

Overcapacity in China

Has China really built up huge overcapacity in recent years with the help of massive subsidies, with which it is now threatening to flood Western markets? A simple look at capacity utilization in the industries in question is not enough here. Rather, a whole set of indicators must be considered to clarify this question, and these do indeed point to considerable overcapacity in some industries in China. In addition, the Chinese government's growth strategy, which is focused on key emerging industries, gives rise to fears that the problem is likely to worsen in the coming years.

Tommy Wu

Higher tariffs for fear of China's overcapacity

The US and the EU accuse China of having built up oversized production capacities through massive subsidies, with notable concerns over industries that are deemed strategic. As a reflection of China's growth strategy, its lending to the industrial sector has increased markedly in recent years to finance the development of manufacturing and the expansion of capacity (Chart 1). To prevent their markets from being flooded by Chinese products and thus threatening their own industries, the US and the EU have imposed increasing trade measures. The US has significantly increased tariffs on some Chinese products, including electric vehicles, lithium-ion batteries, solar cells, and semiconductors. The EU has also raised tariffs on EVs produced in China.

From China's perspective, its industries are expanding partly in response to the expected massive increase in global demand, and in the long term the global demand would not be met solely by Chinese capacity. Arguably, at the country level, China's overcapacity is not severe. According to the official statistics, capacity utilization rate of China's industry sector, which many use as an indicator of overcapacity, was at 73.6% in the first quarter of 2024. While this is lower than the average of around 76% in 2017-2022, it has not yet reached the low of 72.9% in 2016 (chart on front page). The problem is that this indicator is being depressed by the current phase of domestic economic weakness in China which is partly cyclical.

Chart 1 - Outstanding loans to industrial sector rose rapidly

Annual rate of change in %, quarterly data



Source: PBoC, CEIC, Commerzbank Research

What is "overcapacity"

The above shows that the question "structural overcapacity or not?" cannot be answered on the basis of a single variable. Other indicators must be considered alongside it. Also, oversupply differs industry by industry. An industry-specific view makes better sense here.



In the case of structural overcapacity, the ratio between sales turnover and the asset/capital employed (in machinery or other means of production) becomes less favorable over a longer period of time. At the same time, too much is often produced on a permanent basis, causing inventories to rise in relation to sales turnover. In order to slow this down, attempts are made to sell the surplus products abroad, i.e. to increase exports and at lower prices. All of these depress the gross profit margin and increase the proportion of companies in the relevant industries that are making losses. If this trend continues over several years without the companies in question exiting the market, this is an indication that state subsidies are responsible for the overcapacity. A detailed description of the indicators considered can be found in a box at the end of the main text.

Several industries show signs of overcapacities ...

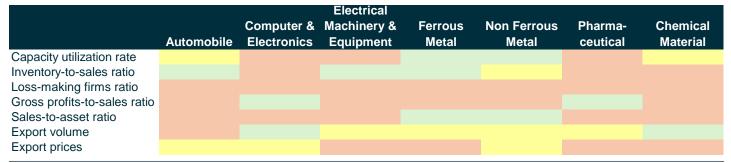
Table 1 shows the results of this analysis. Red color indicates overcapacity, yellow indicates no or only slight overcapacity, and green indicates undercapacity. It is noticeable that the proportion of loss-making companies has increased in all industries, from 10-15% of all companies in an industry in 2016 and 2017 to 20% or more in 2023. This suggests that more and more inefficient and unprofitable companies have survived, likely due to government subsidies in various forms, including direct financing, cheap credit, and the increasing share of state-owned enterprises.

By industry, automobile, computer and electronics, electrical machinery and equipment, pharmaceutical, and chemical material show the most signs of overcapacity. These are the industries in which China wants to upgrade along the value chain and become self-reliant.

There are the fewest signs of overcapacity in ferrous metals (e.g. steel) and non-ferrous metals (e.g. aluminum). This can be explained by the fact that the government has set capacity reduction targets for these heavy industries since 2016. However, export prices of Chinese ferrous metals have fallen the most so far in 2024 among the industries we considered here. In fact, the West has been complaining about cheap steel products from China, and has launched anti-dumping investigations and imposed (or looking to impose) tariffs on these products.

With the exception of the two metal industries, the ratio between sales turnover and asset/capital employed has also fallen in the industries under review. However, it is difficult to say whether this is due to weak demand - i.e. a cyclical argument - or whether the companies' capital stock is not being fully or efficiently utilized from a long-term perspective.

Table 1 - Signs of overcapacity for automobile, computer & electronics, electrical machinery & equipment, pharmaceutical, and chemical material industries



Source: NBS, China Customs, CEIC, Commerzbank Research

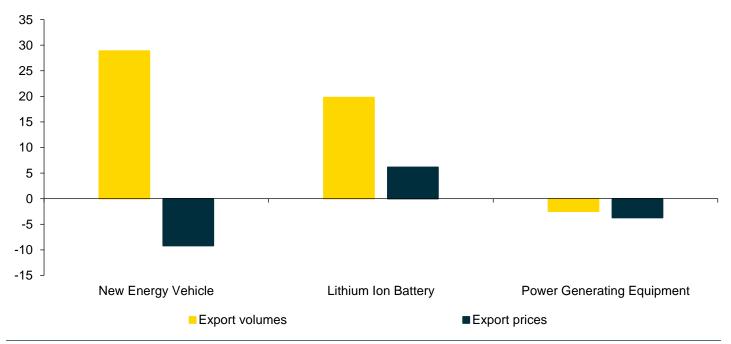
... and in emerging industries which are hit by western tariffs

Obviously, there are differences within these - quite broadly defined - industries. For the automobile industry, for example, company-level studies indicate that the capacity utilization of Chinese EV manufacturers is over 80%. In contrast, manufacturers of cars with combustion engines appear to be utilizing only half or less of their capacity.

Official figures are often not available for more narrowly defined groups. For the so-called "new three" industries affected by the recent US tariff increases - electric vehicles (including plug-in hybrids), lithium-ion batteries, and solar cells - we observe the growth in export volumes and export prices and compared them to the average historical growth of overall Chinese export volumes and prices. For electric vehicles, a combination of sharply rising exports and significantly falling export prices points to existing overcapacity. Perhaps the fact that capacity utilization among Chinese EV makers is high is actually due to their aggressiveness in producing and exporting to gain global market shares. Meanwhile, export volumes and prices for the other two product groups do not paint a clear picture (Chart 2).



Chart 2 - Export volume and price data point to signs of overcapacity for the new energy vehicle industry, but not so clear for others Export volume and price of each industry, annual growth in the first four months of 2024 minus the average historical growth in overall Chinese export volume and price; %-point difference



Source: NBS, China Customs, CEIC, Commerzbank Research

Studies on the future development of production capacities and demand show a major risk of massive overcapacity. They point to the massive expansion of Chinese production capacities that is becoming apparent:

- Electric vehicles (including plug-in hybrids): According to Chinese media, production capacity in China is expected to exceed 36 million vehicles per year by 2025. It is expected to continue increasing thereafter. At the same time, global annual sales of electric vehicles are expected to rise to 45 million by 2030 and almost 65 million by 2035, up from around 14 million in 2023, according to estimates by the International Energy Agency (IEA). This would mean that Chinese electric vehicles would continue to play a dominant role in the global market in the long term, indicating a high risk of overcapacity.
- **Lithium-ion batteries:** Capacity utilization has fallen to around 40% in 2023 in China and capacities are likely to increase further in the coming years. Even if the forecasts published by various institutions for further capacity expansion differ greatly in some cases, China's capacities alone are likely to significantly exceed global demand.
- Solar cells: According to estimates by Wood Mackenzie, China's production capacity will reach around 1,700 GW by 2026, compared to around 1,000 GW in 2023. According to BloombergNEF, annual global demand in 2023 was significantly lower at 445 GW. In a scenario in which CO2 emissions fall to zero by 2050, demand is expected to reach around 670 GW by 2026, 840 GW by 2030, and 980 GW by 2035. There is obvious overcapacity today. And even if China stops building additional capacity, global demand will not be able to absorb the entire potential supply in the long term.

Trade conflicts are set to intensify

In sum, there are many signs that there is indeed considerable structural overcapacity in many areas of industry in China. The overcapacity problem is likely to get more severe in the coming years, particularly in the areas that are currently the focus of trade disputes. One important reason for this is the country's state-led economic model, which has already generated overcapacities in the past. After the global financial crisis in 2008, overcapacity arose in the heavy industry and the real estate sector. In 2015, Beijing also presented an ambitious 10-year plan called "Made in China 2025" to achieve self-reliance and innovation in manufacturing. While China has dropped any reference to this plan due to rising geopolitical and trade tensions with the West, the plan has largely continued, with massive resources being allocated to the development of strategic and emerging industries.



Currently, as China is transitioning away from real estate as a pillar of growth, it is doubling down on its industrial policy and is refocusing on manufacturing as its "new growth strategy". Hence, the risk of overcapacity is likely to persist and probably will rise further down the road. The competitive pressure they exert on the Chinese and the global markets is likely to remain high. The US and the EU will in all likelihood respond with further trade restrictions, which in turn would probably trigger corresponding countermeasures from China. As a result, the trend towards a re-regionalization of trade is likely to continue, with possible loss of efficiency and hence an increase in the price of many goods.

Box: Indicators used for diagnosing overcapacity risks

An obvious indicator of overcapacity in an industry is **capacity utilization**. However, this is also influenced by cyclical factors, meaning that falling or low capacity utilization alone cannot provide viable evidence of existing or even rising overcapacity from a structural sense. It serves as an indication and as a reason for further investigations, for which additional indicators are used.

Foreign trade data has a high information content: we analyze **export volume**. Overcapacities that enable production that can no longer be sold domestically lead to efforts to sell the goods in foreign markets. A warning signal is rapid export volume growth in an industry compared to the average historical growth of Chinese export volume as a whole. This will also depress **export prices**. A rapid decline in export prices in an industry compared to the average historical growth of Chinese export prices is therefore a further indication of overcapacity.

We also look at the **relationship between inventories and sales**: an increase relative to sales means that inventories are not being sold. If this situation persists, this is a further signal for our monitor. A high **proportion of loss-making companies** and a low **gross profit margin** also indicate overcapacity, as does an unfavorable **ratio of sales to assets** which signals capacity is underutilized.

To create the heat map in Table 1, we use as a system of warning thresholds. For capacity utilization rate and inventory-to-sales ratio, if the 2023 rate or ratio is over one standard deviation higher than the industry's historical average, then we consider it as a sign of overcapacity (red entry in Table 1). If it is within one standard deviation then there is no or only slight overcapacity (yellow). If it is lower than the industry average then it is considered as undercapacity (green). In the case of gross profits-to-sales ratio, if it is one standard deviation lower than the industry's historical average then it is considered as a sign overcapacity, etc. Similar logic applies to other indicators. For the ratio of loss-making companies, we examine whether there is a sustained increase in the ratio from 2016-17. The situation is similar with the sales-to-asset ratio: here we are looking for a sustained decline from 2016-17. For export volumes and prices, we compare the annual growth in the first four months of 2024 with the average historical growth in overall Chinese export volumes and prices.

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Research contacts (E-Mail: firstname.surname@commerzbank.com)

Chief Economist Dr Jörg Krämer +49 69 136 23650

Economic Research

Dr Jörg Krämer (Head) +49 69 136 23650

Dr Ralph Solveen (Deputy Head; Germany)

+49 69 9353 45622

Dr Christoph Balz (USA. Fed)

+49 69 9353 45592

Dr Vincent Stamer (Euro area, World trade)

+49 69 9353 45800

Dr Marco Wagner (ECB, Germany, Italy)

+49 69 9353 45623

Bernd Weidensteiner (USA, Fed)

+49 69 9353 45625

Christoph Weil (Euro area, France,

Switzerland)

+49 69 9353 45589

Tung On Tommy Wu (China)

+65 6311 0166

Interest Rate & Credit Research

Christoph Rieger (Head) +49 69 9353 45600

Michael Leister (Head Rates)

+49 69 9353 45610

Rainer Guntermann +49 69 9353 45629 Hauke Siemßen +49 69 9353 45619

Ted Packmohr

(Head Covered Bonds and Financials)

+49 69 9353 45635

Marco Stoeckle (Head Corporate Credit) +49 69 9353 45620

FX & Commodities Research

Ulrich Leuchtmann (Head) +49 69 9353 45700

Antje Praefcke (FX) +49 69 9353 45615 Tatha Ghose (FX) +44 20 7475 8399 Charlie Lay (FX)

+65 63 110111 Michael Pfister (FX) +49 69 9353 45614

Volkmar Baur (FX) +49 69 9353 26854

Thu-Lan Nguyen (FX, Commodities)

+49 69 9353 45617

Carsten Fritsch (Commodities)

+49 69 9353 45647

Barbara Lambrecht (Commodities)

+49 69 9353 45611

Tung On Tommy Wu (China)

+65 6311 0166

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Analysts

Dr. Jörg KrämerChief Economist
+49 69 136 23650
joerg.kraemer@commerzbank.com

Bernd Weidensteiner

Senior Economist +49 69 9353 45625 bernd.weidensteiner@commerzbank.com

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Commerzbank Offices

Frankfurt	London	New York	Singapore
Commerzbank AG	Commerzbank AG	Commerz Markets LLC	Commerzbank AG
DLZ - Gebäude 2,	PO BOX 52715	225 Liberty Street, 32nd	128 Beach Road
Händlerhaus	30 Gresham Street	floor,	#17-01 Guoco Midtown
Mainzer Landstraße 153	London, EC2P 2XY	New York,	Singapore 189773
60327 Frankfurt	20114011, 2021 27(1	NY 10281-1050	Singapore 100770
Tel: + 49 69 136 21200	Tel: + 44 207 623 8000	Tel: + 1 212 703 4000	Tel: +65 631 10000