



German Automotive: Downfall or structural change?



The key industry is producing less, but with more added value. Popular key figures paint a too gloomy picture of the situation. Production is expected to fall by 2 % in 2025. Ambitious research and development expenditure forms the basis for future success, but there is a lot of catching up to do in the e-segment.



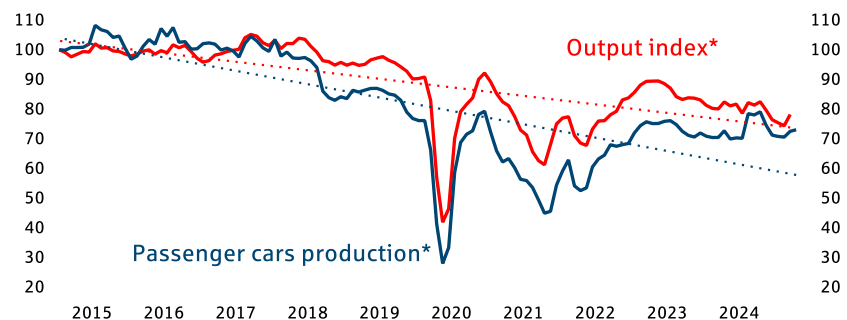
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With a share of around 4.5 % of overall gross value added, the automotive¹ sector is the **largest German industry**. The output index and the number of units produced are often used to assess the economic situation of the industry. Both have fallen significantly in recent years: In April, the output index was 29.3 % below its peak value in August 2017 on a seasonally adjusted basis, while the number of units was 33.5 % lower. The output index has also lacked momentum recently: in the first quarter, it was 4.4 % below the previous year's figure. However, the number of units increased by 3 %.

The automotive industry recently employed over 730,000 people. The fact that this figure has fallen by around 100,000 jobs since 2017 is cause for concern. Together with the low values of the output index and the number of units, the situation initially seems alarming. But it may be misleading to look at these figures alone.

Output index and number of units produced at a low level

Jan. 2015 = 100, seasonally adjusted and smoothed, plus trend lines since 2015



*NACE C29: Manufacture of Motor Vehicles, Trailers, Semi-Trailers
Sources: Macrobond, Helaba Research & Advisory

Output index and number of units may provide an overly pessimistic assessment

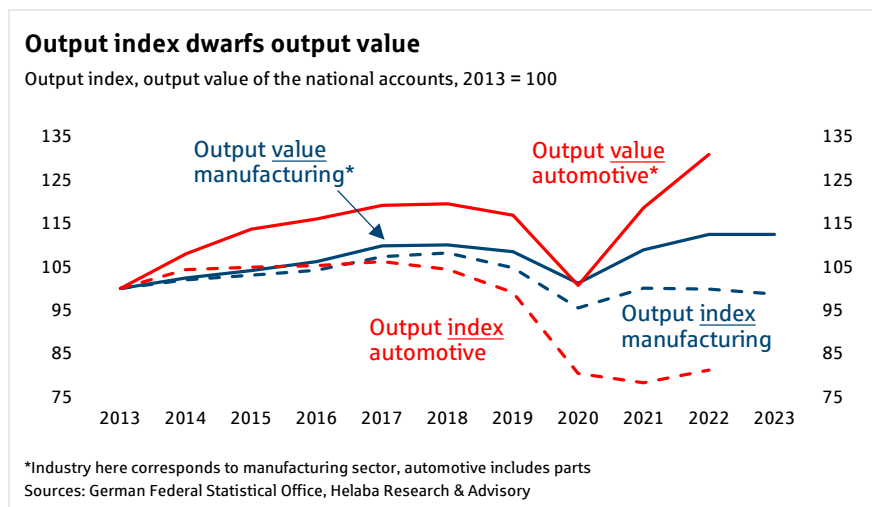
The output *index* shows the price-adjusted value of all goods produced in the sector in a given period. Together with the number of units, it illustrates that the *quantity* of production in particular has fallen. The output *value*, on the other hand, includes the *entire value added* of the industry. This also includes **non-industrial activities** such as consulting and services or income from patents, license agreements and commissions. The output value is published much later and is therefore less frequently considered. However, it is a **better measure of the economic value generated by the industry**, as it is included in gross value added, which forms the basis of the production approach for calculating gross domestic product. The ifo Institute recently analyzed in two studies that there has been an **increasing discrepancy between the output index and the output value** in the manufacturing industry since 2013.²

¹ The automotive industry here comprises Motor Vehicles, Trailers, Semi-Trailers, and parts thereof (NACE C29).

² See Lehmann & Wollmershäuser (2024): [Struktureller Wandel im Verarbeitenden Gewerbe: Produktion unterzeichnet Bruttowertschöpfung](#). Ifo Schnelldienst, 2/2024 and Lehmann, Linz, & Wollmershäuser (2025): [Strukturwandel im Verarbeitenden Gewerbe](#). Ifo Schnelldienst digital, 5/2025.

Focus on Sectors: German Automotive

This phenomenon is **most pronounced in the automotive industry among all sectors**.³ The output value data at sector level currently only goes back to 2022. Nevertheless, it can be seen that the indicators diverged earlier and much more strongly than in the manufacturing industry as a whole.



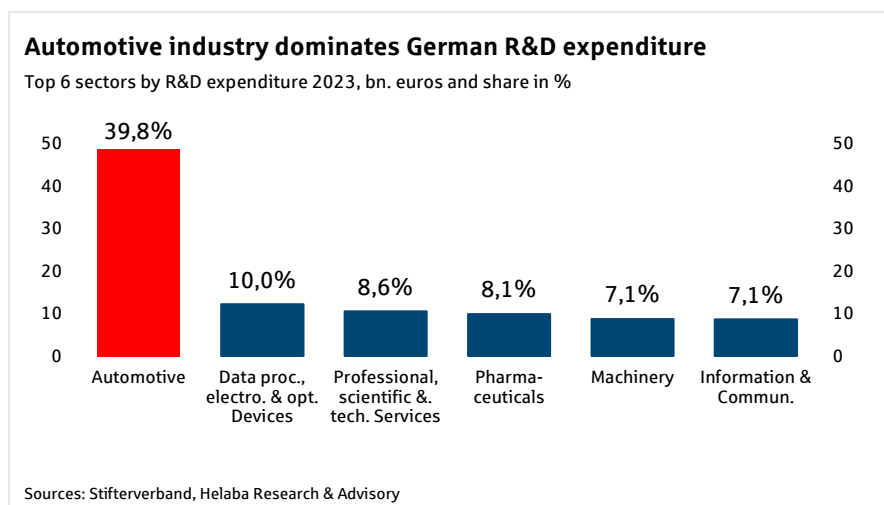
Basically, this difference means that **less output is increasingly generating more value added**. Among other things, this fits in with the shift in the industry's production structure: the automotive industry began outsourcing production long before the recent crisis years. According to the German Association of the Automotive Industry (VDA), foreign production had already overtaken domestic production by 2010. Due to the high wage levels in Germany,

mainly luxury class vehicles with high margins are still manufactured in Germany. According to the VDA, the premium share of domestic car production rose from 62 % to 71 % between 2019 and 2023. **This outsourcing of production is more evident in the quantity-focused indicators:** The output index and the number of units. However, the increasingly non-industrial sources of value creation are being neglected.

Regarding the manufacturing industry, the ifo Institute attributes this development increasingly to **“hybrid business models”**. In the automotive industry, this could represent an increased focus on product development in Germany, increased information and communication services in the course of fleet modernization and revenues from licenses. In short: **“quality instead of quantity”**. This does not mean that the industry's figures are rosy. The output value of the manufacturing industry stagnated in 2023, which is why the corresponding data for the automotive sector is also likely to be somewhat sobering. Nevertheless, the key figures show that the industry is undergoing a structural change - from pure to hybrid production.

Structural change is reflected in a stronger focus on research and development

In the course of the mobility transition, it is crucial that additional value creation is not only expanded in the usual combustion engine segment. In addition to the optimization of old processes and products, innovations in alternative drive technologies are required. The industry's expenditure on research and development (R&D) shows the sector's corresponding ambitions: with a share of 39.8 %, **the automotive industry dominated Germany's R&D expenditure in 2023**.



³ Statistical causes for the divergence of the key figures, such as differences in the underlying survey, were also analyzed in Lehmann, Linz & Wollmershäuser (2025) and ruled out as a cause at the manufacturing industry level.

Focus on Sectors: German Automotive

The industry also increased the R&D share of its total investments by 13.6 % between 2013 and 2022. Patent applications indicate that the knowledge created is increasingly being applied: According to the German Patent and Trade Mark Office (DPMA), they rose by 4.8 % year-on-year in the “transportation” category – which is largely dominated by the automotive industry. With 11,153 applications, the industry thus accounted for almost a quarter of applications in Germany. The ifo Institute also pointed out that the proportion of R&D employees within the automotive industry increased by around 2 % between 2013 and 2022 – however, total employment fell by just under 2 % in the same period. **A change in employment is therefore taking place within the industry**, which was accompanied by net job losses at least until 2022.

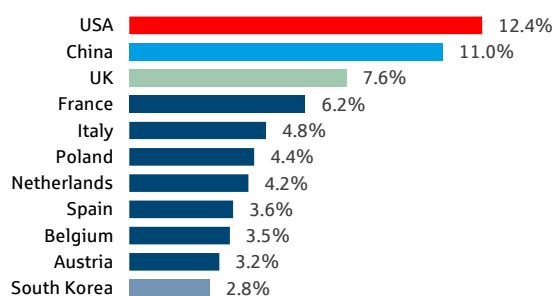
In the long term, the industry's R&D efforts should lead to the broadest possible participation along the e-mobility value chain. This is because the **automotive industry benefits greatly from an agglomeration of vehicle manufacturers and suppliers**. The high vertical integration of the value chain in the combustion segment, particularly in southern Germany, has long been considered a key concept for the success of the industry. Due to the geographical and economic proximity, for example, R&D projects between suppliers and manufacturers could be implemented jointly, knowledge could be transferred and skilled workers could be recruited more easily. Even if the automotive industry opens up new sources of value creation, a sufficient proportion of production should therefore remain locally. If this does not succeed in the course of the mobility transition and too much of the old structures are lost as a result of the relocation of production, this would have negative consequences for the entire sector. The industry's R&D expenditure suggests that it has the necessary prerequisites. But in some areas, such as digitalization and electric drive, there is still a lot to be done.

Export market: declining Chinese demand

With a **foreign sales share of almost 70 %**, the industry mainly plays out in the international market. However, the customer markets in Europe and the USA have hardly shown any momentum in recent years. This is partly due to the fact that these markets are quite saturated: It is mainly old vehicles that are replaced rather than new ones purchased. In saturated markets, it is therefore even more important to increase the added value per production unit when production volumes are stagnating or falling. This is where the development of the output value described above comes into play.

The sectors's most important export destinations

Shares of German car exports in %, mean values 2020 to 2024

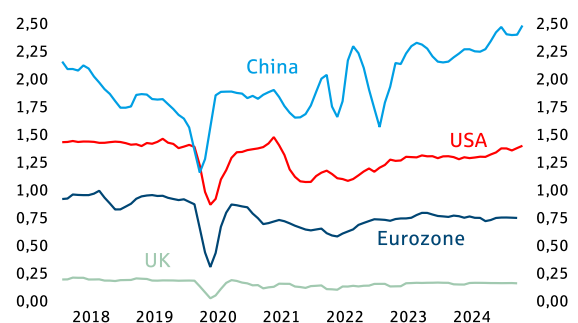


*incl. parts

Sources: Macrobond, Helaba Research & Advisory

Eurozone's market sluggish, China's dynamic

New registrations*, million, seasonally adjusted and smoothed



*Passenger cars (Eurozone, China & UK) or passenger cars & light trucks (USA)

Sources: Macrobond, Helaba Research & Advisory

Although the important Chinese market is developing better overall, the sales figures of German automotive manufacturers have been falling for years. Between 2022 and 2024, sector exports to China fell by 32 % to their lowest level since 2015. The negative development of industry sales in the People's Republic is largely due to the advance of e-mobility. Since the beginning of the decade, the production and number of new registrations of e-vehicles in China has been growing rapidly (see chart on p. 4). In the e-segment, domestic vehicles are far more in demand in China than foreign ones: only 4 % of newly registered e-cars in China recently bore a German logo. With the sharp rise in the production of e-cars, China has largely covered its own new registrations since the beginning

Focus on Sectors: German Automotive

of the decade. Furthermore, China has exported more motor vehicles and parts to the rest of the world than it has imported since 2020 (see chart on p. 4).

The People's Republic also has a decisive advantage in the agglomeration of suppliers and manufacturers in the e-segment: batteries are largely sourced from Chinese and other Asian manufacturers. What was once a key advantage of the German automotive industry in the combustion engine business now applies to the Chinese one. **With the global movement towards pure e-mobility, an advantage that has long supported the German automotive industry is currently diminishing.** It would already be considered a success if the industry could at least establish its own significant production along the e-mobility value chain.

Regarding the US tariffs, a distinction must be made between the impact on companies and on the automotive sector in Germany. Many manufacturers produce directly in the sales markets and can therefore avoid the tariffs. While the production of the vehicles can thus partially avoid the tariffs, **the vehicle parts often have to be imported and would become more expensive as a consequence of the tariffs.** This would reduce the advantage of production in the USA. For Germany, there are risks in the form of job losses due to an increasing relocation of production to the USA in response to the tariffs. The tariffs also endanger the industry as a whole, as they may hinder the development of a German value chain in the e-segment if suppliers also decide to relocate production.

Sustainability and mobility transition: EU accommodates, demand in the e-segment grows

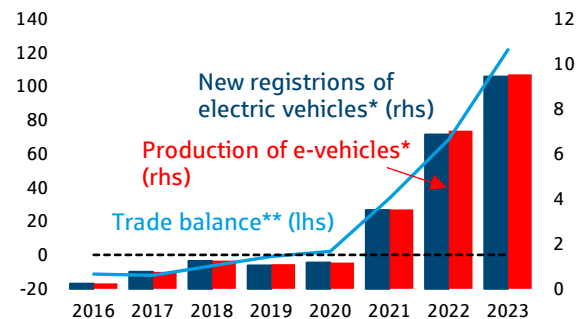
When combustion engines are phased out in the EU from 2035, **manufacturers will have to fully electrify their fleets.** During the transition period, the industry must comply with fleet limits that have already been set. Since the beginning of the year, these have stipulated that newly sold cars must not emit more than 93.6 g of CO₂ per kilometer on average. The EU recently gave manufacturers a reprieve: the limits do not have to be complied with every year but may be cumulatively offset until 2027. This means that there are no penalties for failing to meet the limits this year, but this is only a temporary relief.

The current trend in new registrations in Germany shows that **the end of the combustion engine does not necessarily lead to a huge slump in demand for manufacturers.** From 2015 to 2024, the proportion of combustion engines fell from 98.6 % to 52.9 %, while the proportion of hybrids and battery electric vehicles (BEVs) increased to 47.1 %. In the first quarter of 2025, newly registered cars with alternative drive systems even had a share of 56 %.

Suppliers, on the other hand, are likely to be hit harder by the mobility transition. According to the VDA, the vertical range of manufacture of an electric motor is far less complex with around 200 components than that of a combustion engine, where up to 1,400 parts are installed. This could possibly be mitigated – hybrid production and increases in value added should be mentioned here again – but probably not compensated for. This is because some combustion engine parts such as pistons and cylinders play virtually no role in BEVs.

Electric vehicles make China a net exporter

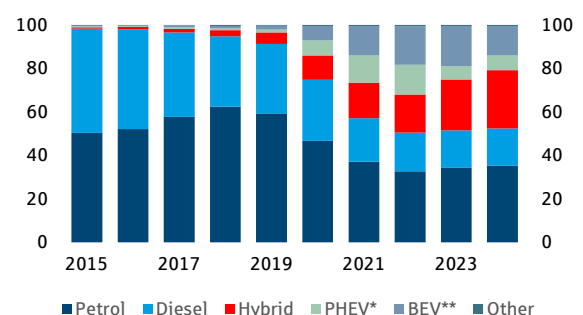
Trade balance in bn. USD, new registrations/production in million



*BEV and PHEV, **China with the rest of the world
Sources: Macrobond, Helaba Research & Advisory

E-vehicles are becoming more popular

New car registrations in Germany, shares in %



*Plug-In Hybrid Electric Vehicles, **Battery Electric Vehicles
Sources: Macrobond, Helaba Research & Advisory

Federal government plans can provide the necessary impulse

In order to support the mobility transition in Germany and thus the e-segment of the industry, **the new German government has set itself a special focus in the coalition agreement**: A whole 8 measures are dedicated to the automobile industry.⁴ The Finance Minister's first draft bill stipulates that electric company cars purchased between June 30, 2025 and January 1, 2028 can be written off at 75 % in the first year. This can be followed by full depreciation over a total of 6 years using the declining balance method. In addition, the upper price limit for the subsidy is to be raised from 70,000 euros to 100,000 euros.

Other plans in the coalition agreement include **a vehicle tax exemption for electric vehicles until 2035** and a permanent exemption from tolls for zero-emission trucks. In order to promote alternative drive systems, the federal government is also planning to **support hybrid technologies and a hydrogen charging infrastructure for commercial vehicles**. A program to support households with low and medium incomes in the mobility transition is also to be launched. Particularly in view of the sluggish German economy and still subdued private consumption, the last project could also have a positive impact on the overall economic situation.

Conclusion: Increasing added value and e-technology determine the future

In the short term, the weak economy in Germany, tariffs from the USA and declining demand from China are having a negative impact. As a result, **production in the automotive industry is expected to fall by 2 % this year**. However, overall value added based on the output value is likely to be more positive.

In the medium to long term, two factors will determine the industry situation. On the one hand, the **value added per production unit must be increased due to saturated customer markets and sluggish sales figures**. The development of output value to date and the data on R&D expenditure and patent applications give reason to hope that the industry's gross value added will improve in the future.

On the other hand, the **German automotive industry must not be left behind in the e-segment**. This has already happened in China and must be prevented in Germany and other sales markets. In Germany, there was a setback when the environmental bonus for e-cars expired at the end of 2023. The new German government has now set itself ambitious plans for supporting the mobility transition. **These political goals and the recovery in new registrations of alternatively powered vehicles are improving the prospects for the e-segment**. The European market, which accounts for a significant proportion of the sector's exports, could also offer opportunities in the future. Thus, it would be important to expand the European automotive market. The European Commission's latest strategy paper⁵ at least shows corresponding ambitions, the implementation of which could provide important support for the industry.

⁴ See Coalition agreement between the CDU, CSU and SPD - 21st legislative period, p. 7-8.

⁵ See [The Single Market: our European home market in an uncertain world](#). May 21, 2025.



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