6.2X	Caa
JFE Holdings	Baa1	63%	Ba	5.1X	B
Arcelor	Baa2	43%	Baa	4.2X	Ba
Commercial Metals	Baa2	39%	A	2.4X	A
ThyssenKrupp	Baa2	49%	Baa	3.3X	Baa
Carpenter Technology	Baa3	29%	Aa	3.9X	Ba
IPSCO	Ba1	25%	Aa	6.0X	Caa
California Steel	Ba2	33%	A	2.9X	Baa
Steel Dynamics	Ba2	30%	Aa	3.8X	Ba
U.S. Steel	Ba2	34%	A	6.4X	Caa
Corus Group	Ba3	34%	A	6.3X	Caa
CSN	Ba3	57%	Ba	3.4X	Baa
Gerdau Ameristeel	Ba3	33%	A	5.8X	B
MMK (Magnitogorsk)	Ba3	24%	Aa	0.7X	Aa
Oregon Steel Mills	Ba3	46%	Baa	5.3X	B
AK Steel	B1	67.4%	Ba	6.2X	Caa
Allegheny Technologies	B1	67%	Ba	7.2X	Caa
Severstal AO	B1	33%	A	0.6X	Aa

= Positive outlier

= Negative outlier

3. 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, and "Moody's Approach to Analyzing Pension Obligations of Corporations", November 1998
4. Ref: "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" (July 2005)
5. Ref: "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")" (September 2005), Request for Comment

Observations

Debt/Capital

Based upon fiscal 2004 numbers (March 2005 for the Japanese issuers), it is not surprising that this sub-factor indicates a number of favorable outliers. With the strong cash flows generated in 2004 and favorable equity markets, many companies took advantage of the opportunity to reduce debt and strengthen their overall capital base.

Debt/EBITDA

Contrary to the more favorable mapping performance of many issuers in the debt to capital sub-factor, this area indicates that more than half of the sample companies fall one or two rating categories below their actual rating. Again, the weakness in EBITDA generation and the capital-intensive nature of the industry combine to indicate low levels of cash generation to cover debt obligations and the need for more moderate leverage given industry volatility. Nucor, mapping to a Aa rating category demonstrates the benefit of low leverage and consistent earnings generation off its asset base and business platform, even in down years for the industry.

Gerdau Ameristeel maps to a low B rating on this measure. However, this is due to the inclusion of only two years of relevant financial history, and 2003's unusually low EBITDA, which exceeded the 10x cut off factor used for this measurement. AK Steel and Allegheny Technologies map to a Caa rating on this measure reflective of several years of depressed EBITDA relative to debt levels, resulting in this measurement being included at the 10x level. Although Arcelor maps below its rating category in this measurement on a gross debt basis, the company has a history of maintaining a high cash balance and the net debt position is considered.

RATING FACTOR 4: FINANCIAL STRENGTH

Why it Matters

Three ratios are critical in this area and are based on both earnings and cash flow. These are particularly important in a capital intensive industry such as steel, especially for integrated producers with a higher fixed cost base and costly blast furnace reline requirements. The key indicators we use 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.

How We Measure It

Interest Coverage: A five-year average of EBIT to interest expense. This looks at a company's ability to service its debt obligations out of earnings generation and uses EBIT as adjusted for non-recurring and unusual charges. EBIT is believed to be a better measure than EBITDA due to the capital intensive nature of the industry and the need to reinvest in the business in order to maintain productivity and efficiency.

Cash from Operations minus Dividends to Debt: A five-year average of cash from operations less dividends to debt.

Free Cash Flow (FCF) to Debt: A five-year average of annual free cash flow, i.e., cash from operations minus dividends minus capital expenditures to debt.

For the steel 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 steel issuer'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 particularly important ratio since it indicates the amount of cash flow that is available to service debt.

Notes on Measurement Criteria

As described elsewhere in this report, EBIT and debt are adjusted and interest expense includes capitalized interest. For comparative purposes, AK Steel's Ebit, EBITDA and book equity numbers are adjusted to reverse the impact of pension and other postretirement benefit "corridor charges."

Factor Mapping

	Aa	A	Baa	Ba	B	Caa
IV) Financial Strength						
1. EBIT / Interest	>10X	10-7X	7-4X	4-2.5X	2.5-1X	<1.0X
2. Cash from Op's - Div / Debt	>40%	40-30%	30-20%	20-10%	10-5%	<5%
3. Free Cash Flow / Debt	>15%	15-10%	10-5%	5-2%	2-(2)%	<(2)%

Ratings Mapping

Issuer	Rating	(9) EBIT / Interest (5-yr avg)	Mapped Rating Category	(10) CFO - Div / Adj Debt (5-yr avg)	Mapped Rating Category	(11) FCF / Adj Debt (5-yr avg)	Mapped Rating Category
Nucor Corporation	A1	24.6X	Aa	75.8%	Aa	30.0%	Aa
POSCO	A2	8.0X	A	51.0%	Aa	23.4%	Aa
Nippon Steel	A3	7.2X	A	16.6%	Ba	7.5%	Baa
JFE Holdings	Baa1	11.2X	Aa	16.9%	Ba	9.8%	Baa
Arcelor	Baa2	4.2X	Baa	21.1%	Baa	7.4%	Baa
Commercial Metals	Baa2	4.3X	Baa	13.9%	Ba	-0.6%	B
ThyssenKrupp	Baa2	3.7X	Ba	17.6%	Ba	1.8%	B
Carpenter Technology	Baa3	3.1X	Ba	22.8%	Baa	18.3%	Aa
IPSCO	Ba1	6.0X	Baa	22.7%	Baa	4.9%	Ba
California Steel	Ba2	5.9X	Baa	18.9%	Ba	7.8%	Baa
Steel Dynamics	Ba2	4.6X	Baa	25.2%	Baa	3.8%	Ba
U.S. Steel	Ba2	1.9X	B	18.5%	Ba	4.9%	Ba
Corus Group	Ba3	-0.2X	Caa	9.0%	B	-3.9%	Caa
CSN	Ba3	2.6X	Ba	4.6%	Caa	-8.6%	Caa
Gerdau AmeriSteel	Ba3	3.3X	Ba	11.3%	Ba	2.0%	B
MMK (Magnitogorsk)	Ba3	12.7X	Aa	135.9%	Aa	46.4%	Aa
Oregon Steel Mills	Ba3	1.4X	B	7.3%	B	2.0%	B
AK Steel	B1	0.7X	Caa	8.5%	B	3.5%	Ba
Allegheny Technologies	B1	-0.1X	Caa	9.1%	B	0.1%	B
Severstal AO	B1	30.4X	Aa	120.2%	Aa	60.6%	Aa

= Positive outlier   = Negative outlier

Observations

EBIT to Interest

Steel Dynamics compares favorably as its average rating in this factor was significantly pulled up by a material improvement in performance in 2004. Absent this strong advancement, coverage ratios would have averaged around 2.5x, indicating a B rating on this sub-factor. IPSCO also maps favorably. Its 6.0 times average coverage ratio results from a "bookend" pattern of very high coverage ratios in 2000 and 2004, when coverage was above 16 times and weak coverage, approximately two times, in the intervening years.

Approximately 35% of the representative issuers map one or more rating categories below their actual rating for this sub factor, indicative of the severity of the last five years on earnings performance. Companies such as Carpenter Technology and Allegheny Technologies also reflect differences in the timing and level of recovery in stainless steel prices vs. carbon steel and the different timing in strengthening in their alloy and specialty metals segments, which are material to the overall business platform for these two companies.

Cash from Operations less Dividends to Debt

Nucor and POSCO map to the Aa category for this sub-factor. Nucor benefits from two years during the time frame measured of this ratio close to or in excess of 100% reflective of strong cash flow and modest debt levels, while POSCO demonstrates strong performance in most all years measured.

Commercial Metals maps unfavorably reflective of high working capital requirements from its service/distribution business segment and tightness of operating cash flow relative to debt levels. The weak figures of Nippon and JFE are attributable to inclusion of the period when the intense competition for domestic business developed before the subsequent industry consolidation was initiated.

Free Cash Flow to Debt

Carpenter Technology is a positive outlier reflective of relatively stable operating cash flow, modest dividends and capital expenditures, and a reducing debt position.

Commercial Metals is a negative outlier reflective of factors mentioned above and capital expenditure levels, which have contributed to negative free cash flow generation over the timeframe incorporated in the ratio. Similarly, ThyssenKurpp's negative outlier status stems from high working capital requirements and capital expenditure levels in the first two years of the measurement period. Its performance in this measurement has been improving and the high cash balances it maintains are a mitigating factor in its rating consideration. CSN is a negative outlier in both cash flow based factors, principally due to a high dividend payout in 2001. However, adjusting for proceeds from investment dispositions in 2001, CSN maps closer to its rating category in these subfactors.

Other Rating Considerations

The rating analysis considers many other risks and financial aspects that are not readily captured in a statistical manner. Some of the more key areas include:

Liquidity:

Given the volatility of operating cash flows and reinvestment requirements, a steel issuer must evidence sufficient liquidity to fund ongoing requirements, deal with seasonal and cyclical pressures, and meet maturing debt obligations. This is especially critical in the non-investment grade area where issuers typically have less operating and financial flexibility. Moody's examines all aspects related to near-term liquidity requirements from both a cash source and cash use aspect. Given the fluctuations evidenced in operating performance and cash-generating ability for the steel industry, a solid liquidity position relative to obligations over a 24-month period can be a distinguishing factor in ratings, or in the support of existing ratings.

Corporate Governance:

Moody's has published corporate governance assessments on a number of the rated steel issuers. These assessments identify areas of strength or concern, principally related to board composition, executive compensation practices, financial expertise, and business strategy, and these findings are factored into our ratings. In those instances where a formal governance assessment has not been conducted, the proxy is reviewed and management's track record, depth and breadth of expertise and turnover levels are considered.

Labor and Legacy Costs:

While the impact of legacy costs is captured in several of the financial measurements we use in the methodology, the labor composition, including union or non-union, contract periods, and labor productivity, is a further aspect that is considered in the rating analysis. These can provide further indications of a company's competitive position, which will vary depending upon where its operations are domiciled.

Emerging Market Risk:

This is a key consideration that affects a number of steel companies operating in emerging markets or those that are exposed to emerging market risks. Many of the emerging markets in which steel companies are present (such as in Latin America and Central and Eastern Europe) expose these companies to additional operating, economic and political risks which are not contained in the ratings grid. As such the ratings assigned to an issuer in an emerging market may be constrained by the uncertainties associated with the local operating, political and economic environment.

Over the forthcoming months, Moody's intends to develop its comments with respect to the risks associated with issuers that are domiciled or who operate predominately within emerging markets.

Product Mix:

The nature of products produced, industries sold to, and the mix between commodity and value-added products, together with the level of spot sales and contract sales, are an important part of the rating discussion. As this information is not presented consistently across all producers, it does not easily lend itself to a specific mapping criterion.

Environmental:

Environmental compliance requirements vary globally and hence the level of environmental liabilities does as well. These would encompass various regulations for air emissions, waste-water discharges, and solid and hazardous waste disposal. In general, the regulations are now more of a cost burden in developed countries than elsewhere.

Regional Differences:

Japan and Asia

The Japanese steel market evidences a different business risk profile from that faced by producers in other countries. The resultant business stability and predictability of cash flows for the rated Japanese integrated steel producers therefore mitigates the more modest quantitative financial measurements relative to those of major global peers.

The market for high-grade and value added steel consumed in Asia is dominated by the Japanese integrated producers who have little exposure to commodity steel grades. The technologies employed by Japanese producers to develop and produce high-quality and customized products are important rating considerations as such capabilities contribute to the sustainability of the strong relationships Japanese producers have with their customer base. In addition, import penetration is low. As a consequence, a lesser degree of pricing volatility is experienced relative to that seen in other markets.

In the rated universe comprising the Japanese steel sector, there has been no case of corporate default. In addition, the underlying systemic support by banks is, in general, arguably higher in Japan than in other countries, thereby reducing the probability of default. As bank financing represents an important part of corporate funding, the behaviors of banks and their approach to credit risk are considered in any rating methodology for Japanese issuers. The stable financing environment in the Japanese market, especially for major corporate borrowers, is viewed as providing a degree of mitigation to the financial risks of debt-financed balance sheets, and Japanese banks and investors generally have a higher tolerance for modest financial metrics than lenders do in many other countries.

Europe

The market for steel producers in Western Europe is differentiated from other markets, particularly the US as the leading three steel producers, Arcelor, ThyssenKrupp and Corus enjoy substantial market share in a largely consolidated market place. In addition, these producers are also the major European steel distribution companies. While the distribution business leads to a dilution of margins, it provides relatively stable cash flows and is less asset intensive. Operating margins also tend to be lower in European countries than in other markets reflective of the cost of operating in a number of smaller countries with differing local consumption habits and different logistics systems.

In addition, European companies generally hold higher cash balances than their US counterparts stemming from a more cautious approach to liquidity. Moody's therefore generally takes into account average historical cash balances, adjusted for working cash needs and trapped cash, when calculating debt ratios for these companies.

United States

Moody's analysis of US companies takes into account the fact that US corporate bond issuers have a higher historical default rate than their counterparts in many other developed markets. In part, this reflects more frequent use of highly leveraged capital structures as well as shareholder pressure for high short-term returns, which, in turn, may force management to deploy higher-risk strategies. The steel industry in the US has experienced a significant number of bankruptcies, principally among integrated and small producers, reflective of high leverage, poor-to-negative operating results and the burden of high legacy costs for both pensions and retiree health care. Ratings for issuers in the US reflect the ongoing costs and obligations in the area of pensions and retiree health care and may therefore be lower than comparable statistics with issuers elsewhere in the world would indicate.

Final Considerations

Appendix I illustrates the mapping and ratios for each of the eleven measured factors as well as each company's overall implied rating using "equal" weighting. For each factor we have highlighted favorable and unfavorable outliers of two or more full rating categories. Among our conclusions:

- Results from equally weighting the factors indicate that fourteen (14) issuers (70% of the representative sample) map at their assigned rating categories: four issuers (20%) fall within one rating category of their assigned ratings, and only two issuers map two or more notches away from their assigned ratings.
- The two issuers mapping two or more notches away from their assigned ratings, MMK and Severstal AO, reflect strong financial metrics, but their ratings are tempered by emerging market risk considerations.
- As can be seen in the chart, the indicated rating categories for most of the companies vary considerably across the factors. The more highly rated companies such as Nucor and POSCO (senior unsecured A) tend to demonstrate the diversity of operational scale and size and more moderate leverage relative to earnings and cash flow generation that provides for financial flexibility through the pricing peaks and valleys.
- Although all factors are weighted equally in arriving at the mapped rating, measurement of the degree of leverage employed in the capital structure relative to both earnings and cash flow generation is an important rating consideration with debt represented in four of the nine financial metrics.
- We believe the rating methodology is useful in identifying companies that fall outside of the indicated ranges for individual measurement criteria - either favorably or unfavorably - and determining whether there are offsetting factors to compensate.
- A number of companies such as Arcelor, U.S. Steel and Corus demonstrate various weak sub-factors and volatility in performance. However, each company has been involved in acquisition or merger activity over the time period and today has a different business platform than in the past.
- The smaller or more specialized companies such as Allegheny Technologies, which has high exposure to stainless steel and specialty alloys, have experienced more limited flexibility and evidence the impact of the sequential industry down years and slower underlying industry recovery on their overall performance.

Related Research

Rating Methodology:

Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations - Part I, July 2005 (93570)

Industry Outlooks:

Domestic Steel Industry, Outlook 2005 - "Still Strong But a Turning Tide", December 2004 (90615)

Japanese Integrated Steels Fortify Financial Profiles In Face of Long-Term Challenges, December 2004 (90415)

European Steel Industry Outlook 2005, December 2004 (90715)

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.

Appendix I

Summary of Mapped Rating Categories

		Business Diversity and Size		Cost Position				Financial Policies		Financial Strength			
		1	2	3	4	5	6	7	8	9	10	11	
Company	Actual Rating	Operational Diversity	Size ($USD billions) (most recent yr-end)	EBIT Margin (%) (5-yr average)	ROA (%) (5-yr average)	Other Liabilities to Equity (most recent yr-end)	Raw Materials	Adj. Debt to Adj. Cap (most recent yr-end)	Adj. debt to EBITDA (5-yr average)	Interest Coverage 5-yr average)	CFO - Div Adj. Debt (5-yr average)	FCF to Adj. Debt (5-yr average)	Mapped Rating Category
		1 = Caa	<$.750 = Caa	<1% = Caa	<1% = Caa	> 75% = Caa		> 90% = Caa	> 6X = Caa	<1.0X = Caa	< 5 % = Caa	< (2)% = Caa	
		2 - 3 = B	<$1.5 = B	<2.5% = B	<2.5% = B	50-75% = B	0 = B	75 -90% = B	> 4.5X = B	< 2.5X = B	5 - 10% = B	(2) - 2% = B	
		4-5 = Ba	< $3.0 = Ba	2.5 - 7% = Ba	2.5 - 5% = Ba	30-50% = Ba	1-3 = Ba	50 - 75% = Ba	3.5-4.5X = Ba	2.5-4X = Ba	10 - 20% = Ba	2-5% = Ba	
		6-10 = Baa	< $10.0 = Baa	7 -15% = Baa	5 -10% = Baa	15-30% = Baa	4-7 = Baa	40 - 50% = Baa	2.5-3.5X = Baa	4-7X = Baa	20 - 30% = Baa	5-10% = Baa	
		11-20 = A	> $10.0 = A	15 -20% = A	10 -15% = A	< 15% = A	8-10 = A	30 - 40% = A	1.5-2.5X = A	7-10X = A	30 - 40% = A	10-15% = A	
		>20 = Aa		>20% = Aa	>15% = Aa			< 30% = Aa	< 1.5X = Aa	>10X = Aa	> 40% = Aa	>15% = Aa	
Nucor Corporation	A1	Aa	A	Baa	A	A	Ba	Aa	Aa	Aa	Aa	Aa	A
POSCO	A2	Aa	A	A	A	A	Baa	Aa	A	A	Aa	Aa	A
Nippon Steel	A3	Aa	A	Ba	Ba	A	Baa	Ba	Caa	A	Ba	Baa	Baa
JFE Holdings	Baa1	Aa	A	Baa	Baa	A	Baa	Ba	B	Aa	Ba	Baa	Baa
Arcelor	Baa2	Aa	A	Ba	Baa	A	Ba	Baa	Ba	Baa	Baa	Baa	Baa
Commercial Metals	Baa2	Baa	Baa	Ba	Baa	A	Ba	A	A	Baa	Ba	B	Baa
ThyssenKrupp	Baa2	Aa	A	Ba	Baa	Baa	Baa	Baa	Baa	Ba	Ba	B	Baa
Carpenter Technology	Baa3	Baa	B	Ba	Baa	Baa	Ba	Aa	Ba	Ba	Baa	Aa	Baa
IPSCO	Ba1	Baa	Ba	Baa	Baa	A	Ba	Aa	Caa	Baa	Baa	Ba	Baa
California Steel	Ba2	Caa	B	Baa	A	A	Ba	A	Baa	Baa	Ba	Baa	Ba
Steel Dynamics	Ba2	Baa	Ba	Baa	A	A	Ba	Aa	Ba	Baa	Baa	Ba	Baa
U.S. Steel	Ba2	Aa	A	B	Ba	B	Baa	A	Caa	B	Ba	Ba	Ba
Corus Group	Ba3	Baa	A	Caa	Caa	A	Ba	A	Caa	Caa	B	Caa	B
CSN	Ba3	Ba	Baa	Aa	Aa	A	Ba	Ba	Baa	Ba	Caa	Caa	Ba
Gerdau AmeriSteel	Ba3	A	Baa	Ba	Baa	A	Ba	A	B	Ba	Ba	B	Ba
MMK (Magnitogorsk)	Ba3	Ba	Baa	A	Aa	A	Baa	Aa	Aa	Aa	Aa	Aa	A
Oregon Steel Mills	Ba3	B	B	Ba	Baa	A	Ba	Baa	B	B	B	B	Ba
AK Steel	B1	A	Baa	B	B	Caa	Ba	Ba	Caa	Caa	B	Ba	B
Allegheny Technologies	B1	Ba	Ba	Caa	Caa	Caa	Ba	Ba	Caa	Caa	B	B	B
Severstal AO	B1	B	Baa	A	Aa	A	Baa	A	Aa	Aa	Aa	Aa	A

= Positive outlier = Negative outlier

Appendix II

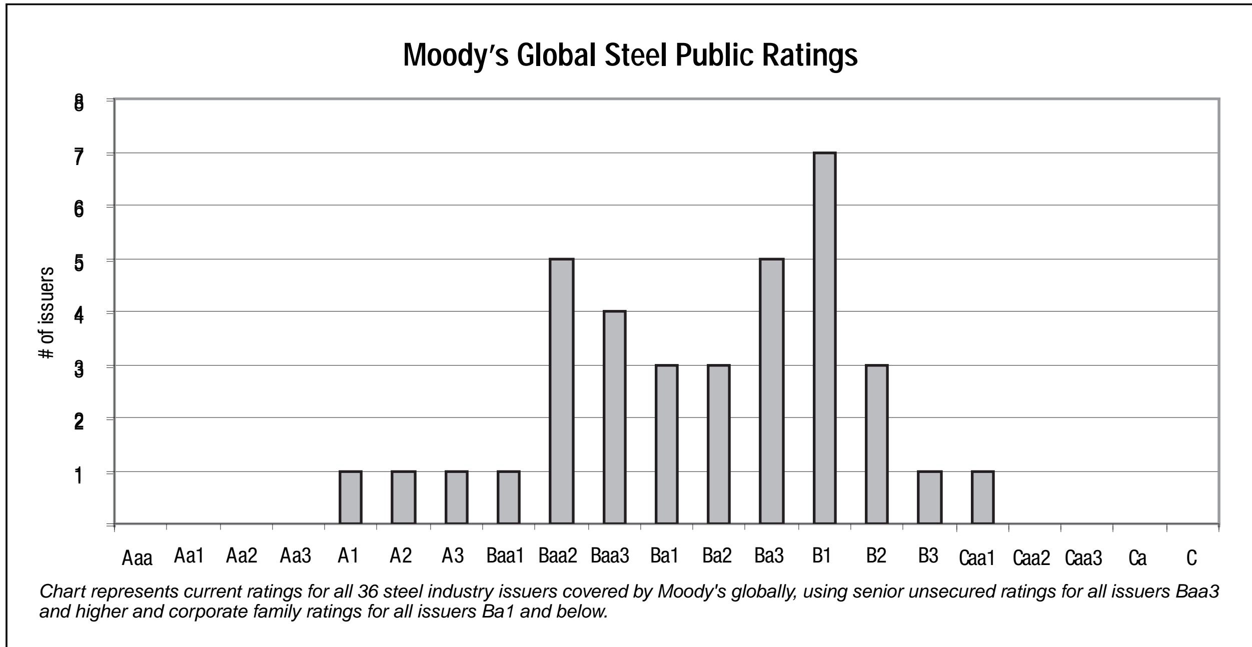

Chart represents current ratings for all 36 steel industry issuers covered by Moody's globally, using senior unsecured ratings for all issuers Baa3 and higher and corporate family ratings for all issuers Ba1 and below.

Appendix III

KEY RATIO DEFINITIONS

EBIT Margin (5-year average)

EBIT = Pretax Income + Interest expense +/- other non-recurring income/expense

EBIT Margin (%) = 5 year average of annual EBIT divided by annual revenues.

Return On Average Assets (5-year Average)

ROA (5 year average) = 5 year average of annual EBIT Divided by average tangible assets (last two years).

Other Liabilities To Book Equity (Most Recent Year)

Other Liabilities = OPEB + environmental liabilities (balance sheet portions only).

Other Liabilities to Book 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 + operating leases (using Moody's modified present value approach) + unfunded pension liabilities + securitizations + preferred shares & hybrids.

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

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

Debt To Ebitda (5-year Average)

EBITDA = EBIT + DD&A.

Debt to EBITDA = 5 year average of annual year end debt divided by annual EBITDA.

Interest Coverage (5-year Average)

Interest expense = Gross interest + Capitalized portion of interest.

Interest Coverage = 5-year average of annual EBIT divided by annual interest expense.

Cash From Operation Less Dividends To Debt (5-year Average)

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

Cfo - Dividends To Debt = 5 Year Average Of Annual Retained Cash Flow After Working Capital Divided By Debt.

Free Cash Flow To Debt (5-year Average)

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

FCF to Debt = 5 year average of annual free cash flow divided by debt.

PAGE INTENTIONALLY LEFT BLANK

To order reprints of this report (100 copies minimum), please call 1.212.553.1658.
Report Number: 94683

Author	Editors	Associate Analyst	Production Specialist
Carol Cowan	*Dale Wagner* *Joe Cullen*	*James O'Shaughnessy*	*Cassina Brooks*

© Copyright 2005, Moody's Investors Service, Inc. and/or its licensors including Moody's Assurance Company, Inc. (together, "MOODY'S"). All rights reserved. **ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY COPYRIGHT LAW AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT**. All information contained herein is obtained by **MOODY'S** from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, such information is provided "as is" without warranty of any kind and **MOODY'S**, in particular, makes no representation or warranty, express or implied, as to the accuracy, timeliness, completeness, merchantability or fitness for any particular purpose of any such information. Under no circumstances shall **MOODY'S** have any liability to any person or entity for (a) any loss or damage in whole or in part caused by, resulting from, or relating to, any error (negligent or otherwise) or other circumstance or contingency within or outside the control of **MOODY'S** or any of its directors, officers, employees or agents in connection with the procurement, collection, compilation, analysis, interpretation, communication, publication or delivery of any such information, or (b) any direct, indirect, special, consequential, compensatory or incidental damages whatsoever (including without limitation, lost profits), even if **MOODY'S** is advised in advance of the possibility of such damages, resulting from the use of or inability to use, any such information. The credit ratings and financial reporting analysis observations, if any, constituting part of the information contained herein are, and must be construed solely as, statements of opinion and not statements of fact or recommendations to purchase, sell or hold any securities. **NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.** Each rating or other opinion must be weighed solely as one factor in any investment decision made by or on behalf of any user of the information contained herein, and each such user must accordingly make its own study and evaluation of each security and of each issuer and guarantor of, and each provider of credit support for, each security that it may consider purchasing, holding or selling.

MOODY'S hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by **MOODY'S** have, prior to assignment of any rating, agreed to pay to **MOODY'S** for appraisal and rating services rendered by it fees ranging from $1,500 to $2,400,000. Moody's Corporation (MCO) and its wholly-owned credit rating agency subsidiary, Moody's Investors Service (MIS), also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually on Moody's website at www.moodys.com under the heading "Shareholder Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Moody's Investors Service Pty Limited does not hold an Australian financial services licence under the Corporations Act. This credit rating opinion has been prepared without taking into account any of your objectives, financial situation or needs. You should, before acting on the opinion, consider the appropriateness of the opinion having regard to your own objectives, financial situation and needs.