

COMPREHENSIVE IMPACT STUDY

Michigan, Midterms and Motor Vehicles

Potential Regional Effects of U.S. Automotive Tariffs and European Retaliation by 2028

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1 Summary

In this study, we analyse the economic consequences of a potential renewed increase in U.S. tariffs on European motor vehicles and parts in the aftermath of the 2026 midterm elections. The focus is on the U.S. state of Michigan, home to the largest automotive industry in the United States in terms of production output and employment. Against the backdrop of heightened tensions between the U.S. government and European authorities, we investigate how European retaliatory tariffs would alter these effects. The simulation exercises assess the comparative-static effects of these trade policies by comparing the simulated post-shock equilibrium with the reference equilibrium, assuming a two-year adjustment horizon ending in 2028, the year of the next presidential election.

Our analysis thus provides insights into short-run developments at the regional and sectoral levels. The main results can be summarised as follows:

- The macroeconomic effects of the isolated increase in import tariffs on motor vehicles and parts from Europe remain barely perceptible through 2028. This applies to all regions except Michigan, which experiences a slight decline in gross domestic product and total employment. This development is attributable to the strong absorption of labour by Michigan's motor vehicle and parts industry, which adversely affects other industries and ultimately reduces private consumption and investment goods demand.
- At the industry level, Michigan's motor vehicle and parts industry records substantial increases in output (+0.40%), prices (+0.78%), and employment (+4.41%) at the expense of other industries due to labour reallocation. As imports of intermediate goods from foreign suppliers, including those in Europe, are essential, production in Michigan (and other U.S. states like North Carolina) depends on integration into international trade networks. The considerable importance of the motor vehicle and parts industry in Michigan, together with its strong dependence on imports of European motor vehicles and parts, explains the simulation results at the macroeconomic and industry levels.
- In the event of European retaliation, changes in macroeconomic indicators for the remaining U.S. states and Europe relative to the escalation scenario remain virtually negligible. In addition to alternative sales markets outside the United States, European producers benefit from alternative sources of motor vehicles and parts located in non-U.S. regions.
- Michigan's motor vehicle and parts industry experiences smaller increases in output, prices, and employment than in the absence of European retaliation. Relative to the escalation scenario, the differences amount to -0.26, -0.25, and -2.85 percentage points, respectively. Michigan's diversified trade relationships and the pronounced regional orientation of industrial production ("home bias") observed in North Carolina and Europe, reflected in a high share of industrial output sold within the respective regions, mitigate the adverse effects of retaliatory tariffs on capacity utilisation and production value.
- Our simulation exercise shows that a tariff policy targeting a single industry may benefit that industry while causing economic losses in other sectors and resulting in negligible overall macroeconomic

effects. The central conclusion is that a greater share of regional production absorbed within the same region is associated with less adverse tariff effects, although the magnitude of these effects also depends on industry size, i.e., the larger the industry, the more severe the effects. Adverse effects can also be mitigated by establishing and maintaining diversified trade relationships.

2 Preface

Since the twentieth century, global trade has expanded and contributed substantially to rising economic prosperity worldwide. With the beginning of Donald J. Trump's second term as the 47th President of the United States, however, international trade has come under increasing scrutiny. A shift in U.S. trade policy, reflected in substantial tariff adjustments, has disrupted the exchange of goods and services.

The administration's extensive use of tariffs aims to promote the re-industrialization of the United States by providing domestic industries with a policy-induced competitive advantage over foreign firms through higher import duties. This policy approach is consistent with the America First doctrine associated with Trump's first term and the strategic concept known as the Mar-a-Lago Accord associated with his second term. As a consequence, international trade flows have undergone a geographical reorientation since 2025, with growing trade among economies outside the United States and evidence of trade diversion towards alternative markets, partly in response to higher U.S. tariffs (World Trade Organization, 2026; Le Roux and Spital, 2026).

Recent developments in transatlantic trade relations, however, highlight the risk of renewed tariff escalation, particularly in the automotive sector. In May 2026, the U.S. administration announced a potential increase in tariffs on cars and trucks imported from the EU from 15% to 25% (Slattery et al., 2026). The European Commission had already specified retaliatory tariffs on U.S. automobiles and automotive parts in Regulation (EU) 2025/1564 in July 2025, but suspended their application in August 2025 (European Commission, 2025a). This suspension was subsequently extended under Regulation (EU) 2026/1893 following negotiations with the U.S. government in July 2026 (European Commission, 2026).

Michigan is a major production and supply hub for the U.S. automotive industry, particularly for the manufacture of motor vehicles and motor vehicle parts. According to official 2025 data from the U.S. Bureau of Economic Analysis (BEA), available for Michigan and the United States, Michigan accounts for 22% of the U.S. gross domestic product (GDP) generated by the motor vehicles and parts industry. The Michigan Economic Development Corporation reports that in 2026 approximately 19% of all automotive production in the United States takes place in Michigan, while 96 of the 100 largest automotive suppliers in North America have a presence in the state. The European Union (EU), meanwhile, accounted for 14.9% of global vehicle production in 2024. From 2024 to 2025, the value of EU vehicle exports to the U.S. declined by 21.7% to EUR 31 billion; in 2025, the U.S. accounted for 18.4% of the EU vehicle export market, according to publications by the European Automobile Manufacturers' Association in 2025 and 2026. Consequently, renewed U.S. tariff policies targeting the motor vehicles and parts industry may continue to cause substantial disruptions to production and trade in both regions.

Against this background, this study examines the potential economic effects of two counterfactual trade-policy scenarios: a renewed escalation of U.S. tariffs on motor vehicles and parts imported from the European Union and, in the second scenario, additional European retaliatory tariffs on corresponding imports from the United States. These scenarios are motivated by continued uncertainty regarding the future direction of U.S. trade policy in the period surrounding the November 2026 midterm elections and leading up to the 2028 presidential election. Using a comparative-static computable general equilibrium (CGE) framework, the analysis evaluates deviations of the simulated post-shock equilibria from the calibrated reference equilibrium, assuming a short-run adjustment horizon of approximately two years ending in 2028.

The main focus of this simulation exercise is on the development of the motor vehicles and parts industry in Michigan and on the macroeconomic, regional, and industry-level effects of protectionist U.S. tariff policy. The findings are intended to inform business decisions and contribute to an evidence-based assessment of the potential economic consequences of trade protectionism.

3 The CGE Framework

The simulations conducted in this study employ the S8IS-specific CGE model. This model enables a model-based assessment of macroeconomic developments by accounting for interdependencies among economic variables such as GDP and aggregate employment. A CGE model serves as an analytical framework that links a mathematical system of equations, based on economic assumptions, with empirical data expressed in levels. For a given (reference) year, each data point is represented as the product of the quantity and price of the respective good.

A CGE model represents the reciprocal relationships between supply and demand within an economy. At its core, such a macroeconomic model rests on the neoclassical paradigm, under which market disequilibria are ruled out by the central assumption of perfect competition. This means that markets return to equilibrium after all adjustment processes have been completed, i.e. supply and demand coincide. Changes in model variables are derived from a micro-founded approach that is generally described by nonlinear equations and subsequently linearised by applying the method of total differentiation. Simulation results are generally expressed as percentage changes in model variables relative to their initial values.

Microfoundations imply that economic agents make decisions by optimising their respective objective functions subject to the resources available to them. For example, each industry seeks to minimise its production costs by choosing the optimal combination of labour, capital and intermediate inputs. An industry's investment plan depends on the development of its return on capital. Under the assumption of perfect competition, all industries act as price takers. This implies that they adjust their activities to market conditions until the zero-profit condition is satisfied. A decline in input costs (e.g. due to a reduction in the real wage) therefore leads to increased demand for the respective input factor (labour) until all marginal costs are fully covered by the market price of the industry's product. The resulting industry output satisfies demand, which depends on prices and income. Households follow a linear expenditure system when determining private consumption, subject to a budget constraint (Wittwer,

2022).[1]

Depending on the underlying database, a CGE model can simulate both supply-side and demand-side developments affecting the economic structure of one or several regions. A detailed representation of supply relationships between regional industries allows direct and indirect repercussions of changes along the value chain to be assessed. Linking this information to regional industry-level employment data makes it possible, for example, to derive effects on the structure of labour demand. This provides a differentiated picture of the expected effects.

The S8IS-specific CGE model is based on the baseline version of a multidimensional macroeconomic model called TERM (The Enormous Regional Model), originally developed by the Centre of Policy Studies (CoPS) at Victoria University in Melbourne, Australia (Horridge et al., 2005). TERM generally follows a multiregional approach in which each region represents a separate economy. In particular, a model version called GlobeTERM is employed. GlobeTERM combines national economic and bilateral trade data from the Global Trade Analysis Project (GTAP) with subnational economic detail. As described by Wittwer (2025), the master database is based on GTAP database version 11c, with 2017 as the base year, and covers 160 national regions. Selected countries can be further disaggregated into subnational regions, while up to 74 industries can be distinguished. The regional disaggregation relies on supplementary statistical information, including regional production, expenditure, export and import shares, obtained from sources such as the U.S. Bureau of Economic Analysis, the U.S. Census Bureau and the U.S. Department of Agriculture. These data are used to allocate national economic activity to subnational regions while preserving the national totals provided by GTAP. Interregional trade flows are estimated using a modified gravity approach. This framework enables the analysis of region-specific economic shocks while retaining the national input-output structures and international bilateral trade relationships represented in the GTAP database. Detailed information on the selection and integration of data into TERM in general can be found in Horridge (2012), and specifically for GlobeTERM, in Wittwer (2025).[2]

Specifically, the S8IS-specific CGE model uses a particular aggregation of the main database for the United States.[3] The analysis focuses in particular on interactions among nine regions: the U.S. states of Arizona, Georgia, Michigan, North Carolina and Pennsylvania, as well as aggregates for the rest of the United States, China, Europe and the rest of the world. In addition, 19 aggregated industries are included. For clarity, the present study uses abbreviated labels, such as *MVP* (not to be confused with a minimum

[1] Feedback effects may arise when relative prices adjust in response to disturbances, such as a technology shock. For example, if a temporary labour-market disequilibrium emerges owing to either an excess supply of or excess demand for labour, the real wage will adjust (in the long run) to restore the final equilibrium. Consequently, real-wage adjustments affect industries' cost structures because the relative price of the labour input changes. This effect is more pronounced the more extensively labour is employed across industries' production processes.

[2] To conduct simulations, the model's core structure must be extended and the magnitudes of the shocks must be parameterised. In addition, model closure conditions must be specified to determine the exogenous variables and ensure the required consistency between the number of endogenous variables and the number of model equations. It must also be verified that the model results are balanced with respect to all (updated) databases, i.e. that no significant numerical imbalances occur. The simulation results presented in this study exhibit none of the irregularities mentioned above. A more detailed discussion of these issues is beyond the scope of this study. For a more general and comprehensive introduction to CGE methodology, see Burfisher (2016). The results reported here were calculated using GEMPACK, version 12.2 (Horridge et al., 2024), inter alia, on the basis of the 11th version of the GTAP database (Aguiar et al., 2022).

[3] Reference is made to archive entry TPGW0211, which can be accessed on the CoPS website.

viable product) instead of the full sector name, *Manufacture of Motor Vehicles and Motor Vehicle Parts*.

A comparative-static analysis is conducted, i.e. the results are derived by comparing the initial and final equilibrium states. In the S8IS-specific CGE model, these results are expressed as percentage changes in model variables relative to their respective initial values. The analysis covers a period of no more than two years. This short-run perspective is based on the assumption that the capital stock is fixed, while changes in employment are determined endogenously by the model at a constant real wage rate. Labour mobility across regions is also assumed. This is one of the central assumptions underlying the modelling of regional and nationwide labour markets in GlobeTERM (see Wittwer, 2022, 2025). For all results presented in this study, it has been ensured that all initial and final database entries are balanced. This means that no significant numerical discrepancies between supply and demand schedules have been identified.

4 Shock Calibration

The S8IS-specific CGE model allows for the introduction or increase of trade taxes in the form of ad valorem tariffs, which raise the gross trade prices of the affected goods. The analysis focuses on additional tariffs imposed on imports of motor vehicles and parts (hereafter collectively referred to as *MVP*). In keeping with the TERM convention, this sector and all other sectors considered are also referred to as industries. Two scenarios are considered. In the *Escalation Scenario (E)*, an additional tariff is imposed on imports from Europe (more precisely, from the EU; see below) into the United States. In the *Retaliation Scenario (R)*, additional European retaliatory tariffs on imports from the United States into the EU are considered.

The following points require clarification. They are addressed in the subsequent discussion of database alignment and shock calibration and taken into account throughout the study when interpreting the simulation results.

- Although tariffs on imports of *MVP* commodities are interpreted as automotive tariffs, the *Manufacture of Motor Vehicles and Parts* sector in the underlying CGE database corresponds to the identically named GTAP sector and encompasses both finished motor vehicles and automotive components (Giesecke and Waschik, 2025). The sector includes the manufacture of passenger cars, trucks, buses, trailers and semi-trailers, as well as vehicle parts and accessories, such as engines, transmissions, brakes and other automotive components. Given the available data, the *MVP* industry therefore comprises both final goods and intermediate inputs used in automotive production.
- Interindustry linkages are represented through the input-output structure of the CGE database, which captures the production and use of intermediate inputs across industries. In Michigan, for example, intermediate purchases of *MVP* commodities by the *MVP* industry amount to approximately USD 47.0 billion. This indicates substantial intra-industry intermediate input use and is consistent with an important role for automotive parts, components and assemblies in the production process. However, the aggregated sectoral classification does not reveal the precise composition of these

intermediate inputs or allow for a distinction between their use in vehicle assembly and automotive parts manufacturing.

- The underlying CGE database combines all EU member states with selected non-EU European countries, including the United Kingdom, Switzerland, Norway and Iceland, into the aggregated model region Europe. While the tariff measures considered in this study are intended to apply specifically to trade between the United States and the EU, the model does not distinguish EU member states from other countries included in this regional aggregate. Accordingly, the tariff shocks are implemented at the level of Europe, subject to the trade-share adjustment described below. Throughout the study, Europe refers to the corresponding model region when reporting sectoral and macroeconomic simulation results.

As the original GlobeTERM database is based on economic observations for 2017, a sequential calibration procedure is used to construct an approximate reference database for 2026. The resulting reference database approximates economic conditions under the trade-policy environment prevailing as of September 2026 and serves as the starting point for the counterfactual simulations. The following steps are therefore carried out in sequence:

- The initial database is upscaled to 2024 using targets for nominal GDP in all model regions. The upscaling procedure adjusts the corresponding regional, sectoral and macroeconomic aggregates while retaining the underlying economic structures and bilateral trade relationships of the GTAP-based database as the starting point. The nominal GDP targets are drawn from official statistics published by the U.S. Bureau of Economic Analysis, the World Bank's World Development Indicators and the International Monetary Fund's World Economic Outlook.
- Following the upscaling procedure, the effects of the tariff policies implemented in 2025 are simulated to update the database further. The corresponding shock calibration reflects the tariff changes made at various points during that year, particularly following the "Liberation Day" announcement in spring and the subsequent adjustments arising from negotiations with China and the EU during the summer and autumn. Sources include, inter alia, publications by the U.S. government (The White House, 2025a-g), the European Commission (2025b-c), China (Office of the Customs Tariff Commission of the State Council, 2025) and Canada (Department of Finance Canada, 2025; The Canada Border Services Agency, 2025).
- As part of the 2025 database update, the import adjustment offset intended to mitigate Section 232 tariffs on certain imported automobile parts is explicitly taken into account. Under this scheme, eligible automobile manufacturers may claim an offset against qualifying tariff liabilities of up to 3.75% of the aggregate manufacturer's suggested retail price (MSRP) of vehicles assembled in the United States. In October 2025, the program was extended until April 2030 (Executive Office of the President, 2025a-b).

  The compensation scheme is approximated by a one-off negative production-tax-equivalent shock for the *MVP* industry in the 2025 calibration. This corresponds to a reduction of 3.75 percentage points in the modelled production tax rate and represents a stylised approximation rather than an exact conversion of the statutory MSRP-based offset, as the latter is not explicitly modelled in the

CGE framework. The existing level of effective support is assumed to remain unchanged despite the hypothetical tariff increases in later years. This allows the analysis to isolate the economic effects arising from both scenarios.

- The database is subsequently adjusted to account for tariff changes in 2026. These include the implications of the February ruling of the U.S. Supreme Court on the International Emergency Economic Powers Act (Supreme Court of the United States, 2026). Accordingly, the calibration distinguishes tariffs affected by this ruling from measures imposed under other statutory authorities, particularly Section 232 of the Trade Expansion Act. Furthermore, the calibration incorporates the renewed escalation of trade tensions between the United States and Canada in the summer of 2026 (The White House, 2026; Government of Canada, 2026). Canada-specific tariff adjustments are approximated by trade-share-weighted shocks applied to the corresponding trade flows involving the aggregated rest-of-the-world region.
- Throughout the calibration procedure, EU-specific tariff adjustments are approximated for the aggregated Europe model region by applying a uniform weighting factor of 0.80. This factor is derived from the EU's average share of approximately 80% in total bilateral trade between the United States and the countries represented by Europe in 2024, considering both imports and exports. Since this aggregate trade share may differ across industries and trade directions, the uniform weighting factor represents a simplifying approximation rather than an exact sector-specific measure of EU trade exposure.

Based on the calibrated 2026 reference database, the economic effects of the two counterfactual scenarios are simulated. Both scenarios assume an additional ad valorem tariff of 10 percentage points on the relevant EU-related trade flows. Applying the uniform weighting factor of 0.80 yields an effective increase in the tariff rate of 8 percentage points for the aggregated Europe model region. Specifically, in the escalation scenario, the tariff component of import prices is assumed to increase by 8 percentage points for imports from Europe into the United States, while in the retaliation scenario, an 8-percentage-point increase in tariffs also applies to imports from the United States into Europe. As mentioned above, due to sectoral aggregation, the model does not distinguish between finished vehicles and automotive parts when implementing tariff shocks. This is taken into account when interpreting sectoral production and trade effects.

5 Results for the Escalation Scenario

5.1 Effects at the Regional and State Levels

Table 1 reports percentage changes in selected macroeconomic indicators for various world regions, as well as for Michigan, North Carolina, and the remaining U.S. states. Specifically, these are ex post percentage changes over a horizon of up to two years following the completion of all adjustment processes.

With respect to the macroeconomic indicators, the effects of the isolated increase in import tariffs on *MVP* from Europe remain barely perceptible through 2028. According to the simulation results, short-run numerical changes in China and the rest of the world (RoWorld) are close to zero. Effects

Table 1: Changes in selected macroeconomic indicators (in %) in scenario E.

Indicators	Regions					
	Michigan	North Carolina	RoUSA	Europe	China	RoWorld
Gross Domestic Product	−0.07	0.00	−0.01	−0.01	0.00	0.00
Aggregate Employment	−0.10	0.01	−0.01	−0.01	0.00	0.00
Consumer Price Index	0.21	0.01	0.05	−0.07	−0.01	0.00
Real Consumption	−0.10	0.01	−0.01	−0.01	0.00	0.00
Real Investment	−0.10	0.00	−0.03	0.00	0.00	0.00
Trade Balance	−0.29	−0.26	−0.01	0.01	−0.01	0.00

Notes: Percentage changes occur over a short-run period of up to two years. RoUSA and RoWorld denote the rest of the USA (without Michigan and North Carolina) and the world, respectively.

in the remaining U.S. states (RoUSA) and in Europe are likewise marginal, even though Europe is directly affected by the policy measure. The small declines in GDP and aggregate employment indicate both Europe's dependence on the U.S. market for motor vehicles and parts and the potential for alternative sales channels in non-U.S. regions to offset the adverse effects of the partial loss of U.S. business.

Among the regions in the United States and Europe directly affected by the tariff increase, Michigan experiences the strongest changes. The changes in real GDP and aggregate employment of -0.07% and -0.10%, respectively, correspond, based on current official data for 2026 from the U.S. Bureau of Economic Analysis and the U.S. Bureau of Labour Statistics, to a decline in real GDP of USD 0.577 billion, valued at constant prices of the reference period, and a loss of approximately 4,496 jobs through 2028. This net decline in Michigan's overall employment results from a loss of approximately 11,726 jobs in other industries, partly offset by an increase of about 7,230 jobs in the *MVP* industry. On the demand side, demand for both private consumption goods and investment goods declines. This reflects lower wage income under a given real wage rate and employment that is variable in the short run and declines in this case, as well as a reduction in aggregate production. A real appreciation counteracts this development by inducing a partial increase in employment, in accordance with the industries' labour demand functions and given an unchanged capital stock, while also reducing net exports. The consumer price index increases by 0.21%, driven primarily by higher prices for *MVP*.

In the following section, we explain why this price increase is accompanied by an expansion of production in the *MVP* industry and why, according to Table 1, North Carolina appears largely insulated from the effects of this specific tariff policy despite its non-negligible motor vehicle and parts industry.

5.2 Industry-Level Results

According to Table 2, the simulation results show increases in industry output (+0.40%), prices (+0.78%), and employment (+4.41%) in the *MVP* industry. The price increase is supported by strong domestic demand for *MVP* both within Michigan (+2.23%) and in the rest of the United States (+0.57%), while exports to Europe (-5.00%), China (-3.38%), and the rest of the world (-2.63%) decline.

Table 2: Changes in industry-level variables in Michigan (in %) in Scenario E.

Industry	Output	Price	Employment
Other Agriculture, Forestry and Fishing	−0.06	−0.01	−0.84
Wheat and Other Cereals	−0.07	−0.01	−1.04
Oilseeds	−0.05	−0.01	−0.77
Mining and Quarrying	−0.05	−0.03	−0.79
Food, Beverages and Tobacco	−0.12	0.01	−1.15
Other Manufacturing	−0.16	0.01	−1.30
Metals and Metal Products	−0.12	0.03	−1.00
Computer, Electronic and Optical Products	−0.16	−0.01	−0.92
Electrical Equipment	−0.21	−0.01	−1.66
Machinery and Equipment n.e.c.	−0.24	0.03	−1.89
Motor Vehicles and Parts	0.40	0.78	4.41
Other Transport Equipment	−0.17	−0.01	−1.47
Electricity, Gas and Water Supply	−0.04	0.03	−0.57
Construction	−0.13	0.05	−0.95
Wholesale and Retail Trade	0.03	0.20	0.28
Other Services	−0.08	0.06	−0.69
Transportation and Storage	−0.02	0.10	−0.20
Health and Education	−0.11	0.14	−0.63
Owner-Occupied Dwellings	0.00	−0.01	−0.44

Note: Percentage changes occur over a short-run period of up to two years.

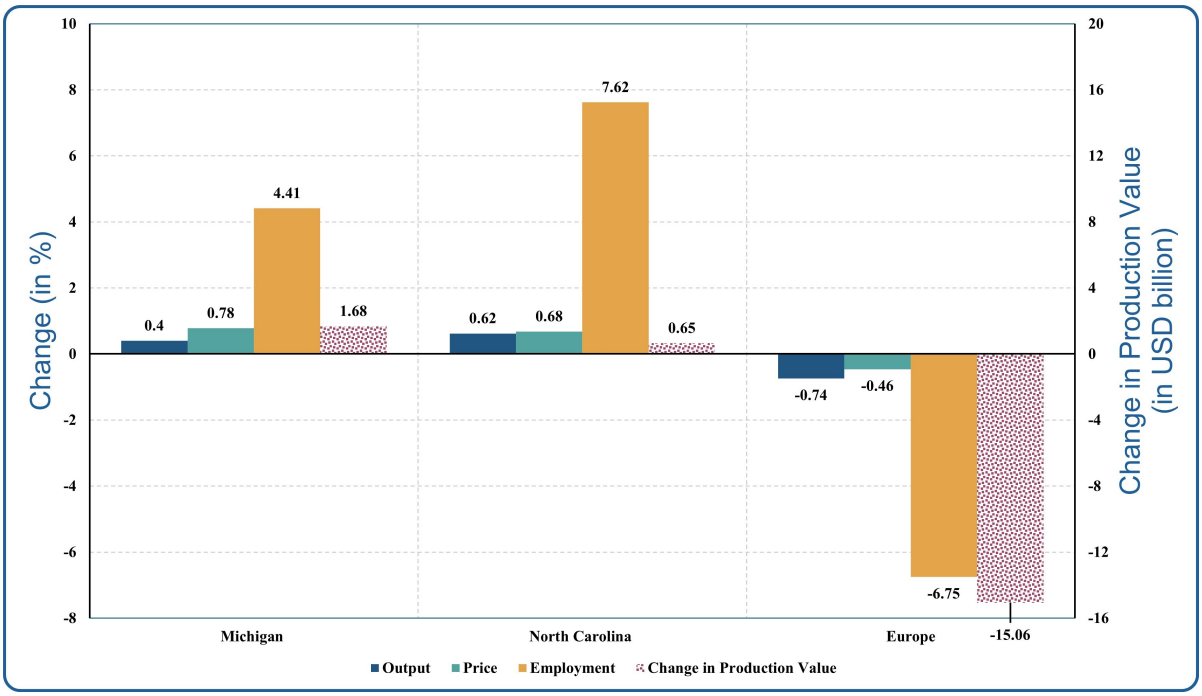
Labor is a flexible input factor and is highly mobile within the United States. The expansion of *MVP* output therefore requires workers to be absorbed from other industries, adversely affecting their production. This generates a cascading effect: Table 2 shows, for example, that employment declines in *Machinery and Other Equipment* (-1.89%), Electrical Equipment (-1.66%), and *Other Transport Equipment* (-1.47%). These reductions can be explained by the recruitment of skilled workers who can be employed in *MVP* production without an extended adjustment period. As a result, output declines in the industries concerned. This contraction also affects other sectors, such as *Other Agriculture, Forestry and Fishing*, which uses intermediate inputs from *Other Transport Equipment* in machinery-related activities (in this case, e.g. specific harvesting equipment).

Overall, output declines across all industries in Michigan, in some cases by barely perceptible percentages, with the exception of *MVP*, *Wholesale and Retail Trade*, and *Owner-Occupied Dwellings*. Price developments depend on the respective supply and demand elasticities. The isolated tariff shock therefore primarily benefits the *MVP* industry, while the vast majority of other industries in Michigan experience a decline in gross value added.

Unsurprisingly, European *MVP* exports to Michigan (-22.3%) and to the rest of the United States (-20.8%) decline. According to Table 1, however, the macroeconomic effects remain small. This can be explained by increased demand for European *MVP* within Europe itself (+0.25%), as well as higher exports to China (+2.03%) and the rest of the world (+2.34%). This redirection toward existing export markets outside the United States mitigates the adverse effects of the U.S. tariff increases. For regions affected by

higher U.S. import prices, diversifying trade toward non-U.S. markets therefore remains essential.

Figure 1: Effects on the *MVP* industry in Michigan, North Carolina, and Europe in Scenario E.



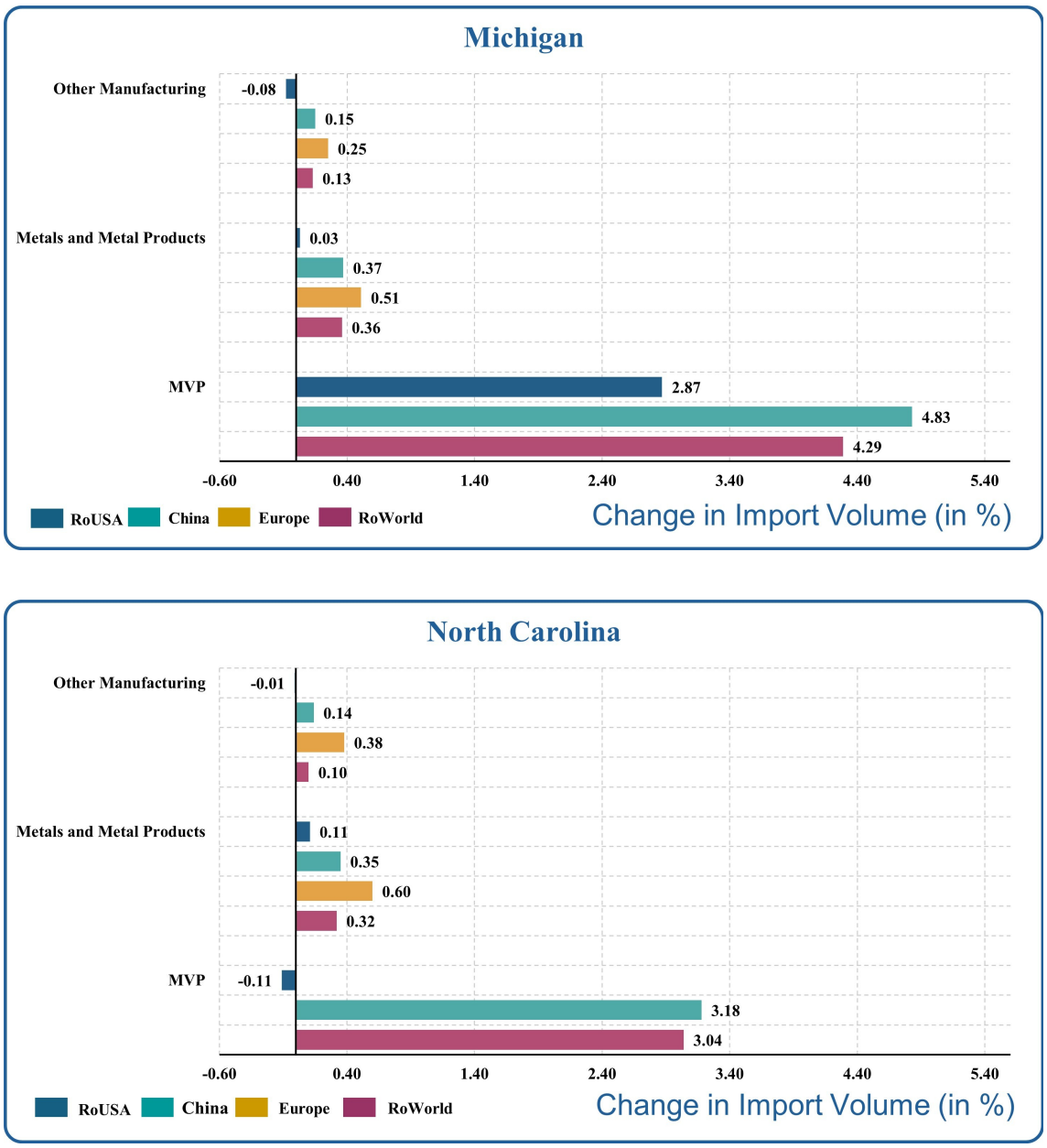
Notes: Percentage changes are measured relative to the calibrated 2026 reference equilibrium and displayed on the left axis. Changes in the production value are displayed on the right axis.

Figure 1 summarises the effects on the *MVP* industry in Michigan, North Carolina and Europe. Specifically, production value increases by USD 1.68 billion in Michigan and USD 0.65 billion in North Carolina, while falling substantially by USD 15.06 billion in Europe. Compared with Michigan, the macroeconomic effects in North Carolina are negligible according to Table 1, apart from a decline in the external balance of 0.26%, whereas *MVP* industry output and especially employment increase more strongly, as illustrated in Figure 1. This result reflects North Carolina's lower dependence on *MVP* imports from Europe: in the baseline, i.e. before the tariff increase, the corresponding import value amounts to only USD 56.17 million. By contrast, Michigan imports *MVP* worth USD 14.26 billion. North Carolina is therefore less exposed than Michigan to the adverse effects of the tariff increase because motor vehicle parts are used to a lesser extent as intermediate inputs contributing to overall gross value added, and only a small share of motor vehicles imported from Europe is demanded by final consumers. The size of the *MVP* industry in the two states further illustrates this difference. Its baseline production value amounts to USD 141.90 billion in Michigan, almost three times the USD 49.47 billion recorded in North Carolina.

In summary, both the substantial importance of the *MVP* industry in Michigan and its strong dependence on European *MVP* imports explain the simulation results at the macroeconomic and industry levels. North Carolina, by contrast, benefits from its lower demand for European *MVP* and is therefore largely shielded from the adverse effects of this isolated tariff measure. In other words, an America First strategy that relies on tariffs as one of its main instruments is less detrimental to economic activity when a substantial share of production already takes place in the United States before such measures are implemented.

However, with regard to reducing dependence on foreign imports, a protectionist tariff policy fails to achieve its objective, at least when, as in this study, only the import prices of a single product group are increased. Figure 2 illustrates this point. It presents the percentage changes in import volumes for the three most important intermediate inputs used by the *MVP* industry in Michigan. These comprise products from *Other Manufacturing*, *Metals and Metal Products*, and *MVP* itself, which account for 11.6%, 20.5%, and 51.1%, respectively, of total regional demand for intermediate goods.

Figure 2: Changes in intermediate input imports to the *MVP* industry in Michigan and North Carolina in Scenario E.



The analysis focuses on changes in imports of these intermediate inputs from the rest of the United States, China, Europe and the rest of the world. Figure 2 shows that the additional demand for *Other Manufacturing* and *Metals and Metal Products* arising from increased production in the *MVP* industry

is largely met by suppliers outside the United States, as the change in import volumes from the rest of the United States is negligible. Imports of *MVP* are an exception: here, the sharp decline in imports from Europe (not displayed) following the tariff increase is offset by supplies from China and the rest of the world but also from the rest of the USA. The simulation results for North Carolina show a similar pattern, where these intermediate inputs account for nearly the same shares as in Michigan.[4]

Production in the *MVP* industry in Michigan (and in other U.S. states) therefore depends on integration into international trade networks. Such globalisation can also become disadvantageous if tariffs are imposed not on one product group alone but on several product groups — as was the case with the far-reaching U.S. tariff measures already introduced in the past. Under such circumstances, the increase in *MVP* output would be offset by higher prices for a variety of intermediate inputs.

6 Results for the Retaliation Scenario

6.1 Effects at the Regional and State Levels

Table 3 presents the simulation results for the regions and U.S. states in the retaliation scenario. The numerical differences relative to the escalation scenario, expressed in percentage points, are shown in parentheses.

Table 3: Changes in selected macroeconomic indicators (in %) in scenario R.

Indicators	Regions					
	Michigan	North Carolina	RoUSA	Europe	China	RoWorld
Gross Domestic Product	−0.09	0.00	−0.01	−0.01	0.00	0.00
	(-0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Aggregate Employment	−0.11	0.01	−0.01	−0.01	0.00	0.00
	(-0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Consumer Price Index	0.17	0.03	0.04	−0.05	−0.01	0.00
	(-0.04)	(0.02)	(-0.01)	(0.02)	(0.00)	(0.00)
Real Consumption	−0.11	0.01	−0.01	−0.01	0.00	0.00
	(-0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Real Investment	−0.15	0.00	−0.03	−0.01	0.00	0.00
	(-0.05)	(0.00)	(0.00)	(-0.01)	(0.00)	(0.00)
Trade Balance	−0.67	−0.25	−0.02	0.01	−0.01	0.00
	(-0.38)	(0.01)	(-0.01)	(0.00)	(0.00)	(0.00)

Notes: Percentage changes occur over a short-run period of up to two years. RoUSA and RoWorld denote the rest of the USA (without Michigan and North Carolina) and the world, respectively. Numerical differences in comparison to scenario E expressed in percentage points are shown in parentheses.

[4] An exception is the relatively small decline of 0.11% in imports of *MVP* from the rest of the USA caused mainly by an *MVP* price increase of 0.78% in that region. By contrast, imports from China and the rest of the world represent more attractive alternatives in North Carolina, reflecting comparatively moderate price changes of -0.02% and 0.10%, respectively.

As in China and the rest of the world, changes in macroeconomic indicators for the remaining U.S. states and Europe relative to the escalation scenario are virtually negligible. In addition to alternative sales markets outside the United States, European producers benefit from alternative sources of *MVP* outside the United States, as they impose import tariffs on the corresponding U.S. products in this scenario. The adverse effects of this European tariff response are greatest in Michigan, although the changes in GDP, employment, the consumer price index, and demand components relative to the escalation scenario are only marginal. Thus, Michigan's total employment declines by approximately 4,945 jobs, representing an additional loss of 449 jobs compared with the escalation scenario. This net decline reflects a loss of approximately 7,505 jobs in other industries, partly offset by an increase of 2,560 jobs in the *MVP* industry. North Carolina, by contrast, remains largely unaffected economically in this scenario. We discuss this in greater detail in the following section.

6.2 Industry-Level Results

Table 4 shows that, when European retaliatory tariffs are imposed simultaneously, *MVP* industry output (-0.26 percentage points), prices (-0.25 percentage points), and employment (-2.85 percentage points) each increase less strongly than in the escalation scenario. This is unsurprising given the higher cost of *MVP* imports into Europe. According to Figure 3, the increase in the production value of the *MVP* industry amounts to USD 0.96 billion, a difference of USD 0.72 billion relative to the escalation scenario. Production value increases by USD 0.54 billion in North Carolina (minus USD 0.11 billion relative to the escalation scenario), while the loss in Europe amounts to USD 10.77 billion (plus USD 4.29 billion relative to the escalation scenario).

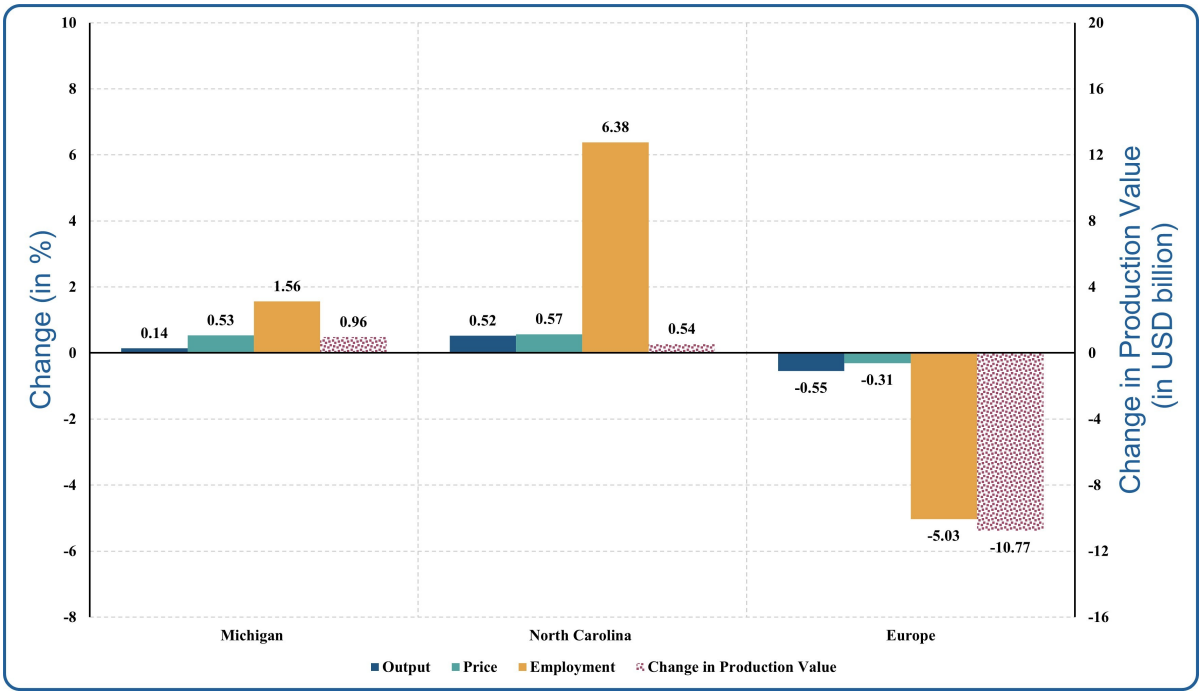
Table 4: Changes in industry-level variables in Michigan (in %) in Scenario R.

Industry	Output	Price	Employment
Other Agriculture, Forestry and Fishing	−0.05	−0.01	−0.67
Wheat and Other Cereals	−0.05	−0.01	−0.80
Oilseeds	−0.04	−0.01	−0.62
Mining and Quarrying	−0.04	−0.03	−0.67
Food, Beverages and Tobacco	−0.09	0.01	−0.88
Other Manufacturing	−0.13	0.01	−1.06
Metals and Metal Products	−0.10	0.02	−0.83
Computer, Electronic and Optical Products	−0.08	−0.01	−0.75
Electrical Equipment	−0.16	−0.01	−1.28
Machinery and Equipment n.e.c.	−0.20	0.02	−1.60
Motor Vehicles and Parts	0.14	0.53	1.56
Other Transport Equipment	−0.14	−0.01	−1.18
Electricity, Gas and Water Supply	−0.04	0.02	−0.49
Construction	−0.12	0.03	−0.89
Wholesale and Retail Trade	0.00	0.12	−0.04
Other Services	−0.07	0.04	−0.63
Transportation and Storage	−0.01	0.08	−0.12
Health and Education	−0.12	0.10	−0.68
Owner-Occupied Dwellings	0.00	−0.08	−0.52

Note: Percentage changes occur over a short-run period of up to two years.

However, the baseline shows that only 4% of Michigan's exports are destined for Europe, compared with just 0.1% for North Carolina. Michigan's *MVP* sales are distributed across three major destinations: domestic consumption (36%), the rest of the United States (30%), and the rest of the world (25%), whereas 69.5% of consumption takes place within North Carolina itself. In Europe, domestic demand for locally produced *MVP* also accounts for a high share of total trade volume in the baseline (77.6%). Compared with the escalation scenario, demand for *MVP* produced within Europe increases more strongly, by 0.70% (+0.45 percentage points), owing to higher import prices for U.S. products. Michigan's diversified *MVP* trade relationships and the "home bias" observed in North Carolina and Europe therefore mitigate the adverse effects of retaliatory tariffs on capacity utilisation and production value.

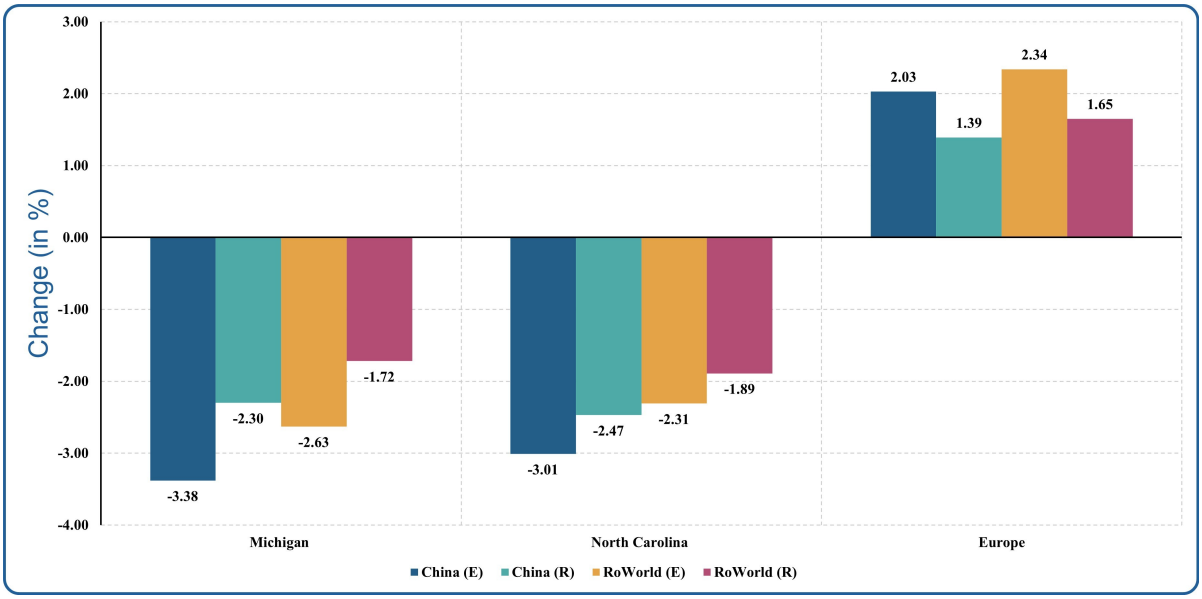
Figure 3: Effects on the *MVP* industry in Michigan, North Carolina, and Europe in Scenario R.



Notes: see Figure 1.

Finally, Figure 4 shows that declines in the volume of *MVP* exports from both U.S. states to China and the rest of the world are smaller than in the escalation scenario. This is because *MVP* produced in the United States experiences a smaller price increase in the retaliation scenario as a result of the retaliatory tariffs and the associated reduction in European demand. Consequently, demand in other regions of the world also declines less sharply. A mirror-image development would be expected for Europe, where the price decline is smaller than in the escalation scenario, while stronger domestic demand offsets lower exports to China and the rest of the world.

Figure 4: Change in the volume of *MVP* exports from Michigan, North Carolina, and Europe to China and the rest of the world (RoWorld) in Scenarios E and R.



7 Conclusion

U.S. trade policy under President Donald Trump continues to be characterised by a high degree of unpredictability. In its ruling of February 20, 2026, the U.S. Supreme Court held that the International Emergency Economic Powers Act does not authorise the imposition of tariffs; other statutory tariff authorities were not affected by this ruling. The renewed escalation of trade tensions with Canada in late summer 2026 illustrates the continuing uncertainty surrounding future tariff adjustments. Whether the results of the U.S. midterm elections on November 3, 2026, will encourage or restrain a further escalation of tariff policy remains unclear. The threatened increase in U.S. import tariffs on automobiles from the European Union in May 2026 and the EU countermeasures that were prepared but have since been suspended demonstrate that transatlantic trade relations continue to face substantial challenges. Developments also remain uncertain in the run-up to the next U.S. presidential election in 2028.

This study therefore examines the short-run effects of a potential renewed increase in U.S. tariffs on motor vehicles and parts imported from Europe following this year's U.S. midterm elections. It also investigates how European retaliatory tariffs would alter these effects. The analysis focuses on Michigan's economy and automotive industry. Measured by the number of vehicles produced, Michigan is regarded as the leading automotive production state in the United States, making it particularly relevant to the U.S. government's America First strategy, which aims to strengthen domestic production through industrial and tariff policies.

The comparative-static simulations compare the respective post-shock equilibria with the reference equilibrium within a short-run adjustment framework extending to 2028. With the exception of Michigan, where real gross domestic product and total employment decline slightly, the aggregate economic effects

in both tariff scenarios, i.e. with and without European retaliatory tariffs on motor vehicles and parts, remain small. At the industry level, Michigan's motor vehicle and parts industry records substantial increases in output, prices and employment. Employment growth in this industry is accompanied by a reallocation of labour from other industries within and outside the state, which consequently experience losses in production and value added. The effects on private consumption and investment goods demand in Michigan are therefore substantial, as the simulations, using official employment data from the U.S. Bureau of Labor Statistics, indicate employment losses of approximately 11,726 (7,505) jobs in other industries under the scenario without (with) European retaliatory tariffs.

The results for Michigan illustrate that supporting an economically important industry through tariffs can entail adverse aggregate economic repercussions when other industries are affected by the reallocation of production factors. The distribution of gains and losses from such a trade policy measure therefore remains relevant to economic policy assessment. Compared with Michigan, North Carolina exhibits a pronounced regional orientation of motor vehicle production ("home bias"), reflected in a high share of locally produced output sold within the region. In the scenarios considered, this pattern helps mitigate adverse effects on capacity utilisation and production value. The simulations also indicate that sourcing patterns for certain intermediate goods may shift: while imports of motor vehicles and parts from Europe decline in response to the U.S. tariff shock, alternative supplier regions such as China and the rest of the world gain importance for some intermediate inputs, provided that they are not affected by the additional tariff measures. This underscores the importance of international trade linkages for supplying the motor vehicle and parts industry with intermediate inputs.

Overall, the findings show that the U.S. tariff measure considered creates winners and losers at the industry level — both without and with European retaliatory tariffs. Aggregate economic effects remain small in most of the regions considered, while Michigan experiences modest negative effects on real GDP and total employment. The simulated adjustments in trade flows further illustrate that sales and sourcing relationships can partly shift towards alternative regions. These findings suggest potential risks to the competitive position of the U.S. economy if confrontational tariff policies are maintained or expanded. Whether the U.S. midterm elections will foster a reorientation of trade policy remains to be seen.

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