

## Rating Methodology by Sector

### Iron & Steel

#### 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 securing margins through appropriate price reflection, 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 gradually decline 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. Since steel products are heavy and not suited for long-distance transportation, Asian countries rely on Japan, China and South Korea for most imports.

Steel product use is broadly divided into manufacturing and other purposes. The former includes automobiles, ships, industrial machinery, construction machinery, 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 manufacturing industry is high 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 s

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. Most of these dealers are small or medium-sized companies, and nearly all of them have business with domestic customers. Some primary wholesalers 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 commercial right. 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, and they have taken over the commercial rights of their parent companies. 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. The blast furnace industry, which accounts for about 80% of Japan's crude steel production, has seen a consolidation of manufacturers as a result of past industry reorganization, and the risk of excessive competition is low. In addition, blast furnace companies have adopted a management policy of matching production to demand and has been optimizing their production systems, thereby limiting the occurrence of a supply-demand gap. On the other hand, the electric furnace industry for ordinary steel is relatively less restructured, and competition may intensify when demand declines.

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 major steel company has its original and the world's leading technologies as well as established stable customer relationships.

Technical capabilities are an important point of differentiation from overseas manufacturers. There are only a limited number of manufacturers that can produce high-end products, and Japanese blast furnace steelmakers with high technological capabilities have an advantage. On the other hand, general-purpose steels are exposed to fierce competition. An increasing number of overseas steelmakers are introducing state-of-the-art facilities and other measures to produce highly cost-competitive products with quality comparable to that of Japanese blast furnace steelmakers. As overseas steelmakers improve their technological capabilities, competition may intensify even for high-end products in the future.

In steel distribution, there are cases where commercial rights fluctuate due to M&A and business transfers, but

in general, the industry order is stable 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, in the rating assessment, 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 focuses on 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 passed on 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, JCR judges from the perspectives of whether long-term stable transactions have been established with customers backed by technical capabilities and whether a practice of reasonably sharing an increase in the cost of raw materials between the steelmakers and its customers have been established.

The major raw material of electric furnace steelmakers is scrap iron, of which the market is relatively volatile. However, specialty steel companies have introduced a steel scrap surcharge system with many customers and have been able to secure a spread, although there is a time lag. In addition, even for steel products to which surcharges are not applied, the fluctuations in raw material prices are reflected in product prices, backed by technological capabilities and stable business relationships with customers. On the other hand, since the electric furnace industry for ordinary steel has not introduced the surcharge system, there is a risk that raw material price fluctuations cannot be fully reflected in selling 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. Both blast furnace and electric furnace steelmakers are constantly investing in capacity expansion, labor saving, maintenance and renewal, causing the depreciation cost to remain above a certain level. JCR focuses on the cost structure and break-even point production volume of each company in the rating assessment.

In the case of steel trading companies, normally the burden of fixed cost becomes lighter. If, however, such investments as those 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 monitored.

### (iv) Risk associated with policy

Blast furnace is an industry with high greenhouse gas emissions, and JCR focuses on technological development related to decarbonization and trends in taxes and public charges. While a company's ability to sell its products could be enhanced if it can achieve carbon neutrality ahead of others, there is a risk that delays in technological development could reduce its competitiveness. In addition, there are moves overseas to implement carbon pricing,

such as carbon taxes and emissions trading system, which could impose additional cost burdens.

Electric furnace steelmakers emit less greenhouse gases than blast furnace steelmakers. On the other hand, they consume large amounts of electricity in the manufacturing process. Therefore, over the long term, as the share of renewable energy in the power supply mix increases and the price of fossil fuels rises, electricity prices are expected to rise, leading to higher manufacturing costs for them.

## (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 a company's size and market share, the easier it is to achieve 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 important in terms of bargaining power in 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 terms of market information gathering, control over market conditions, and bargaining power with their suppliers (steel manufacturers) over price.

### (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 upstream to downstream. 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 contributed to customers' solving problems and improving product quality, and have developed long-term and stable business relationships with their customers. JCR considers that these relationships help control the risk of fluctuations in demand and market conditions, maintain spread, and ultimately 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 their technological capabilities are at a globally high level. The key factor in rating evaluation will be whether Japanese steelmakers can maintain their technological superiority and competitiveness.

The stability of a customer base is also important for steel trading companies. As 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 reflected in a credit rating. For example, a variety of steel products, mainly high-end products, are manufactured and sold to a wide range of demand fields, and businesses other than steel are developed to diversify the income sources. 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 thus ongoing cost reductions are required. In its credit rating assessment, therefore, JCR examines the comprehensive cost-competitiveness, including the overall distribution cost, from the upstream to downstream processes, in addition to the cost-competitiveness of major facilities at each steelworks.

(v) System for capturing foreign demand

While demand in Japan is expected to decline over the medium to long term, demand overseas is expected to increase, mainly in emerging countries. In order for each company to secure stable cash flow and sustain growth, it is important to capture overseas demand. JCR consequently analyzes each company's overseas strategy in terms of regions in which it operates, alliances with local companies, production system (division of upstream and downstream processes by region), product mix and composition of major customers, sales system, etc. in each region.

(vi) Stable procurement of raw materials

As global demand for steel products increases, demand for the raw materials for steel, such as iron ore and coal, is expected to grow in the medium- and long-term. On the other hand, raw material suppliers have become more oligopolistic. 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.

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. Since 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, are reflected in 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, carbon neutrality related investments, and investments in research and development. 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 includes a company's financial management policy and medium- and long-term trends, rather than a temporarily level only, which are reflected in the credit rating.

Key financial indicators:

- Key financial indicators:
- Shareholders' equity
- Equity ratio
- Debt equity ratio
- Interest coverage ratio

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