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The German-Central European supply chain revisited

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In this policy brief, we look at the current situation in the automotive industry in Austria, Germany and the Visegrád countries, as they form a tightly integrated supply chain for the production of automobiles. Our analysis highlights the central role of Germany in this setting, as the main producer and exporter of cars. Due to this key position, the current negative economic developments in Germany mostly spill over into these countries. Currently, the industry faces many challenges. The imposition of a 15% tariff on cars and car parts by the US will decrease EU exports, further aggravating the difficult situation in its automotive industry. Our recommendation is to see the green and digital transitions as an opportunity to expand the capabilities of European car producers, to view competition from China as a chance, and to keep regulatory certainty to steer the necessary change.

1. Introduction

The so-called German-Central European supply chain (GCESC) has been a key success factor for the economies of Central European economies since the 2000s. Its effects include more synchronized business cycles, significant technology transfer and accelerated income convergence (IMF 2013). Also known as the Central European manufacturing core, the GCESC refers to the supply chain integration of Austria and the Visegrád countries (i.e. Czechia, Hungary, Poland and Slovakia) with Germany (see Stehrer and Stöllinger 2015). The automotive industry has been a prominent example of this supply chain integration and plays an important role in the CEE countries as well as Austria (see Hanzl-Weiss et al. 2018).

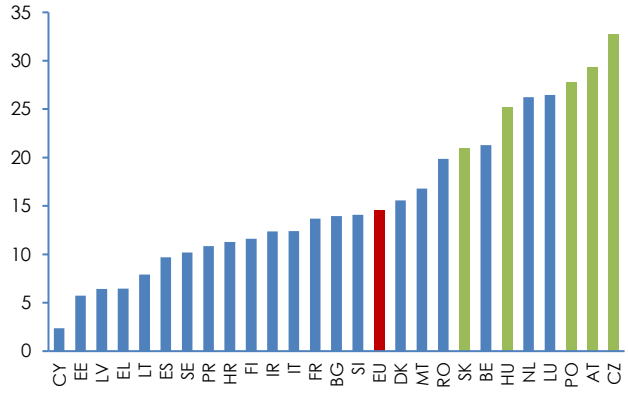
Since late 2018, Germany's industrial sector has experienced a trend reversal, with industrial production declining and stagnating between 2020 and 2023. Together with energy-intensive industries, the automotive industry remains in crisis (Scheiblecker 2025). This raises some questions: To which extent does this development having negative repercussions on Austria and the CEE countries? How are these countries – and Austria, in particular – being affected? And how is the automotive sector doing? In addition, global supply chains have recently been put under increased pressure and trade wars are looming. What will the related implications for the automotive sector be?

The policy brief begins by setting the scene and outlining the role that Germany plays for the Visegrád countries as well as Austria when it comes to automotive manufacturing. It then examines recent trends in this sector before analysing the linkages between the automotive sectors of Germany, the Visegrád countries and Austria. Finally, it assesses the potential impact of recent US tariffs on the region. The policy brief concludes with a set of policy recommendations.

2. Germany's focal role for the region: trade and automotive linkages

Germany's importance in the region rests on two key pillars. First, it is the primary trading partner for the Visegrád countries and Austria. In 2022, Germany accounted for 33% of total Czech exports (the largest share among all European countries), about 29% of both Austria's and Poland's, 25% of Hungary's, and 21% of Slovakia's. In addition, Germany is a major trading partner for Luxembourg, the Netherlands and Belgium (see Figure 1).

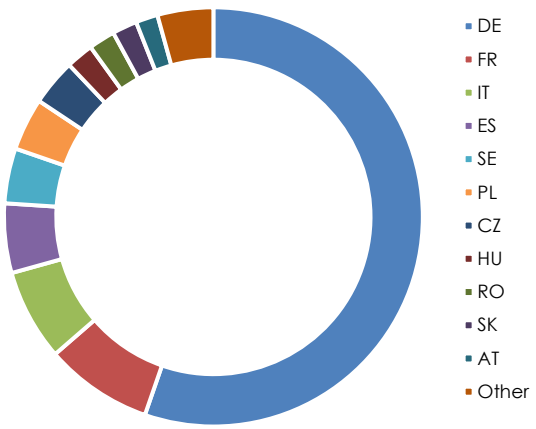
Figure 1: Exports to Germany, in % of total exports, 2022



Source: Eurostat Comext

Second, these close economic ties are largely driven by the automotive industry. Germany and the Visegrád countries are highly specialised in this sector, with strong production and supply-chain linkages. German original equipment manufacturers (OEMs) and automotive parts suppliers maintain significant subsidiaries throughout the region, underlining the deep integration between German industry and its Central European partners. Overall, in 2022, the automotive sector accounted for 23% of manufacturing value added (VA) in Slovakia, 16% in both Germany and Czechia, and 15% in Hungary. Its role was more limited in Poland and Austria, respectively contributing 8% and 5% to their economies. Austria differs slightly in this respect, as no major OEMs are located in the country. Instead, there is only one smaller contract car manufacturer (Magna Steyr), and the country specialises in car parts.

Figure 2: Automotive value added in Europe, 2022



Note: Automotive NACE rev.2: 29.

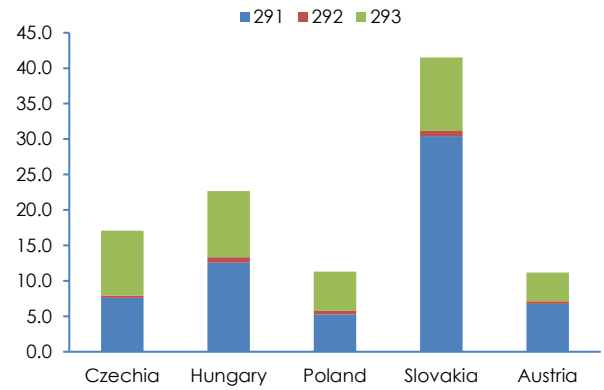
Source: Eurostat SBS

At the European level, Germany is by far the leading automotive producer, generating 55% of the EU's total automotive VA (see Figure 2). When combined with other major producers (i.e. France, Italy, Spain and Sweden), this figure rises to 80%. In contrast, the collective share of Czechia, Hungary, Poland and Slovakia amounts to just 12%, with Austria contributing an additional 1.7%.

When combining the share of exports to Germany with the significance of the automotive sector, it becomes clear that automotive products represent a substantial portion of trade with Germany. In 2022, the automotive sector accounted for 41.5% of Slovakia's exports to Germany, followed by 23% in Hungary, 17% in Czechia, and 11% in both Poland and Austria. Figure 3 further breaks down automotive exports into motor vehicles and car parts, showing the importance of Germany as a demander of final goods and intermediate products (though it is simultaneously also a major supplier of both to the countries in focus). In Slovakia, exports to Germany were predominantly composed of motor vehicles (30%), while car parts contributed an additional 10%. In the other countries, the shares of motor vehicles and car parts were more balanced, particularly in Czechia and Poland.

In terms of export value in euros, Slovakia led as the largest motor vehicle exporter to Germany, followed by Czechia and Poland[1] (see Figure 4). For car parts, Czechia and Poland were the top exporters. Austria and Slovakia recorded similar export volumes for car parts.

Figure 3: Automotive exports to Germany, in % of total exports to Germany, 2022

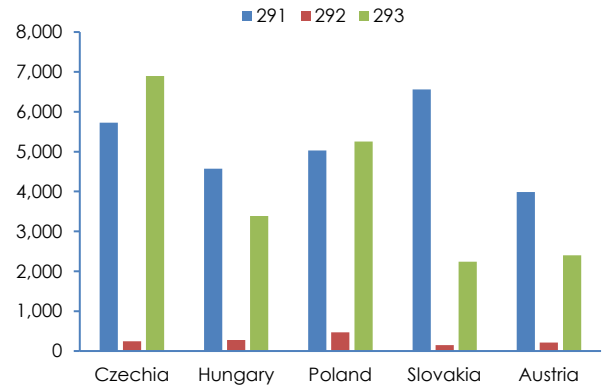


Note: Automotive NACE rev.2: 291 Motor Vehicles, 292 Bodies for motor vehicles, 293 Parts and accessories for motor vehicles.

Source: Eurostat Comext

1 While Poland is not a large producer of passenger cars, it is more focused on commercial vehicles, which are also included in NACE 291.

Figure 4 / Automotive exports to Germany, in EUR m, 2022



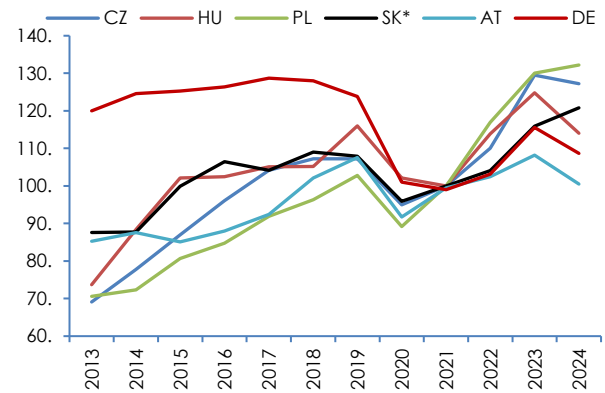
Note: Automotive NACE rev.2: 291 Motor Vehicles, 292 Bodies for motor vehicles, 293 Parts and accessories for motor vehicles.

Source: Eurostat Comext

3. Automotive industry in trouble

The global automotive industry has faced several major shocks in recent years. During the first lockdown of the COVID-19 pandemic, companies closed their plants for several weeks, including those in the observed region. This was followed by a semiconductor shortage, which caused severe production disruptions and delays in 2021 and 2022 (see Hanzl-Weiss and Reiter 2022). Russia's full-scale invasion of Ukraine in 2022 shook the European economy even more, driving already high energy prices even higher.

Figure 5: Automotive production, Index, 2021 = 100

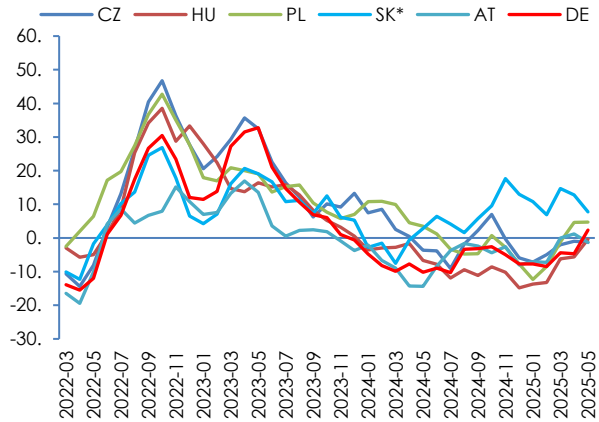


Note: Calendar adjusted data, not seasonally adjusted data. Automotive NACE rev.2: 29. *SK 29+30

Source: Eurostat STS

Pent-up demand from this period was subsequently processed, and automotive production recovered. Pre-pandemic peaks were already surpassed in Czechia and Poland in 2022 as well as in Hungary and Slovakia in 2023, while peak production levels were never regained in Germany and Austria (see Figure 5). Overall, Germany's passenger car production had already been on a downward trajectory before the COVID-19 pandemic, peaking at 5.7 million units produced in 2016, dropping to 3 million in 2021, and recovering to only 4 million in 2024 (Deutsche Bundesbank 2024). Overall, automotive production declined again in 2024 as the pent-up demand was finally met (except in Slovakia). Trends in early 2025 show a continuation of negative growth rates at the start of the year, followed by a slight increase in May. Possible negative trends of US tariffs might be seen in the second half of the year, as companies have been waiting for the outcome of the trade deals (see Figure 6).

Figure 6: Automotive production, monthly growth rate, 3-month moving average, in %



Note: Calendar adjusted data, not seasonally adjusted data. Automotive NACE rev.2: 29. *SK 29+30

Source: Eurostat STS

Overall, the automotive industry is currently going through a difficult phase. For example, the agendas of the green and digital transitions are requiring fresh investment in new technologies and software, and European automotive manufacturers are also facing fierce competition from other carmakers, including Chinese companies and new entrants. In addition, there is the ongoing transition to electromobility, a shift that started in 2020 in pursuit of the European Commission's CO_2 fleet emission targets, which entered into full force in 2021 and have hastened the transition to electromobility across Europe (European Commission 2025a). As production figures for electric vehicles are missing, export figures are used as a proxy to map the pace of the electromobility transition. According to these figures, the share of EVs – including full hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEV) – rose dramatically in 2020 and 2021 in the major car-producing countries (see Figure A1 in the Annex). By 2024, this share stood at 40% in Germany and above that level in Poland and Slovakia (48% and 46% respectively), while it was slightly lower in Hungary and Czechia (36% and 34%, respectively). In Austria, the share only reached 24%.

The next stage of CO_2 fleet emission targets, which was originally supposed to come into force in 2025, was expected to provide an additional boost to EV production and the availability of new models.[2] Detailed production data for Czechia already indicate a surge in BEV output at the start of 2025 (see Hanzl-Weiss and Hrubý 2025). Export figures focusing on BEVs show that these cars accounted for 23% of Germany's car exports in 2024. Within the Visegrád countries, Poland (16%) and Czechia (12.5%) had notable shares (as did Austria, with 12.6%), while Slovenia stood even higher, at 27%. In contrast, Slovakia's share dropped to just 2% (see Figure A2 in the Annex). This decline was caused by the 2023 phase-out of the e-up!, a small city car manufactured by Volkswagen since 2013. In May 2025, Slovakia lost out on producing its successor, the ID.1, which will instead be manufactured at Volkswagen's plant in Portugal beginning in 2027 (Liptáková 2025). Similarly, Slovakia and Poland were unsuccessful in their effort to secure production of a new EV model developed by Stellantis in partnership with the Chinese EV startup Leapmotor, which will instead be produced in Spain (Slovak Spectator 2025).[3]

New EV plants under construction or nearing completion in the region include: a BMW plant in Hungary, with production starting in the second half of 2025; a new BYD facility in Szeged, Hungary, which was initially scheduled to open in late 2025 but recently delayed in favour of production in Türkiye (EconoTimes 2025); and a Volvo plant in Slovakia, scheduled to open in 2026 or 2027.

Looking at Austria, in 2020, the contract manufacturer Magna Steyr announced that it would produce the Fisker Ocean, a battery-powered luxury sport utility vehicle (SUV). However, only around 10,000 units were produced in 2023 before funding ran out and the project discontinued. Following the discontinuation of several other models (e.g. the Jaguar I-Pace and E-Pace), Magna Steyr is seeking new customers. The company will reportedly manufacture EVs for the Chinese companies XPeng and GAC Motor Co. (Doll 2025). In addition, linkages with companies in neighbouring countries have drawn attention recently. For example, the main Austrian steel plant, voestalpine Stahl,[4]has announced that it will supply flat steel to BYD in Hungary beginning in early 2026 (Der Standard 2025), and BMW Motoren Steyr will reportedly supply electric motors to the new BMW plant in Debrecen, Hungary, probably by the end of this year (Strobl and Dworak 2025).

4. Strong linkages between Germany and the Visegrád countries

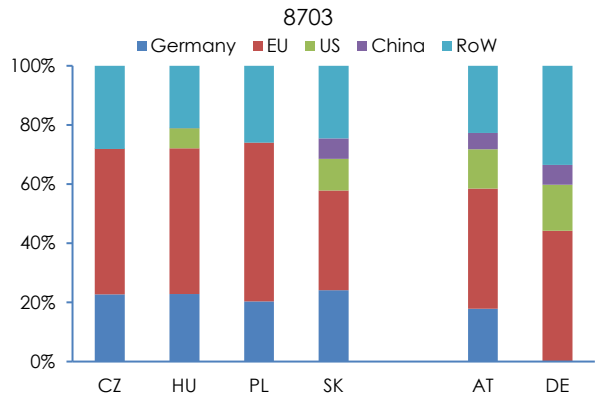
How similar are Germany's trajectories to those of the Visegrád countries and Austria? And what impact is a weak automotive performance in Germany having on these countries? An initial rough look at correlation coefficients between Germany and the countries in focus reveals that GDP growth rates show the highest degree of similarity, followed by manufacturing production and, to a lesser extent, automotive performance, but also country-specific differences (see Table 1). Among the countries analysed, Czechia shows the strongest correlation with Germany's overall economic development (i.e. GDP), manufacturing and automotive-sector production. When it comes to the latter, in particular, the largest similarities can be seen between Germany, Czechia and Poland.

Table 1: Correlation coefficients of growth rates between Germany and selected countries

	CZ	HU	PL	SK	AT
GDP	0.90	0.89	0.84	0.78	0.88
Manufacturing	0.94	0.77	0.74	0.80	0.88
Automotive	0.85	0.68	0.81	0.64	0.67

Source: Eurostat; own calculations

Figure 7: Destination of passenger car exports, 2024, HS 8703



Source: Eurostat Comext

Looking at direct linkages with Germany, in 2024, more than 20% of total passenger car exports from the Visegrád countries were destined for Germany (18% in the case of Austria), while over 40% of car parts exports went to Germany, rising to 48% in Austria's case (see

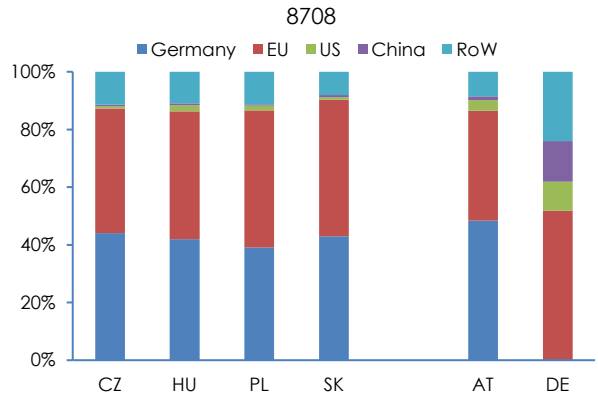
2 On 27 May 2025, the European Commission adopted a one-time flexibility measure allowing car and van manufacturers to meet CO_2 targets over a three-year average for 2025, 2026 and 2027 rather than annually. https://www.consilium.europa.eu/en/press/press-releases/2025/05/27/co2-emissions-in-cars-council-gives-final-approval-to-additional-flexibility-for-carmakers/

3 In addition, production of the Peugeot 208, a mainstay of Stellantis's Trnava plant for 17 years, ended in 2023. Manufacturing of the combustion-engine version was relocated to Morocco, while that of the electric version moved to Spain.

4 https://www.voestalpine.com/stahl/en/Companies/voestalpine-Stahl-GmbH

Figures 7 and 8). Otherwise, exports mainly go to the EU: about 50% for passenger cars and 20–30% for car parts. Exports to the US account for 7%, 11% and 13% of passenger car exports from Hungary, Slovakia and Austria respectively. Exports to China account for 7% and 5% of passenger car exports from Slovakia and Austria respectively. Between 2018 and 2024, nominal car exports to Germany increased from Czechia and Slovakia, declined from Hungary and Poland, and remained stagnant from Austria. In terms of nominal car parts exports to Germany, all Visegrád countries recorded increases, while Austria's figures did not show any significant change.

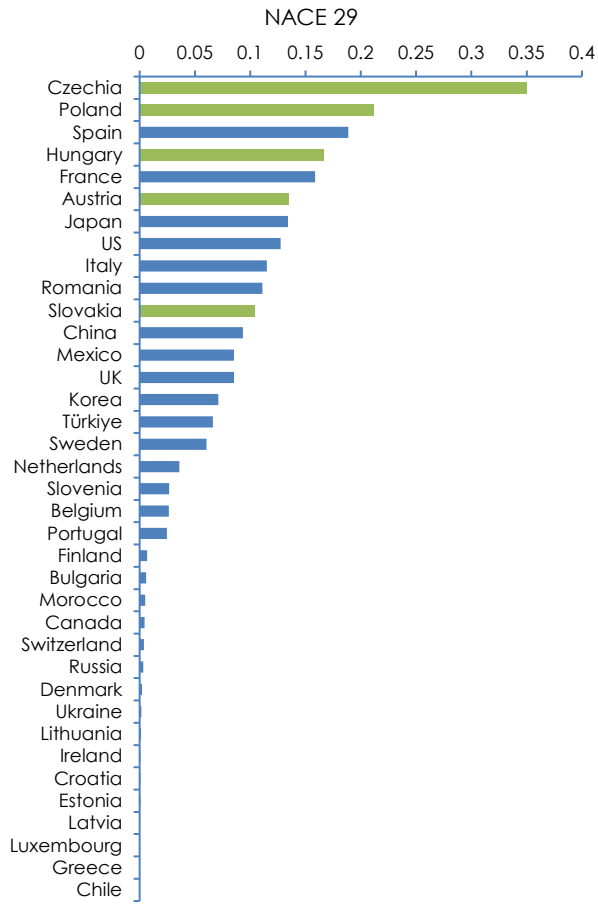
Figure 8: Destination of car parts exports, 2024, HS 8708



Source: Eurostat Comext

When German automotive exports decline – including due to US tariffs (see next section) – the Visegrád countries and Austria are affected via both direct and indirect linkages. The indirect effects can be assessed by examining the share of foreign VA content in gross exports. In the case of German automotive exports, the foreign VA content in 2020 was around 25%, indicating a large domestic share of 75%. The foreign value added may come from all sectors of the economy, ie. other parts from manufacturing or software from the services sector. Looking at this total VA content from the region, it was particularly notable from Poland (1.5%), followed by Czechia and Austria (both about 1%), and smaller from Hungary (0.5%) and Slovakia (0.4%), while China, the US and France were at the top of the list (followed then by Poland). Zooming in only on foreign VA from activities from the automotive sector itself, the importance of the region becomes clearer, however, shares also become much smaller. In this case, Czechia and Poland are at the top the list, Czechia supplies by far the largest amount (0.35%), followed by Poland (0.2%), but also Hungary and Austria (see Figure 9).

Figure 9: Foreign value-added content of NACE 29 activities of German automotive exports, 2020, in % of gross exports



Source: OECD TiVA database

5. Negative impact of US tariffs on EU automotive manufacturing

5.1 Model description

The model by Caliendo and Parro (2015) used in this analysis is a Ricardian trade model. Its core equation, which relates trade flows to the characteristics of exporting and importing countries, mimics a structural gravity equation. Unlike structural gravity models – as described in Yotov et al. (2016) and Grübler and Reiter (2021) – the Caliendo and Parro model incorporates input-output linkages. This means that an increase in the exports of a specific good also raises the flows of its intermediate inputs, which in turn can be part of international trade flows. As a result, this model can specifically analyse the effects of trade policy changes on global value chains, which is not possible using structural gravity models. For an example of a recent application of the model, see Mendoza et al. (2024) on the EU's carbon border adjustment mechanism (CBAM).

The model is based on the Inter-Country Input-Output (ICIO) database of the Organisation for Economic Co-operation and Development (see OECD 2023). This database, which covers 77 countries and 45 industries, contains information on nearly all model variables (e.g. international trade flows, input-output coefficients and shares of final demand).

Additionally, we use estimated trade elasticities from Fontagné et al. (2022) and Eppinger et al. (2023) for goods-producing industries, while elasticities for service sectors are drawn from Freeman et al. (2021). These elasticities are calculated for the long term, which is typically interpreted as a period of four to five years.

Finally, trade data are collected from the World Integrated Trade Solution (WITS) platform of the World Bank (2023), which were cleaned and used in Cieslik and Ghodsi (2024).

We use data from 2020, as this is the most recent year for which all data sources are available.

5.2 Modelled tariff increases

We compare a 'baseline' with a 'counterfactual' scenario. The baseline scenario is based on the tariff structure from 2020, while the counterfactual scenario additionally includes a 15% US tariff on cars and car parts. We do not model other announced and implemented tariffs (e.g. steel and aluminium tariffs or the tariffs on China), as our interest in this report lies on the effects on the automotive industry. By only including tariffs on this industry, we can focus on their consequences and exclude the effects from other tariff increases.

5.3 Results

In Table 2, we see the changes in trade flows for cars and car parts between the baseline and the counterfactual scenario. Exports by Austria, Germany and the Visegrád countries to the US would collectively decrease in a range from 25.6% for Poland up to 27.1% for Austria. Exports of the other EU27 members would collectively sink by 22%.

Table 2: Changes in automotive trade flows, in %

	Importer									
Exporter	Austria	Germany	Czechia	Hungary	Slovakia	Poland	Other EU27	United States	Other countries	Sum
Austria	-0.27	-0.39	-0.23	-0.71	-1.86	-0.15	-0.11	-27.12	0.19	-2.71
Germany	-0.54	-0.33	-0.23	-0.75	-1.91	-0.13	-0.10	-27.08	0.20	-2.01
Czechia	-0.45	-0.41	-0.19	-0.78	-1.87	-0.16	-0.14	-26.08	0.12	-0.47
Hungary	-0.39	-0.40	-0.23	-0.35	-1.85	-0.14	-0.12	-26.82	0.20	-1.43
Slovakia	-0.38	-0.30	-0.12	-0.50	-1.15	-0.03	-0.01	-27.13	0.31	-2.49
Poland	-0.59	-0.41	-0.28	-0.78	-1.91	-0.11	-0.17	-25.64	0.09	-0.64
Other EU27	-0.50	-0.37	-0.26	-0.66	-1.88	-0.18	-0.12	-22.05	0.07	-1.43
United States	-1.04	-0.82	-0.78	-0.97	-2.47	-0.69	-0.43	0.54	-0.07	-0.12
Other countries	-0.62	-0.49	-0.41	-0.85	-1.82	-0.32	-0.24	1.00	0.00	0.51
Sum	-0.54	-0.43	-0.28	-0.74	-1.88	-0.20	-0.17	-2.02	0.06	-0.64

Source: own calculations. Note: Values on the diagonal refer to changes in trade flows within the country or region.

The decrease in exports to the US is especially painful for Slovakia, as the share of vehicles in total exports to the US is considerably larger (68%) for Slovakia than for other EU countries. This circumstance is also the cause of the larger drop in Slovakia's imports from the other EU countries. Specifically, exports of cars and car parts to Slovakia would collectively decrease by 1.9% from Austria, Germany and the other Visegrád and EU countries. Within Slovakia, flows of cars and car parts would sink by 1.2%. For the rest of the EU27 countries, their intra-EU trade flows are expected to decrease by between 0.01% (within the other EU27 countries) and -0.78% (Polish exports to Hungary).

As we can also see in the table, the model estimates that there will be trade diversion. For example, exports of the EU members to other countries (meaning not EU27 countries or the US) would increase – by between 0.07% for the group of other EU27 countries and by up to 0.31% for Slovakia. The trading partners whose imports would increase the most are China, the UK, Japan, Mexico, South Korea and Canada. Nevertheless, car and car part exports would decrease overall, as the trade diversion cannot make up the export losses to the United States. In total, the reduction in exports ranges from -0.47% (for Czechia) to -2.71% (for Austria).

In absolute terms, the magnitudes differ widely. Germany's automotive exports to the US are reduced by EUR 3bn and production within Germany by close

to an additional billion euros. Austrian exports drop by EUR 312m. Slovakia, being especially vulnerable, would even see its exports to the US fall by EUR 621m.

As expected, prices for automobiles and their parts rise in the United States – by about 0.48%, according to our model estimates. In contrast, prices for vehicles from the EU27 would decrease by about 0.09% in response to the imposition of US tariffs.

The reduction in EU exports to the US also depresses wages in the EU. According to our model's estimates, real wages would decline by 0.02% in Austria and by 0.026% in Germany. In the Visegrád countries, real wages would sink between 0.017% in Poland and 0.1% in Slovakia.

6. Conclusions and policy recommendations

The German-Central European supply chain (GCESC), which refers to the supply chain integration of Czechia, Poland, Hungary, Slovakia and Austria with Germany, is still an integral part of the automotive sector in the region. A high share of exports going to Germany and the importance of the automotive sector shape these linkages, encompassing both final goods and intermediate products. Consequently, developments in the German automotive sector are important for the region and its economic prospects. While recent negative developments in Germany's automotive industry were also felt in Austria, the neighbouring Visegrád countries managed to recover production levels after the COVID-19 pandemic.

The automotive sector has faced difficult times in recent years, but new challenges lie ahead. In the short term, US tariffs on cars and car parts, in force since April 2025, are putting pressure on the car sector, as they are decreasing trade flows and could potentially trigger trade wars. The US tariffs on China have already prompted Beijing to retaliate by imposing stricter export licensing for rare earth materials, which raises the risk of potential shortages for important inputs to electric cars. The full direct and indirect effects of US tariffs will only become apparent over time. In the long term, the industry faces the dual challenge of the green and digital transitions – both of which are already underway but still surrounded by regulatory uncertainties, with the most debated being the ban on combustion engines beginning in 2035 (Politico 2025, T&E 2025).

At the European level, policy options have broadened with the shift of industrial policy away from purely horizontal measures. The automotive sector is regarded as a major strategic industry in the EU. Based on key initiatives – including the Draghi Report, the Competitiveness Compass, and the Clean Industrial Deal (CISAF) – the Industrial Action Plan for the European Automotive Sector was adopted on 5 March 2025 (European Commission 2025a). To maintain a strong European production base, safeguard global competitiveness and address the sector's major challenges, the plan outlines action in five key areas: (1) innovation and digitalisation, (2) clean mobility, (3) competitiveness and supply chain resilience, (4) skills and the social dimension, and (5) a level playing field and business environment. It also provides EUR 1.8bn in funding to establish a secure and competitive supply chain for battery raw materials. Furthermore, the new state aid framework accompanying the CISAF, adopted on 25 June 2025, allows subsidies for a broader range of technologies, including electric motors (see European Commission 2025b).

- A policy recommendation for Austria, the Visegrád countries, and their companies is to actively participate in the planned initiatives proposed by the EU. These include, for example, the European Connected & Autonomous Vehicle Alliance, the planned 'important projects of common European interest' (IPCEIs), the Horizon Europe Battery Partnership (BATT4EU) and the TechEU investment programme.

China has emerged as a major player in the automotive industry, supplying low-cost EV models and dominating the production of battery raw materials (thanks in part to state subsidies). For this reason, countervailing duties have been adopted by the EU in 2024 (see European Commission, 2024). Chinese companies are now on the verge of entering the EU market by importing BEVs, and they are also active through foreign direct investment (FDI) in Europe's battery and supply chains. Hungary has been a particular target and remained the top destination in 2024. Notable recent investments include those from CATL and BYD.[5] In fact, Hungary will have the largest battery capacity in the EU once all investments have been realised (Tapliapietra et al. 2025). However, public debate and policy have turned to the dual nature of Chinese FDI, which provides short-term benefits but also poses significant risks (ibid.).

- A policy recommendation for Austria is to take opportunities and supply possibilities in the neighbouring Visegrád countries and their OEMs. Additional business opportunities could be presented by Chinese investment in the country and links to Chinese companies in neighbouring countries. Although these opportunities can be seized, the associated risks should also be kept in mind.

Overall, the European automotive industry is at a critical juncture. In the domestic market, European OEMs are currently deciding where to produce battery electric vehicles – a decision that will reshape the European automotive landscape. Will production be

[5] BYD recently announced plans to produce all vehicles for Europe in Europe by 2028 (Carey and Amann 2025).

relocated to low-cost countries? Will EVs be produced in Southeast Europe, Eastern Europe or the Western Balkans (an area that requires further investigation)? At the global level, access to the US market is becoming more difficult, while strong competition is emerging from Chinese EV manufactures.

In any case, the European automotive industry should not lose out. To remain competitive, both OEMs and suppliers must meet customer demands in terms of models and pricing, while keeping costs under control despite rising energy and labour expenses. To counter these risks, an active and targeted industrial policy for the automotive sector is essential. This policy should address what the sector needs to successfully transform itself, provide regulatory certainty, strengthen location attractiveness and foster a supportive environment for e-mobility, including the necessary infrastructure. Our recommendation is to see the green and digital transitions as an opportunity to expand the capabilities of European car producers, to view competition from China as a chance, and to keep regulatory certainty to steer the necessary change.

7. References

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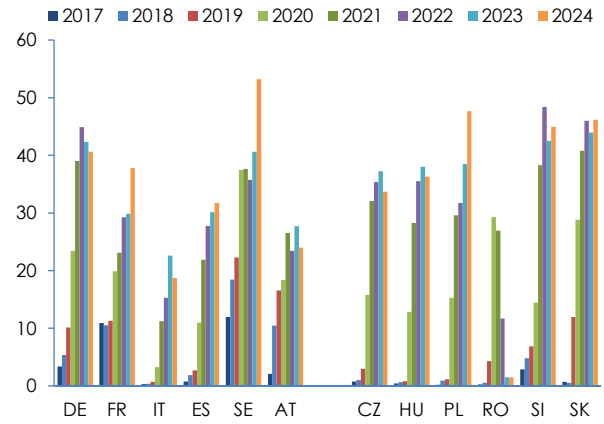
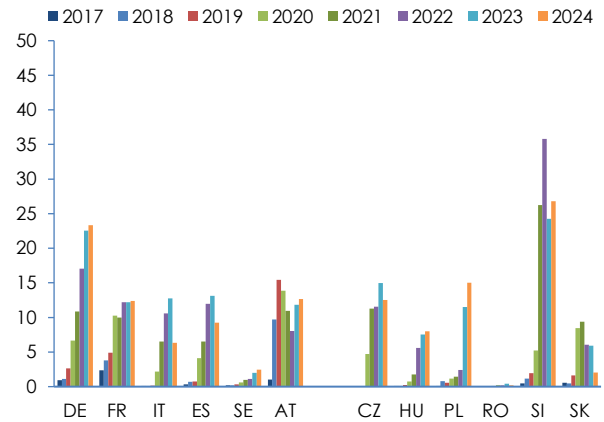
8. ANNEX

Figure A1: Exports of electric vehicles (BEVs, PHEVs and HEVs) in % of total car exports



Source: Eurostat Comext

Figure A2: Exports of battery electric vehicles (BEVs) in % of total car exports



Source: Eurostat Comext

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