

Rating Methodology by Sector

Iron & Steel

*This rating methodology is a modification of the rating methodology made public on July 13, 2011, and modifications are made to the key financial indicators in narrowing down these indicators by significance as part of clarification of rating methodology.

1. Business base

Japan's steel industry is a basic materials industry, in which fluctuations in supply and demand and market conditions are inevitable. It is characterized by a heavy burden of fixed cost due to the large facilities required for manufacturing, and earnings tend to decline substantially when demand is low. In determining credit ratings, therefore, JCR observes how such business risks are controlled by the entire steel industry or by individual companies. More specifically, the key criteria include the level of control over excessive competition, establishment of stable business relationships with customers based on technical capabilities, meeting of demand in growing markets, and building of a business model using the advantages of each company.

(1) Characteristics of the industry

(i) Market overview

Steel products are used in a wide variety of applications, and the short-term demand repeats a cyclical movement associated with the business cycle. Medium- and long-term demand is also considered to generally correspond to economic growth, which is expected to slow down in Japan. Meanwhile, global demand, led by emerging countries, is likely to grow. In emerging countries experiencing rapid market expansion, increases in production capacity are not necessarily keeping pace with the market, and shortfalls are covered by imports. Because steel products are heavy and not suited for long-distance transportation, Asian countries rely on Japan and South Korea for most imports.

Steel product use is broadly divided into manufacturing and other purposes. The former includes ships, industrial machinery, automobiles, and home appliances, and the latter includes construction and civil engineering works. The former prioritizes the quality of steel materials, and the relationships between steel manufacturers and their customers are often stable. Sales contracts that specify the period and fix the quality to be sold and price (conditional transactions) are commonly employed. The latter, on the other hand, generally takes the form of transactions in which customers purchase a necessary quantity of products from wholesalers based on the market conditions in each case (retail transactions). Prices traded in overseas markets are mostly based on the market conditions. The

component ratio of sales to the domestic manufacturing industry has been increasing for blast furnace and special steel companies in Japan.

The convenience of iron metal has long been recognized in various customers, and the product life is generally considered long. However, if the prices of steel products continue to soar, there is a risk of steel being substituted by other raw materials.

In general, other than the exceptional direct sale, steel materials are distributed by steel trading companies called primary wholesalers. After sale from a steel manufacturer to a primary wholesaler, some products are sold directly to customers and others go through a processor or authorized dealer (secondary wholesaler) before being sold to customers. Nationwide, there are about 60 primary wholesalers and over 1,000 authorized dealers, comprising the majority of steel trading companies. Most of these dealers are small or medium-sized companies, and nearly all of them have business with domestic customers. Some primary wholesalers have businesses that are relatively large in size and are actively involved in overseas businesses. A business size is closely related to the stability of the business base and growth potential.

Steel trading companies are broadly divided into three categories—manufacturer-affiliated, general trading company affiliated, or independent—and each boasts a different trade area. Manufacturer-affiliated trading companies have a capital relationship with their parent steel manufacturer and distribute primarily the products of the parent company. General trading company affiliated steel trading companies were founded by separating the steel product business of their parent companies and integrating businesses. Some general trading companies operate their steel distribution business by themselves without separating it as another company. Independent steel trading companies have no affiliation with either specific manufacturers or general trading companies, and most steel trading companies are in this category.

(ii) Competitive situation

When determining the competitive situation in steel manufacturing, JCR focuses on the level of control over excessive competition and technical capabilities of the companies.

Since the industry is a process industry and carries a heavy burden of fixed cost, JCR monitors whether excessive price competition develops from a decline in demand. Such risk has been decreasing in Japan as the blast furnace industry, comprising approximately 80% of crude steel production, has been going through reorganization to optimize production systems, resulting in less likelihood of a gap between supply and demand, and a policy of concentrating on demand-based production has become more established.

For the products for manufacturers, technical capabilities are an important competitive factor as the quality of steel materials considerably affects customers' production efficiency and the nature of end products. Each steel company has its original and the world's leading technologies as well as established stable customer relationships, and excessive competition has not developed in this respect.

Some overseas manufacturers, however, are improving their technical skills, which suggests the need to be aware of future competition with high-quality imports.

In the past, Japanese steel producers have been exporting products largely for Japanese customers in overseas. As in Japan, excessive competition has been prevented through the employment of their own technical capabilities. In contrast, the competitive environment is expected to be harsher from now on. Unlike in Japan, small and medium-sized manufacturers have a significant effect on the overseas market conditions, often resulting in market turmoil. Industries are often reorganized and some large companies aggressively improve their abilities, which causes large companies to grow even larger. Japanese companies will face quantity and cost competition with these companies in the future. Sustainability of technological advantages must be monitored, including improvements in the technical skills of overseas companies and the risk of technology outflow to alliance partners.

Industrial reorganization may further develop both inside and outside Japan in the future, which could significantly change the competitive situation. While currently the risk of excessive competition is limited in Japan, if foreign companies having management policies different from those of Japanese companies acquire domestic companies, the market environment in the country is likely to substantially change. Although applying such industrial restructuring to assessing a credit rating in advance is difficult, the trends must be carefully monitored at all times.

In the distribution of steel, changes in the trade area of existing products are rare and competition is limited.

(iii) Cost structure

The cost of raw materials comprises the largest part of manufacturing costs using the blast-furnace method, which is followed by outsourced labor costs, depreciation costs, other labor costs, and repair costs, respectively. Consequently, JCR examines the risk of fluctuations in the cost of raw materials, degree of the burden of fixed cost, and room for cost reduction, among other factors.

The major raw materials of blast furnaces are iron ore and coal. Although the prices of these raw materials are determined in light of market conditions based on supply and demand, the market of raw material supply has been increasingly oligopolistic, typically helping the suppliers gain more power in negotiations. Based on such an understanding, JCR analyzes the level and volatility of the cost of raw materials. In addition, such aspects as how much of the changes in the cost of raw materials can be applied to the product prices and whether the spread (difference between the product price and raw material cost) can be maintained are also emphasized. More specifically, whether such mechanism as surcharges or similar systems of almost automatically applying cost changes to product prices has been developed as well as whether long-term, stable business with customers through technical capabilities and the practice of reasonably sharing an increase in the cost of raw materials between the steel manufacturer and its customers have been established are some of the perspectives used for

assessment.

The major raw material of companies in special steel business using the electric-furnace method is scrap iron, of which the market is relatively volatile. Yet, since 2008, the steady diffusion of the scrap iron surcharge system has helped companies ensure their spread. Even for steel materials to which this system does not apply, as in the case of blast furnaces, technical capabilities, stable business relationships with customers, and other aspects have facilitated the application of fluctuations in the cost of raw materials to product prices.

A blast furnace is a large piece of equipment that requires large fixed costs, such as depreciation. An electric furnace is a smaller apparatus than a blast furnace, but it still tends to involve a large proportion of fixed costs in the total cost. In both cases, continual investment is made to improve capacity and fuel efficiency and for renewal, causing the depreciation cost to remain above a certain level. Meanwhile, the companies have been making continuous efforts to reduce the cost of labor and other costs of manufacturing. Taking into account such a cost structure, JCR examines the effect of costs on profit in each period of economic growth and slowdown, break-even sales, break-even production volume, and other such factors in establishing a credit rating.

In the case of steel trading companies, normally the burden of fixed cost becomes lighter. If, however, such investments as in a coil center, overseas base, and resource rights are made to strengthen the business base, whether the burden of the cost is excessively heavy must be surveyed.

(iv) Risk associated with policy

Due to the largeness of the blast furnace business, the effect of policy changes, such as those relating to taxation, is significant. The steel industry emits a sizeable amount of greenhouse gases, and the possible imposition of various taxes and other public charges has been brought up for discussion in the past. Although no specific regulations that could cause a substantial burden have yet been adopted, the direction of such discussion must be continuously watched.

(2) Key factors in market position and competitiveness

(i) Market position

Market positions and presence are important in the business of steel manufacturing as the larger the size of market share, the easier it is to achieve both economies of scale in terms of cost and greater control of market conditions. Both the industries of raw material suppliers and major customers have been generally reorganized to become more oligopolistic, which makes a strong market position more important in terms of material procurement and product sale. JCR meanwhile considers other factors, such as the market share of each product and capacity of each steelworks in addition to the overall company size in its rating assessment.

The business size and presence is important also for steel trading companies in view of market information gathering, control over market conditions, and bargaining power relative to their

suppliers (steel manufacturers) over profit margins.

(ii) Stable customer base backed by technical capabilities

As noted earlier, the quality of steel materials for manufacturers significantly affects the performance of the end product in many cases. A variety of technical capabilities that support the quality of steel materials can be found throughout the processes, from upper to lower. The technologies further include those related to iron molecular structures as well as components and manufacturing methods. Based on the technical skills acquired in this way, domestic steel manufacturers have developed long-term, stable business relationships with their customers and contributed to solutions for user companies. In establishing a credit rating, JCR considers that the ability to build and maintain such business relationships helps control the risk of fluctuations in demand and market conditions, maintain the spread, and stabilize cash flow.

Japanese blast furnace companies have been leading the global technological development and their technical capabilities are considered the highest in the world. Special steel companies supply materials for important security parts in automobiles and maintain a globally high technological level.

Although steel manufacturing technologies may be partially caught up with by manufacturers in other countries or may flow out in the process of technological alliances, whether a company has advantages in comprehensive technology and is able to maintain its competitiveness are the key criteria in JCR's assessing the creditworthiness for assigning a credit rating.

The stability of a customer base is also important for steel trading companies. Because changes in suppliers and customers in conditional transactions are uncommon, the business bases of manufacturer-affiliated and general trading company-affiliated companies are relatively stable.

(iii) Business model

Each steel manufacturer develops its original business model, leveraging its advantages, and works to control business risk. The achievements through such activities are examined and reflected to a credit rating. For example, businesses other than steel are developed to diversify the income sources and the company's lower process products are reduced to only the ones considered competitive. There is also a case in which medium- and long-term stable sales contracts are signed with customers to ensure sales at times of low demand. In addition, foreign demand is captured according to the size and financial strength of each company.

(iv) Cost-competitiveness

Although steel products are supposedly differentiated based on technologies, customer demand concerning pricing is generally strong, and cost-competitiveness is an important competitive requirement. In its credit rating, therefore, JCR examines the comprehensive cost-competitiveness, including the overall distribution cost, from the upper to lower processes, in addition to the

cost-competitiveness of major facilities at each steelworks.

(v) System for capturing foreign demand

While growth in domestic demand suffers, foreign demand is expected to increase, particularly in emerging countries, and capturing it is important for each company to ensure stable cash flow and maintain growth. JCR consequently analyzes each company's overseas strategy in view of regions to enter, alliances with local companies, production system (regional division of upper and lower processes), composition of products and major customers at each region, sales system, etc.

As manufacturers strengthen their overseas bases, trading companies are also facing the issue of developing foreign businesses.

(vi) Stable procurement of raw materials

While demand for the raw materials for steel, such as iron ore and coal, is expected to grow in the medium- and long-term, raw material suppliers have become more oligopolistic in recent years. In such an environment, ensuring the stable procurement of raw materials in terms of both quantity and price is likely to have a significant effect on competitiveness. JCR's credit rating, therefore, is based on the status of raw material interest acquisition. Equity investment, however, requires large funds and, thus, JCR considers the balance with financial stability, described later, is also important.

Not only manufacturers, but also trading companies need to improve their systems related to raw material procurement.

2. Financial base

(1) Business size

JCR focuses on the size of a business, as this industry can easily benefit from economies of scale. Control over the market must be maintained, and a company's presence must be big enough to maintain stable business with large customers.

Key financial indicators:

- Net sales
- Production volume or turnover
- Market share

(2) Earnings strength

JCR observes earnings strength in view of maintaining and expanding businesses. Because the industry is susceptible to business cycles, however, assessment is made within a certain cycle rather than actual results for only a single accounting period. If apparent changes are evident in the income level, the causes are analyzed, and any structural or trend changes, rather than a business cycle, is applied to a credit rating. While saving profit during a business upturn is important, JCR examines whether the

company maintains an income structure resilient to a downturn that would prevent an extreme financial decline.

When the prices of raw materials and products fluctuate, changes in the ratio of operating profit to net sales, with a high correlation with the spread, are also monitored.

For trading companies, the commission system and rates also become important criteria.

Key financial indicators:

- Operating income
- Ordinary income
- Operating margin
- Return on assets

(3) Cash flow

Each company continually engages in financing and investing. Whether past investment has produced the planned outcomes and whether the cash flow created is appropriately allocated to the repayment of external liabilities must be examined. In addition, the ability to create cash flow is important for smooth financing in the future.

Key financial indicators:

- EBITDA
- Cash flow from operating activities
- Free cash flow
- Ratio of interest-bearing debt to EBITDA

(4) Safety

To control business risks, each company must continually make large investments to capture foreign demand, investments connected to interests in raw materials, and investments in research and development to further improve technical capabilities. For this reason, ensuring a sound financial position that allows efficient financing is thought to be important and JCR prioritizes the following indicators. Analysis of these indicators considers a company's financial management policy and medium- and long-term trends, rather than a temporarily level only, which are applied to the credit rating.

Key financial indicators:

- Shareholders' equity
- Equity ratio
- Debt equity ratio
- Interest coverage ratio



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