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Rating Methodology by Sector

Machinery

1. Business base

Machinery encompasses a range of categories, including general machinery, electrical machinery, transport equipment, and precision instruments. This report will refer only to general machinery. Although the machinery industry is likely to continue to grow in the future, demand volatility is generally expected to be high, and sales competition is likely to be intensified. When evaluating ratings, we mainly analyze steps taken to contain business risks, such as highly volatile demand, in addition to the competitiveness of mainstay products that are the sources of earnings and cash flows.

(1) Characteristics of the industry

(i) Market overview

General machinery means industrial machinery that is used for production in factories as well as machinery and appliances that are embedded in other machines. The former includes construction machinery, machine tools, and agricultural machinery. The latter include power units and power transmission equipment.

There are many kinds of general machinery manufacturers. Some specialize in specific businesses, while others expand into different businesses by using and applying basic technologies, acquiring businesses, and carrying out M&A.

Technical innovation is ongoing on this industry. Most machinery is developed based on long-established technologies. While many of these machines appear to be products developed by undertaking a series of improvements and capacity enhancements, given progress in electronic engineering, machinery has become significantly more sophisticated. In addition, with rising awareness of environmental conservation in recent years, requirements for machinery have been changing. Typically, demand has been growing for new machinery related to the development of electric vehicles and natural energy. This development has presented manufacturers with a number of challenges for their production process. For example, they need to focus on compliance with environmental regulations, achieving reductions in product weight, and using new materials. Business opportunities are certainly increasing, but it is also important to note that there will be cases of machinery being replaced or eliminated.

Demand for machinery has risen significantly since the second half of the twentieth century, a reflection of the industrialization of Japan, the United States, and Europe. Demand, which has come mainly from the developed countries until recently, is set to further increase going forward, on the strength of new demand from China, India, Russia, Brazil, and other emerging countries whose

economies are likely to continue to grow.

Fluctuations in demand, however, will likely continue to occur with the economic cycle. Demand for machine tools and other producer goods has been changing rapidly, given the effects of trends in private capital investment. In contrast, because demand for power transmission equipment and other machinery parts is affected by production levels and the utilization of customer facilities, it does not fluctuate as much as demand for producer goods.

(ii) Competition situation

The competitive landscape varies noticeably depending on the type of machinery. Some manufacturers enjoy overwhelming dominance in niche markets, while others face intensifying competition with the entry of new competitors. In general, the established manufacturers in Japan, Europe, the United States, and other developed countries enjoy a strong hold on high value-added machinery, while Asian manufacturers have been expanding production of economical machinery with lower quality.

At present, manufacturers in developed countries have a competitive edge in product quality, such as the degree of precision and durability. However, because the market for mid-range machinery in terms of quality and price has been growing in emerging countries, capturing this market has become a challenge for machinery manufactures. As this market is subject to intensifying price competition, machinery manufacturers have been taking steps such as cutting costs and developing products with specific quality. Meanwhile, it is important to be cautious of the gains being made by Asian manufacturers. They have been expanding production and accumulating experience and know-how. Because these manufactures can also tap the technologies and successful experiences of developed countries, the pace at which they are catching up to their counterparts in developed countries has been accelerating.

(iii) Cost structure

Because the cost structure varies depending on the products handled and the competitive environment, it is essential to analyze companies individually. In general, the ratio of variable costs to sales is high in the industry, and it has risen noticeably in recent years. One key reason for this is that machinery manufacturers have tried to shift labor costs to variable costs by employing part-time workers and outsourcing production as steps to deal with demand fluctuations. Another factor is the rise in prices of raw materials.

As demand is expected to grow over the medium to long terms, machinery manufacturers have been increasing research and development expenses and capital investments to maintain their competitiveness and develop emerging markets. This will cause a rise in fixed costs. Prices of raw materials and labor costs also appear to be on the increase, because of the supply-demand environment. On the other hand, sales prices are likely to be under downward pressure, due to

intensifying competition. In this environment, machinery manufacturers are striving to improve production efficiency, and are focusing on cutting costs by raising the ratio of overseas production and increasing the procurement of less expensive raw materials.

(2) Important factors in market position and competitiveness

(i) Market position

We monitor the level of market shares and the trends. Strong market shares are counted as a positive factor in evaluation because they represent competitive superiority and will lead to flexible business strategies and economies of scale. However, as strong market shares do not guarantee a superior ability to negotiate price with customers or achieve profitability, we focus on trends in market shares and factors that influence the level of market shares. These factors include product development capabilities, production technologies, patents, and production and sales structures. Know-how, experience, and other expertise that is obtained during the period when significant capital and time are outlaid are also considered to be factors that support a position in the market. We compare these factors with competitors, and identify the similarities and differences. In this way, we determine the degree of competitiveness of the relevant manufacturers. We believe that manufacturers who have earned the trust of customers through their long-standing performance and can develop brand power and strong business relationships can enjoy consistent market shares and business results.

(ii) Customer base

Demand for machinery changes depending on the production activities and capital investment plans of customers. For this reason, we confirm who the main customers are and the level of dependence a machinery manufacturer has on specific customers. This exercise is important to judge the ability to control risks of demand fluctuations. Some machinery manufacturers produce general-purpose products, but sometimes manufacture special products tailored for the requirements of specific customers. As customers, meanwhile, value stable supply and the reliable functionality of products, they often narrow down the number of manufacturers with whom they place orders. As a result, they tend to develop strong ties with certain manufacturers.

Although these strong ties are basically considered to be a positive factor, it is necessary to pay attention to the management situation of the customers and other related issues. Certain companies can establish not only close trading ties with customers, but also strengthen capital relationships with them by making capital contributions and taking other measures. In cases where special relationships are identified, it is necessary to look at the credibility of the customers.

(iii) Business structure

We judge the ability of machinery manufacturers to respond to fluctuations in demand by

confirming the degree to which they have dispersed risk in terms of products and regions. If the business comprises machines with demand that is not closely correlated to each other or if the business consists of operations in regions with differing economic situations, then the nature of the business is considered less exposed to fluctuations in sales caused by the economic cycle, and this is evaluated as a positive factor. We examine the durability of earnings in the face of economic downturns and the level of dispersion of earnings by confirming breakdowns of sales and earnings in chronological order. We also pay attention to synergies among business segments and to management efficiency.

In light of the shifting of demand to emerging countries in recent years, we focus in particular on the structure of sales by region. We also pay attention to the dispersion of areas of production, from the perspective of risks, including fluctuations in foreign exchange rates and natural disasters.

2. Financial base

(1) Earnings strength

We focus on the level of operating income and its trends. However, because the volatility of demand in the machinery business is high, it is difficult to judge each company's earnings strength based on results for a single fiscal year. Consequently, we also pay attention to total operating income from one economic cycle with all its changes in demand and its trends. In addition, we focus on operating income on sales as an indicator to measure competitiveness, and ROA to examine if sufficient earnings are generated to justify capital spending.

Moreover, to measure earnings strength in the face of an economic downturn, we examine the degree of resistance to economic slumps. We estimate breakeven sales and the impact on earnings from demand fluctuations. In addition, by taking into account cost-cutting performance in the past, current cost-cutting initiatives, and cost-cutting plans and initiatives for the future, we look at the ability to respond to an economic downturn by estimating changes in the cost structure over the medium-to long-term. There are certain products that require regular inspections and replacement. Sales from repair and repair parts tend to remain steady even during economic slowdowns. Earnings from these sales are also relatively strong. We therefore confirm the level of such sales and earnings as mentioned above in overall sales and earnings.

Key financial indicators:

- Operating income
- Operating income on sales
- ROA

(2) Cash flow

We give weight to the ability to create operating cash flows that can serve as a source of capital investments to be made and repayments for interest-bearing debt. When the economy is contracting, a

decline in operating cash flows could be accelerated not only by a deterioration in earnings, but also by a delay in the collection of accounts receivables and an unexpected rise in inventory. Consequently, we focus on the ability of the companies to be evaluated in reducing fluctuations of operating cash flows by appropriately controlling changes in their working capital. We also believe that trends in free cash flow have important implications for flexible financial strategies.

Moreover, to examine whether or not interest-bearing debts are reaching an unsustainable level as a result of capital investments, M&A and other corporate activities, and whether or not the capability to continue to make investments in the future is maintained, we monitor the balance of EBITDA, operating cash flows, and interest-bearing debt.

Key financial indicators:

- Operating cash flows
- Free cash flows
- EBITDA
- Ratio of interest-bearing debt to EBITDA

(3) Safety

Because the machinery industry has volatile earnings and cash flows, compared with other industries that generate steady earnings, the industry is required to establish a sound financial foundation. As we place particularly heavy weight on financial stability during an economic slowdown, we pay close attention to the scale of shareholders' equity and liquidity on hand that could act as a risk buffer, as well as to shareholders' equity ratio, the debt equity ratio, and other indicators. The bigger the risk of earnings fluctuations for machinery manufacturers, the higher the hurdle in evaluating their financial situation becomes.

Key financial indicators:

- Shareholders' equity
- Liquidity on hand
- Equity ratio
- Debt equity ratio

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