

How has production capacity in the manufacturing industry developed in recent years?

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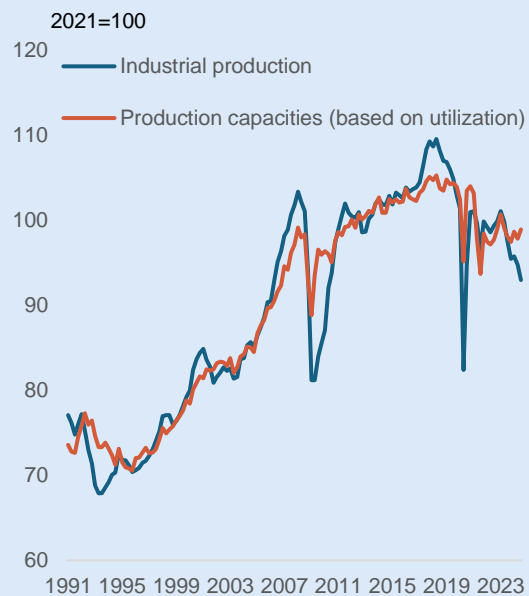
Industrial production has fallen considerably in recent years. In the third quarter, it was about 10 percent below its level in 2019. For the economic outlook, it is important to know how much of the lower production is due to cyclical or temporary factors, and how much is due to a permanent decline in production capacity. Given the importance of manufacturing for the economy as a whole – its share in total gross value added was around 20 percent in 2023 – this has important implications for GDP and potential output. However, production capacity cannot be observed and therefore must be estimated. To this end, we use surveys of capacity utilization in manufacturing and evaluate the results using other indicators.

Manufacturing firms are surveyed by the ifo Institute regarding their capacity utilization on a quarterly basis. This indicator can be used to decompose fluctuations in industrial production into changes in capacity utilization and production capacity. Of course, this requires strong assumptions – for example, that normal capacity utilization in manufacturing has not changed significantly over the years. It is also assumed that the information provided by firms is mainly related to industrial production and not to other (service) activities, such as sales or research and development. According to this approach, the declines in production can be partly attributed to lower capacity utilization, but they are also due to significant reductions in production capacity and are therefore of a more permanent nature (Figure 1). Capacity has fallen by around 6 percent since 2019. It is noticeable that the production capacities estimated in this way show relatively high short-term fluctuations and have sometimes fallen abruptly, especially during economic crises. It is usually assumed that production capacities change only gradually. Part of the fluctuations may be due to the fact that, especially in times of crisis, the information provided by firms is less precise or has a different correlation with industrial production than in normal times. In addition, especially in periods of declining production capacity – for example, when capacity has become obsolete – firms may initially tend to report a declining utilization of their normal production capacity. This in itself could mean that the decline in production capacity is initially underestimated and that the recent fall in production in autumn, when capacity utilization slumped, could be more due to declining production capacity than the estimation method suggests. Short-term fluctuations aside, the results of a flattening growth path until 2019 are in line with other estimates, such as estimates of aggregate potential output based on the European Commission's methodology (Boysen-Hogrefe et al. 2024).

Other observations equally point to a significant decline in production capacity in the manufacturing industry. Employment has fallen by more than 4 percent since 2019, while hours worked have fallen by more than 7 percent (Figure 2). In principle, these declines could also be due to cyclical factors. However, short-time work in the manufacturing industry has increased only moderately. Moreover, given the shortage of skilled workers, many firms are likely to be more reluctant to cut jobs than in previous periods of weakness. This suggests that the decline in employment is largely structural in nature.

There are also other signs that production capacity in important industries has been reduced recently. For example, production in the energy-intensive industries, which account for about 17 percent of industrial production, is still below its pre-energy crisis level (Figure 3). As energy prices in Germany are likely to

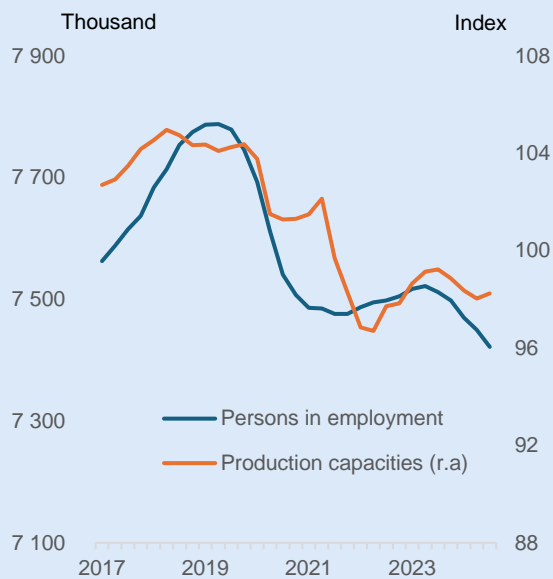
Figure 1:
Industrial production and production capacities



Quarterly data. Volumes, seasonally and calendar adjusted. Production capacities: Calculated based on deviation of survey-based utilization from long-run average (1991-2019).

Sources: Federal Statistical Office; ifo; Kiel Institute.

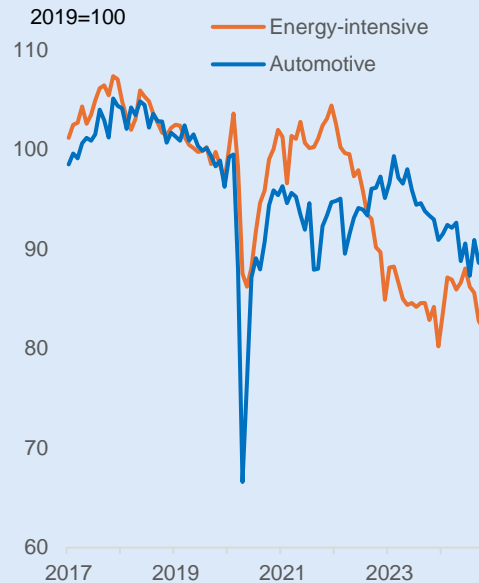
Figure 2:
Production capacities and persons in employment
in manufacturing



Quarterly data. Seasonally adjusted. Production capacities: Average over four quarters.

Sources: Federal Statistical Office; ifo; Kiel Institute.

Figure 3:
Production in energy-intensive and automotive
industries



Monthly data. Volumes, seasonally and calendar adjusted.

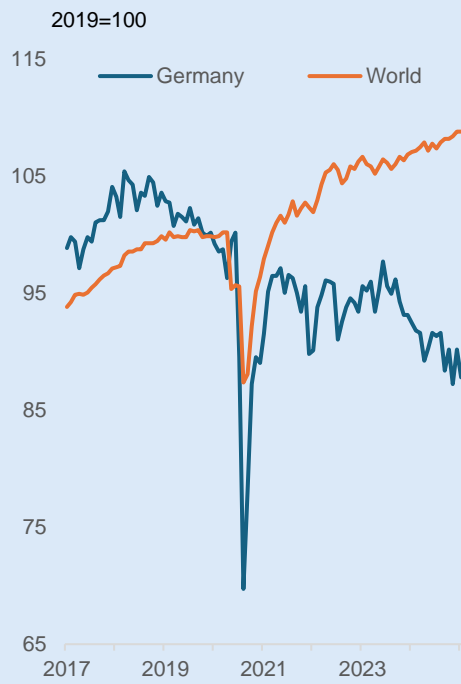
Sources: Federal Statistical Office.

remain relatively high for the foreseeable future – although they have come down from their historical highs –, production in the energy-intensive industries is expected to be permanently lower. In the automotive industry, which is of a similar size, production capacity appears to have been permanently reduced by the switch to electric vehicles (Falck et al. 2021).

Finally, industrial production in Germany has decoupled from global industrial production. Global production has risen significantly since 2019, meaning that international cyclical factors cannot be responsible for weak production in Germany (Figure 4). Rather, in line with company surveys, this suggests that manufacturing firms have lost international competitiveness, and that production will remain subdued.

The fact that gross value added in the manufacturing industry has been much more stable than industrial production since 2019 argues against a significant decline in production capacity in the manufacturing sector as a whole. Although it has been on a downward trend for more than a year, it was recently only about 2.5 percent below its 2019 level, meaning that the weakness in the manufacturing industry had a lower impact on overall economic output (as measured by gross value added or GDP) than the decline in industrial production suggests (Figure 5). In principle, several factors can contribute to the discrepancies between industrial production and gross value added, such as different industry weights or changing intermediate input ratios (Lehmann and Wollmershäuser 2024). However, these factors can hardly explain the large differences between industrial production and gross value added. This could indicate that manufacturing firms have significantly increased their production of services, which are included in gross value added but not in industrial production. In this case, the impact of the weakness in manufacturing on potential output would be less severe, but the result of a significant decline in capacity to produce industrial goods would remain. In addition, to the extent that services are linked to the sale of industrial goods in the form of services, a decline in industrial production could also affect the potential for services with a time lag.

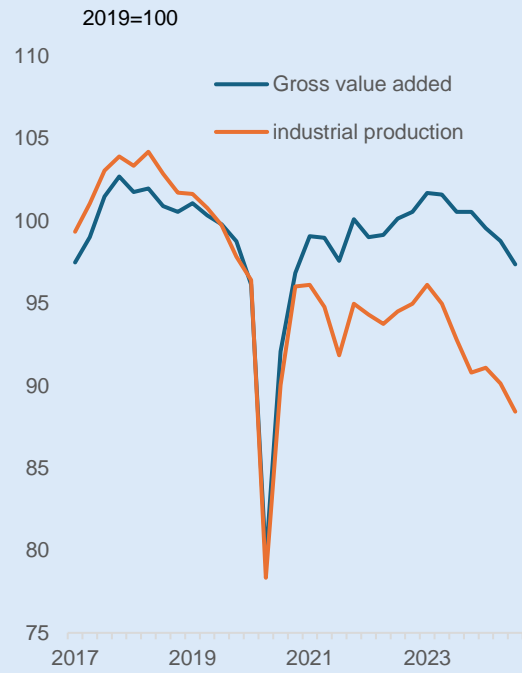
Figure 4:
Industrial production in Germany and in the world



Monthly data. Volumes, seasonally and calendar adjusted. World industrial production includes energy production.

Sources: Federal Statistical Office; CPB.

Figure 5:
Industrial production and gross value added in the manufacturing industry



Quarterly data. Volumes, seasonally and calendar adjusted.

Sources: Federal Statistical Office; Kiel Institute.

Literature

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