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S&P Global
China Ratings

Chinese Engineering Machinery Leaders Take on Global Giants, Aggressive Financial Strategies Imply Credit Risks

Chinese and Foreign Leaders Comparison: Engineering Machinery

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Key Takeaways

- In our view, with the technological gap between Chinese and foreign engineering construction leaders gradually filled, domestic manufacturers, represented by Xugong Group and SANY Group, have seen their global competitiveness significantly enhanced.
- We think a sole price advantage would not be enough for Chinese engineering machinery companies to win the competition across global markets, and they would seek major breakthroughs in electrification and intelligentization.
- Financial risks facing Chinese and overseas companies vary significantly, and high leverages and substantially volatile financial profiles may bode credit risks for the former.
- Weak profitability, aggressive investment strategies, and reliance on credit sales lead to noticeably higher financial risks for Chinese companies relative to overseas leaders.

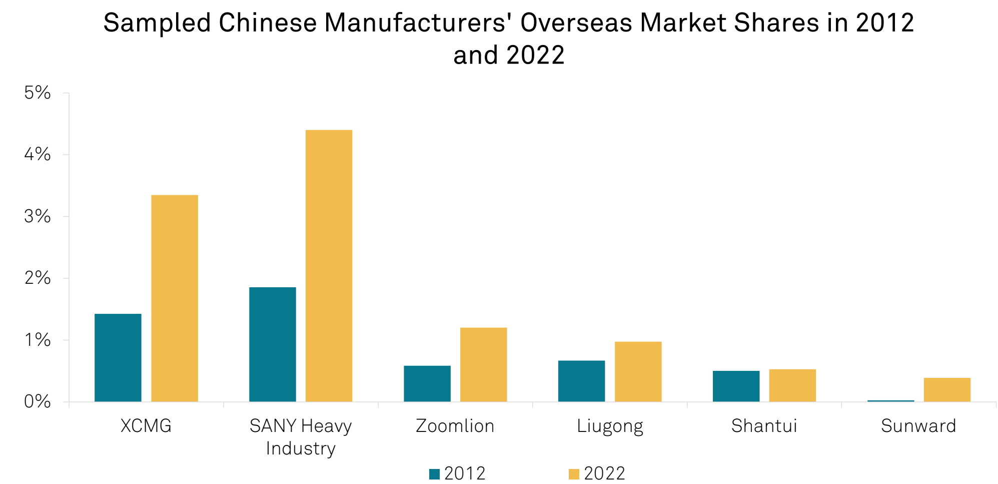
Chinese engineering machinery manufacturers have seen their competitive strengths and influence significantly enhanced in the global markets, underpinned by accelerated technological innovation, diversified product mix, and economies of scale led by vast market space in China. In our view, in the context of intensifying global price competition over the next few years, Chinese manufacturers may not gain an upper hand over its global peers if depending solely on price competition, and they will rely on electrification and intelligentization to gain a competitive edge in the competition.

Chinese and foreign manufacturers differ remarkably from a financial risk perspective. The elevated leverage and high financial volatility may induce certain credit risks for Chinese manufacturers. Chinese engineering machinery leaders' financial risks are typically reflected by their weak profitability, aggressive investment strategies, and reliance on credit sales. To the contrary, international giants, leveraging their solid ability to generate free cash flow and maintain nearly a net cash position, enjoy strong resilience against risks despite operating in an industry featuring strong cyclicality.

Chinese Engineering Machinery Manufacturers' Global Competitiveness Rises Materially Amid Narrowing Technological Gap

Chinese engineering machinery manufacturers' global influence has improved significantly, along with narrowing technological and quality gap relative to overseas giants. In 2012-2022, major Chinese manufacturers saw their overseas market shares expanding remarkably and achieved progress in core technologies, and product quality and innovation, laying the foundation for winning more shares in the global markets.

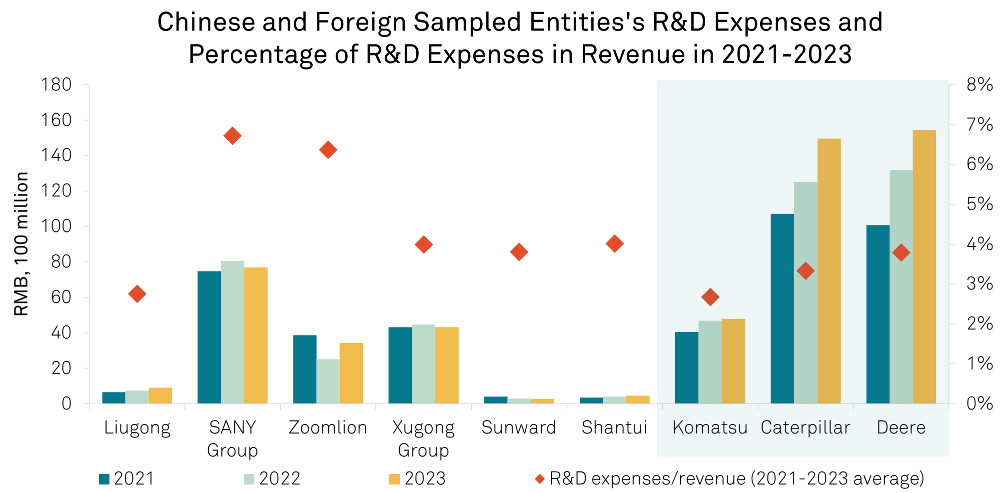
Chart 1



Note: 1. Overseas market share = the company's overseas revenue/total sales amount in overseas markets. 2. Total sales amount in overseas markets is our estimate; 3. Foreign currencies are converted using historical exchange rates.
Source: Company annoucements, China Construction Machinery Industry Yearbook, Wind, S&P Global (China) Ratings.

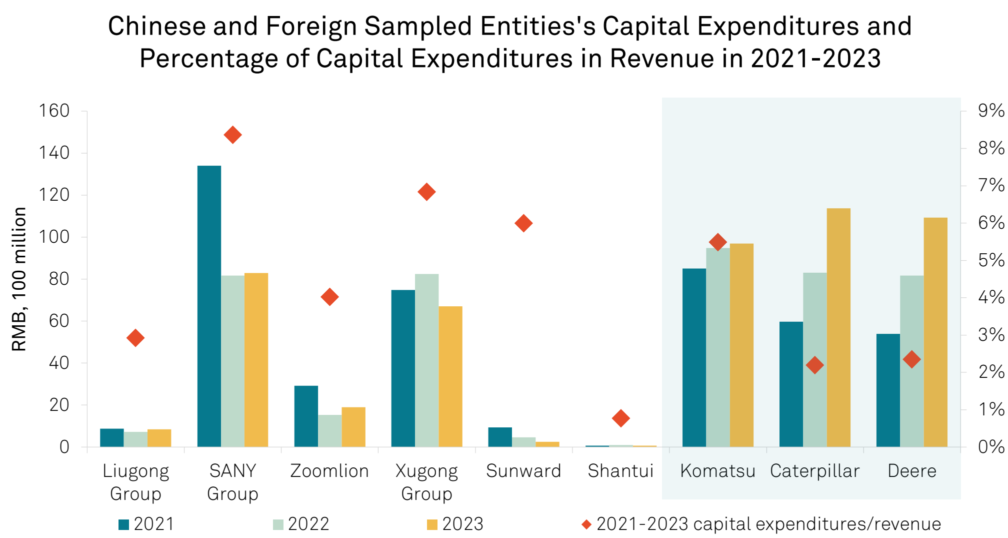
The increasing shares for Chinese manufacturers across global markets are mainly attributable to their technological innovation, diversified product mix, and price advantages driven by economies of scale. Over the past decades, Chinese manufacturers have resolved numerous technological bottlenecks in the engineering machinery sector and significantly boosted the production capacity for key components, exhibiting world-leading technological innovation capabilities. The enormous market size and diversified product needs in China have encouraged Chinese manufacturers to produce a comprehensive universe of products, spanning micro- to extra-large-sized machines. China's sizable market has also formed the ground for Chinese manufacturers to achieve economies of scale. Production at scale and cost advantages have reinforced competitiveness of "Made in China" products. In developing economies featuring weak infrastructure, customers may prioritize price factor when making purchase decisions. As such, Chinese products are likely to stand out due to their stable quality and sound cost efficiency.

Chart 2



Note: 1. Foreign currencies are converted using historical exchange rates. 2. Komatsu's fiscal year begins on April 1 and end on March 31 of the next calendar year, applied throughout. 3. Deere's financial data for the current priod as of October 31, applied throughout.
Source: Annual reports of company, CIQ, Wind, S&P Global (China) Ratings.

Chart 3



Note: Foreign currencies are converted using historical exchange rates.
Source: Annual reports of companies, CIQ, Wind, S&P Global (China) Ratings.

Price Advantage Alone Not Enough to Win Global Competition, Major Breakthroughs to Emerge for Electrification and Intelligentization

In our view, amid fiercer price competition across the global markets, Chinese manufacturers may find it hard to sustain a solid market share worldwide hinging solely on price advantages. International big names such as Komatsu and Caterpillar have set out targeted strategies to compete with China, with plans to launch cost efficient products to solidify their market position.

These globally renowned brands have built competitive edges through wide market recognition, well-established customer base and distribution channels, and mature and stable marketing and services networks across the global markets after decades of development. These would become the obstacles unlikely to be circumvented by Chinese companies in the process of expanding overseas market shares and building brand reputation. Chinese companies still need to adapt better to the sales habits of local markets, reinforce after-sales services, and stick to a long-term commitment to improving product quality and reputation.

China is a global pioneer in developing electrified products, either from the perspective of development speed or of eagerness. We consider electrification a critical initiative for Chinese manufacturers to make a breakthrough in international competition. The development of electrified products would compensate Chinese manufacturers' disadvantages in engine manufacturing, and the complete industry chain and price strengths of the battery sector provide good support for the development and commercialization of electrified engineering machinery products. Chinese manufacturers have seen certain progress regarding the indigenous development in motor control unit, battery control unit, and transmission system of electrified products, paving the way for these companies to realize electrification. According to public information about electrification progress for global leaders in 2023, Chinese manufacturers rolled out electrified products at a faster pace and sustained greater volume of existing products. In addition, they have begun to make electrified products at scale and already seen a portion of revenue contributed by these products. Conversely, global giants stay more conservative on becoming electrified. In our view, domestic engineering machinery manufacturers have made more vigorous moves in introducing new electrified products, so that they are more likely to capture the emerging opportunities in the global markets.

Table 1

New Energy Product Development Progress for Chinese and Foreign Sampled Entities

Komatsu	XCMG
1. Unveiled four electric construction equipment models in 2023. 2. Acquired ABS, a U.S. battery solution provider. 3. Collaborated with General Motor to jointly develop hydrogen fuel cell modules for Komatsu 930E electric mining trucks. 4. Developed a concept model for medium-sized hydraulic excavator powered by hydrogen fuel cell and commenced PoC test.	1. New energy products contributed nearly 10% of total revenue in 2023. 2. BYD partnered with Xugong Group to set up Xuzhou Fudi Battery Technology Limited. 3. Developed 10 new energy components, 15 hydraulic parts, 18 transmission components, and 3 motor control parts in 2023.
Caterpillar	**SANY**
1. Launched four electric engineering machinery prototypes as of early 2023. 2. The prototype for the first electric mining truck – 793 large-sized mining truck debuted in November 2022.	1. Rolled out over 130 new energy engineering machinery products in 2023. 2. Reported 3.15billion RMB in revenue from electric and hybrid products and 130 million RMB from hydrogen powered products.
Deere	**Zoomlion**
1. Acquired the majority of stake in German battery maker Kreisel in January 2022. 2. 644X and 944X four-wheel drive loaders powered by electric motor and diesel engine were put into production.	1. Launched 49 new energy products in 2023. 2. 177 new energy products were for sale as of 2023, comprising those powered by battery, hybrid power, and hydrogen fuel.
	Liugong Machinery
	1. Completed the development of 39 new electric products in 2023. 2. Achieved breakthroughs in core technologies relating to cell and battery control unit.

	Sunward
	Developed the largest range extend electric rotary drilling rig and the innovative hydraulic hybrid rotary drilling rig and intelligent deep water well truck-mounted drilling rig in the sector.

Source: Annual reports and announcements of companies, public information, complied by S&P Global (China) Ratings.

We think intelligentization represents a key direction for the sector's development going forward. The shared and complementary technologies enjoyed by Chinese manufacturers through partnerships with domestic internet and technological companies are expected to drive breakthroughs in intelligentization. Leveraging their prolonged history and rich experience, Caterpillar and Komatsu have built solid technological edges in the fields of automation and intelligentization. Yet, we believe Chinese manufacturers will benefit from their collaboration with leading internet and technological companies to obtain shared and complementary technologies. In addition, they would achieve economies of scale rapidly in their sales of new equipment thanks to the enormous market size in China. This could compensate the massive investments at initial R&D phase for developing intelligent products and encourage companies to make investment.

Table 2

Intelligentization Progress for Chinese and Foreign Sampled Entities

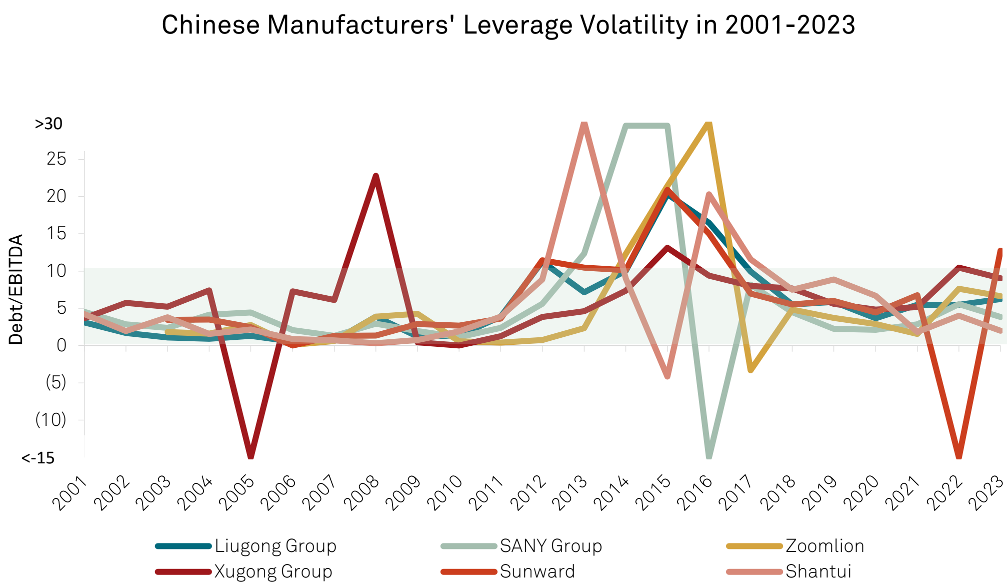
Komatsu	XCMG
1. In FY2022, 2,448 units of ICT-powered equipment were sold across overseas markets. 2. As of the end of February 2024, over 700 units of Komatsu FrontRunner AHS were deployed on Komatsu's autonomous driving off-highway mining trucks.	Xugong XDE240 autonomous mine dumpers commenced operation.
Caterpillar	**SANY Heavy Industry**
Command remote control technology is applied to 60 products, covering mining sprinkler, driller, bulldozer, wheel loader, and LHD loader, allowing these machines to be controlled remotely rather than manually in the cockpit.	1. Launched the first batch of autonomous electric loaders, and mixing plants were delivered for commercialized operation. 2. First rescue robot was delivered.
Deere	**Zoomlion**
Released automated 8R farming excavator, equipped with GPS navigation system and 3D camera to enable autonomous farming	The company acquired Luchang Technology via tender offer in 2022, with major products comprising smart cockpits, intelligent driver assistance system, and autonomous driving solutions.
	Liugong Machinery
	Autonomous loaders and road rollers are at promotion and trial use phase.
	Sunward
	Completed various autonomous and intelligent emergency rescue equipment such as modularized forest fire vehicles and demolition robots.

Source: Annual reports and announcements of companies, public information, complied by S&P Global (China) Ratings.

Significantly Differentiated Financial Risks for Chinese and Foreign Manufacturers, High Leverage and Great Financial Volatility May Fuel Credit Concerns

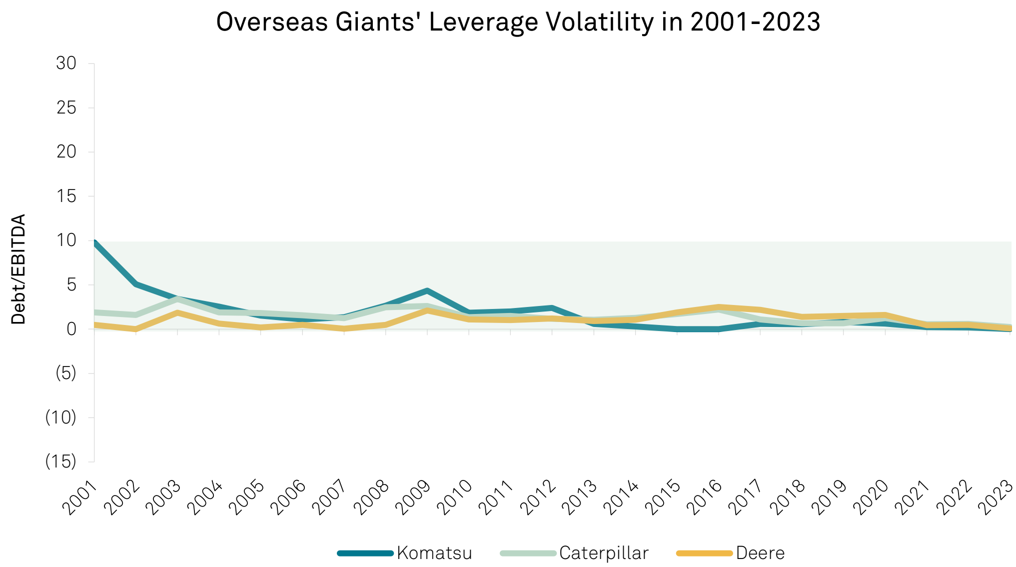
Chinese companies follow comparatively aggressive financial strategies, giving rise to their high leverage levels and volatile financial profiles, which contribute to the diverging creditworthiness between Chinese and foreign engineering machinery leaders. The three global giants – Komatsu, Caterpillar, and Deere - have maintained their leverage ratios between 0.1-0.6 over the past three years, thanks to their solid ability to generate free cash flow steadily, which helps them sustain a roughly net cash position. The sound financial profiles make these companies highly resilient against risks despite operating in an industry showing strong cyclicality. By contrast, domestic manufacturers maintain higher leverage relative to their global peers even during the sales-booming periods, and their leverage levels have exhibited substantial fluctuation over the past two decades. We view stable financial policy and sound financial metrics as a key premise for cyclical companies to withstand the cyclical trough.

Chart 4



Note: 1. Debt data in this chart does not include guaranteed repurchase responsibilities; 2. 2001-2005 data for Liugong Group is substituted with Liugong Machinery data due to data omission. 3. 2001-2005 data for Xugong Group is substituted with XCMG data due to data omission. 4. All metrics in this chart are adjusted by S&P Global (China) Ratings.
Source: Public information, Wind, S&P Global (China) Ratings.

Chart 5

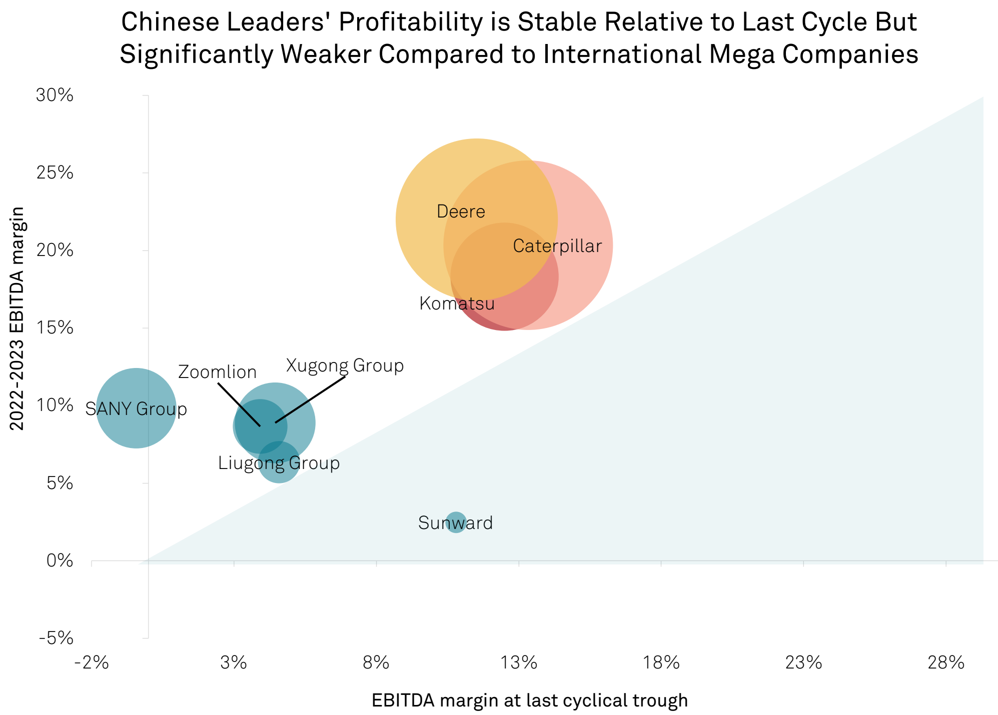


Note: All data adjusted by S&P Global (China) Ratings.
Source: CIQ.

Weak Profitability, Aggressive Investment Strategies, and Reliance on Credit Sales Raise Chinese Manufacturers' Financial Risks Considerably

Although sampled entities' profitability has improved during the present industrial cycle, marked earnings gap still exits between them and international mega companies. Komatsu's profit bottomed in 2008-2009 and Caterpillar and Deere's earnings hit the trough in 2015-2016, with an average EBITDA margin ranging between 11%-13%. In 2022-2023, their profitability improved significantly, lifting their EBITDA margin to 18%-22%. By contrast, domestic manufacturers typically maintain a much lower EBITDA margin, generally below 10%, or even below 5% for certain weaker companies. The compressed margin is owing to the intense price competition across the sector in China.

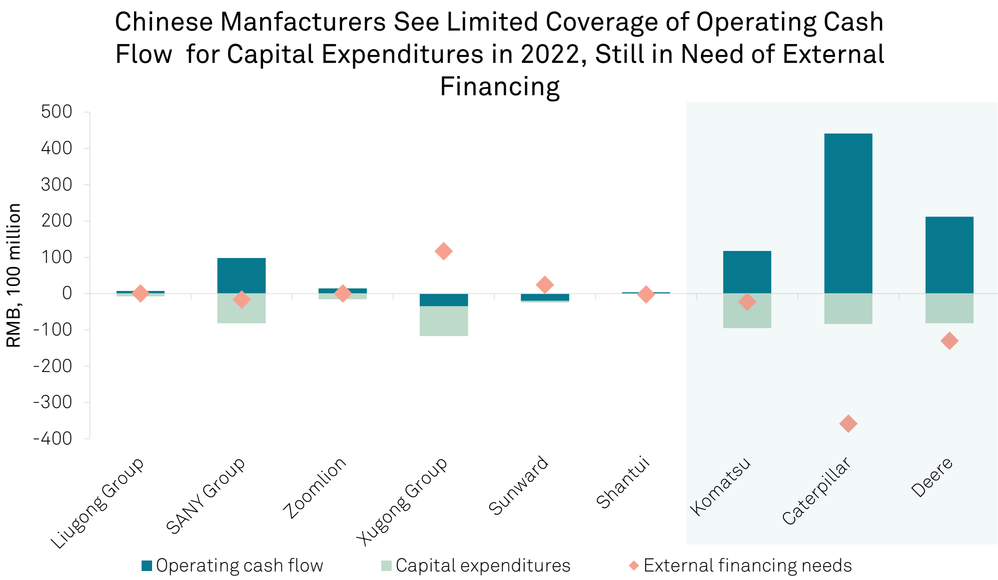
Chart 6



Note: 1. Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings. 2. We take the latest earnings bottom as the last cyclical trough. Cyclical troughs for Chinese and foreign manufacturers are not fully overlapped. 3. Bubble size represents revenue scale. 4. Xugong Group's data at the last cyclical trough is substituted with XCMG data due to data insufficiency.
Source: Public information, CIQ, S&P Global (China) Ratings.

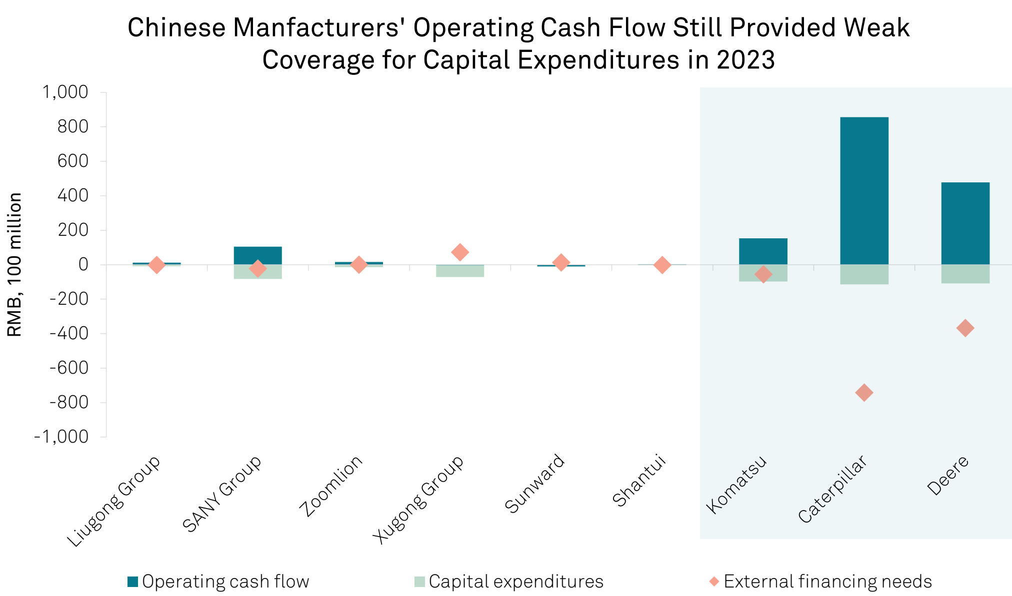
Chinese engineering machinery companies' cash flow coverage for their capital expenditures is relatively weak, which may further dampen their financial stability. We have observed over the past two years that Chinese companies' liquidity profiles have deteriorated somewhat, causing capital expenditures to be inadequately covered by operating cash flow. In this case, companies are urged to seek external financing, increasing the debt size as such. Their capital expenditures are aimed for plant construction and purchase of equipment. In our view, their relatively aggressive financial strategies, albeit having fostered more vigorous business patterns, have led to some potential risks which may hinder their ability to reinforce global competitiveness consistently in the long run. Given the strong cyclicality of the engineering machinery sector, elevated debt level may render a company more vulnerable during the cyclical trough. Comparatively, global giants maintain a cash flow much higher than their capital expenditure needs, leading to limited demand for external financing. Cash flow surplus constitutes a stable source for them to accumulate cash.

Chart 7



Note: 1. Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings. 2. Foreign currencies are converted using historical exchange rates.
Source: Public information, CIQ, S&P Global (China) Ratings.

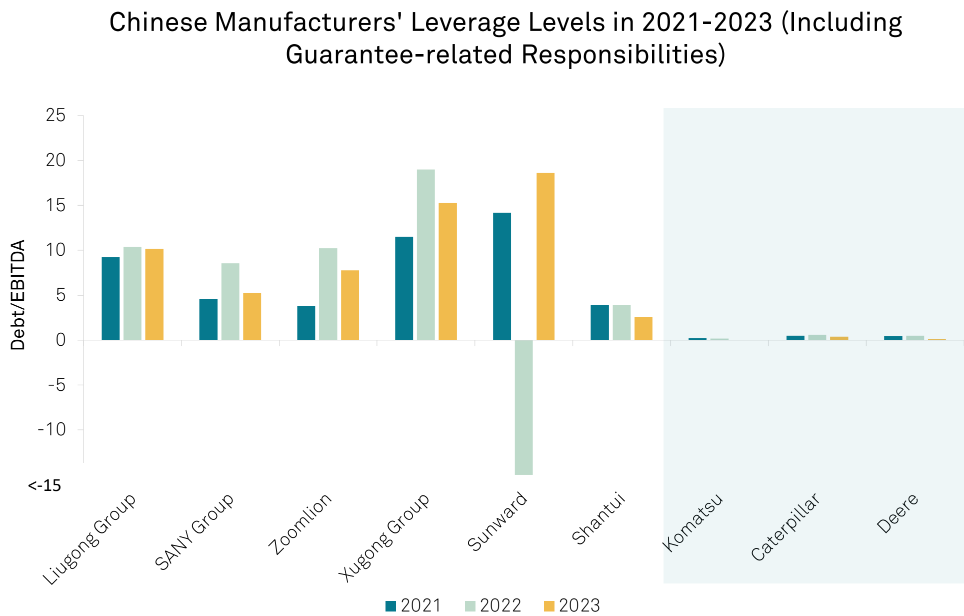
Chart 8



Note: 1. Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings. 2. Komatsu's operating cash flow is our estimate. 3. Foreign currencies are converted using historical exchange rates.
Source: Public information, CIQ, S&P Global (China) Ratings.

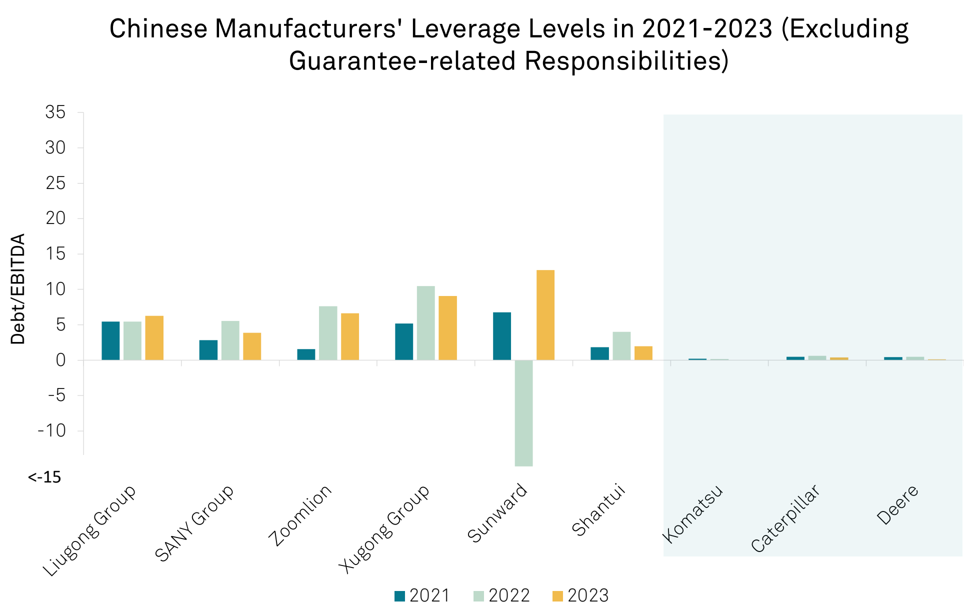
The heavy reliance on credit sales by Chinese manufacturers may add to potential financial risks. We include off-balance-sheet guarantee into debt since we believe guaranteed repurchase may make these companies obliged to repay debt on behalf of its franchisers and customers. Data collected during the last industrial cycle suggests that these companies made repurchase at a substantial scale and booked bad debts accordingly amid the industrial trough. These led to rising liquidity needs for the period and thus a weakened liquidity profile. Responsibilities pertaining to guaranteed repurchase are a primary contributor to the high leverage of Chinese manufacturers.

Chart 9



Note: Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings.
Source: Public information, CIQ, S&P Global (China) Ratings.

Chart 10



Note: Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings.
Source: Public information, CIQ, S&P Global (China) Ratings.

Comprehensive Creditworthiness Comparison Between Chinese and Foreign Leaders under Our Credit Assessment Framework

We take into account a company's business risk profile and financial risk profile to determine its creditworthiness.

We think Chinese and foreign leaders differ in terms of business scale, global presence, operating efficiency, and profitability. Global giants' revenue scales are still multiple times the sizes of Chinese manufacturers. While Chinese leading companies see the percentage of their overseas revenue approaching that for global mega names, marked difference still exits when it comes to absolute revenue scale. Comparatively, international leaders have developed a more extensive business coverage along the industry chain and achieved deep market penetration through global distribution networks. Caterpillar significantly outperforms Chinese companies in terms of accounts receivables and inventory turnovers, while Komatsu and Deere don't have notable turnover advantages. Concerns over Chinese companies' operating efficiency lies more in their guaranteed repurchase responsibilities associated with the high proportion of their credit sales. As the brand premiums and intensity of price competition differ across domestic and overseas markets, Chinese companies' profitability contrast significantly with that for overseas companies, whose average EBITDA margin nearly doubles that of their Chinese peers.

Table 3

Business Risk Profile: Peer Comparison for Sampled Entities (RMB: 100 million, 2023)

	Caterpillar	Komatsu	Deere	Xugong Group / XCMG [2]
Revenue	4,529	1,845	4,144	1,027
Percentage of revenue from after-sales services and products	About 30%	About 40%	-	-
Product diversification	High, over 3,000 machines and more than 1,200 accessories	High	High	High
Global market share [3]	16.8%	10.4%	6.1%	5.3%
Global ranking[3]	1st	2nd	3rd	4th
Degree of diversification at end market	High	High	Moderate, concentrated revenue sources with 58% of revenue contributed by agricultural equipment	High
Overseas capacity	Overseas plants distributed across 16 countries and 54 regions	69 global production bases	Nearly 60 overseas plants	11 overseas manufacturing bases
Number of overseas franchisers	43 franchisers in U.S.; 113 franchisers outside U.S. to	A global network comprising 211 distributors	Products sold across over 100 countries	300 overseas franchisers and 2000 overseas services centers

	serve 191 countries	across 150 countries		
Overseas revenue scale	230.1 billion RMB[5]	164.2 billion RMB	198.6 billion RMB	37.2 billion RMB
Percentage of overseas revenue	48.4%[5]	88.7%	44.3%	40.1%
Accounts receivable days	Excluding financial receivables: 54 Including financial receivables: 105	111	Excluding financial receivables: 47 Including financial receivables: 364	167
Inventory days	148	184	85	172
R&D expenses	149	48	159	43
R&D expenses/revenue	3.3%	2.6%	3.8%	4.2%
Gross margin (2022-2023 average)	33.6%	30.3%	34.1%	23.6%
EBITDA margin (2022-2023 average)	20.3%	18.3%	22.0%	8.9%

Business Risk Profile: Peer Comparison for Sampled Entities (RMB: 100 million, 2023) (cont.)

	SANY Group / SANY Heavy Industry [2]	Zoomlion	Liugong Group/ Liugong Machinery [2]	Sunward	Shantui
Revenue	1,020	471	281	72	105
Percentage of revenue from after-sales services and products	-	-	-	-	-
Product diversification	High	High	Moderate	Moderate	Moderate
Global market share [3]	4.2%	2.4%	1.6%	0.3%	0.6%
Global ranking[3]	6th	12th	19th	41st	31st
Degree of diversification at end market	High	High	Moderate	Moderate	Moderate
Overseas capacity	4 overseas manufacturing bases (U.S., Germany, India, and Brazil)	Production bases located in Italy, Germany, Mexico, and Brazil	4 overseas manufacturing bases (Poland, Brazil, and Argentina)	-	-
Number of overseas franchisers	Over 400 overseas subsidiaries, joint ventures, and franchisers	-	Partnerships with over 300 franchisers and 2700 stores in overseas markets	Collaboration with over 60 overseas franchisers	Over 100 overseas franchisers and distributors
Overseas revenue scale	43.2 billion RMB	17.9 billion RMB	11.5 billion RMB	4.1 billion RMB	5.9 billion RMB
Percentage of	58.4%	38.0%	41.7%	56.8%	55.8%

overseas revenue					
Accounts receivable days	122	201	101	285	107
Inventory days	165	194	136	233	75
R&D expenses	77	34	9	3	5
R&D expenses/revenue	7.5%	7.3%	3.2%	3.9%	4.3%
Gross margin (2022-2023 average)	26.4%	26.5%	19.6%	28.6%	18.1%
EBITDA margin (2022-2023 average)	10.0%	8.7%	6.4%	2.5%	6.8%

Note: 1. Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings. 2. Part of business data for SANY Group, Xugong Group, and Liugong Group comes from their listed subsidiaries. 3. Global market shares and revenue rankings come from Yellow Table published by KHL in 2024. 4. Foreign currencies are converted using historical exchange rates. 5. Due to restriction on data disclosure, Caterpillar's overseas revenue is the revenue generated outside U.S. and Canada.
Source: Company announcements, CIQ, KHL, Wind, S&P Global (China) Ratings.

In our view, Chinese and foreign leaders' financial strategies, cash flow generating ability, and financial stability vary considerably. Compared to their overseas peers, Chinese manufacturers have weaker ability to generate cash flow, reflected by their significantly different FFO, CFO, and FOCF metrics. In spite of inadequate cash flow, Chinese manufacturers, represented by Xugong Group and SANY Group are not taking a more prudent stance when it comes to capital expenditures. Their capital expenditures are made primarily for plant construction and equipment procurement, which still need to be financed by more external funds.

Table 4

Financial Risk Profile: Peer Comparison for Sampled Entities (RMB: 100 million, 2023)

	Caterpillar	Komatsu	Deere	Xugong Group
Capital expenditures	98	96	96	75
Debt/EBITDA (x)	0.4	0.1[3]	0.3	17.1
FFO/Debt	216.2%	389.3%[2]	462.0%	4.7%
CFO/Debt	225.5%	204.2%[2]	264.9%	-1.2%
FOCF/Debt	192.6%	38.9%[2]	199.3%	-6.0%
EBITDA interest coverage (x)	23.5	18.1[2]	33.6	4.4

Financial Risk Profile: Peer Comparison for Sampled Entities (RMB: 100 million, 2023) (cont.)

	SANY Group	Zoomlion	Liugong Group	Sunward	Shantui
Capital expenditures	82	17	8	4	1
Debt/EBITDA (x)	6.9	9.0	10.3	-8.6	3.3
FFO/Debt	9.1%	10.0%	7.6%	-0.9%	30.0%
CFO/Debt	14.9%	4.4%	5.2%	-9.3%	16.4%
FOCF/Debt	2.9%	0.1%	0.8%	-11.6%	12.3%
EBITDA interest coverage (x)	2.6	5.1	3.9	0.5	24.0

Note: 1. Data of Komatsu, Caterpillar, and Deere adjusted by S&P Global (China) Ratings; domestic sampled entities' data adjusted by S&P Global (China) Ratings. 2. Due to data unavailability, Komatsu's FFO to debt ratio, CFO to debt ratio, FOCF to debt ratio, and EBITDA interest coverage are actual values in FY2022. 3. Komatsu's debt to EBITDA ratio is the average of the actual value in 2022 and our estimated value for 2023. 4. Foreign currencies are converted using historical exchange rates.

Source: Company announcements, CIQ, Wind, S&P Global (China) Ratings.

Appendix: List of Sampled Entities

Company Name	Abbreviation
Guangxi LiuGong Group Co., Ltd.	Liugong Group
SANY Group Co., Ltd.	SANY Group
Zoomlion Heavy Industry Science & Technology Co., Ltd.	Zoomlion
Xuzhou Construction Machinery Group Co., Ltd.	Xugong Group
Sunward Intelligent Equipment Co., Ltd.	Sunward
Shantui Construction Machinery Co., Ltd.	Shantui
SANY Heavy Industry Co., Ltd.	SANY Heavy Industry
XCMG Construction Machinery Co., Ltd.	XCMG
Guangxi Liugong Machinery Co., Ltd.	Liugong Machinery
Komatsu Ltd.	Komatsu
Caterpillar Inc.	Caterpillar
Deere & Co.	Deere

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