8

Conclusion

In this book, I have analyzed the changes in the European automotive industry since the 1990s through the conceptual lenses of the GVC/GPN approach by focusing on the spatial strategies of automotive lead firms. I have examined the consequences of these changes for regional economic development and for the spatial division of labor in the European automotive industry. The goal of this final chapter is to summarize the findings and highlight the conceptual contribution of the book not only for the understanding of the changing European automotive industry, but also to evaluate its contribution to the GVC/GPN perspective.

8.1 FDI AND ECONOMIC DEVELOPMENT

Given the sharply increased importance of FDI in the world economy since the 1970s, I began this book with a critical review and explanation of the developmental effects of FDI in less developed countries and in peripheral regions of more developed countries because of its direct relationship to the recent growth of the automotive industry in the peripheral regions of Europe. The GVCs/GPNs approach considers the automotive industry to be a typical example of producer driven GVCs/GPNs and, more specifically, of captive value chains, in which large firms organize and coordinate, increasingly at the international scale, investment-based vertical production networks of component suppliers. Lead firms' internationalization strategies in the automotive industry have been based on FDI and the direct ownership of production facilities abroad. A basic explanation of long-term economic effects of automotive FDI in host countries and regions has therefore been an important starting point for the analysis of the European automotive industry.

I have suggested that the empirical data and analyses from existing literature on less developed countries point toward very uneven effects of FDI and the

overall limited evidence of positive impacts of FDI on long-term economic development in less developed countries. The empirical evidence does not support the overly optimistic arguments about the long-term positive impacts of FDI in less developed countries maintained by the mainstream economic perspective on FDI. However, the empirical evidence neither fully supports the dependency and world-systems perspectives, which mostly emphasize the negative long-term developmental effects of FDI in less developed countries. I have explained the different conclusions of these two perspectives on FDI in less developed countries by their focus on different time periods. The mainstream perspective tends to focus on the immediate short-term effects of FDI in host economies, which are often positive. The dependency and world-systems perspectives tend to emphasize long-term effects of FDI and argue that negative effects tend to prevail in less developed countries in the long run. At the same time, both perspectives tend to ignore the spatial unevenness and variation of FDI impacts across less developed countries.

Overall, I have argued that the heterodox perspective, which is drawing on institutional and evolutionary economics, is more attuned to consider geographically varied and uneven experiences of less developed countries with FDI. Based on the experience of the most successful less developed countries, the heterodox perspective emphasizes the importance of strong state industrial policies and institutions supporting the development of domestic firms alongside the FDI-driven development. The variation in state capacity, industrial policies and policies toward foreign and domestic firms strongly affect the potential contribution of FDI to a successful economic development in less developed countries.

In Chapter 2, I have extended the review of FDI effects in less developed countries from Chapter 1 to FDI effects in peripheral regions of more developed countries by arguing that the economic development effects of FDI differ between core and peripheral regions. I have attributed these different regional development outcomes of FDI to different mechanisms of FDI in core and peripheral regions, which lead to a greater concentration of horizontal FDI in core regions and of vertical FDI in peripheral regions. I have argued that this difference between core and peripheral regions explains the greater development potential of FDI in core regions than in peripheral regions in the long run through the development of more and better-quality linkages between foreign and domestic firms. Since FDI spillovers from foreign to domestic firms occur through FDI linkages, enabling the diffusion of more advanced foreign technology in host economies, a greater quantity and better quality of linkages translate into greater diffusion and absorption of foreign technology in core regions than in peripheral regions. This explanation of FDI mechanism in core and peripheral regions is important for the understanding the regional development effects of automotive FDI in the European automotive industry, especially in its integrated peripheries.

Chapter 2 also critically reviewed conceptual approaches to FDI in peripheral regions of developed countries elaborated by economic geographers since the 1970s, namely the branch plant economy and truncation, new regionalism, new international division of labor and spatial divisions of labor, and the GPN perspective. Despite the changing nature of the capitalist economy since the 1970s and rapidly progressing economic globalization, all these conceptual approaches, including the critique of new regionalism, came to similar conclusions about the limited long-term development effects of FDI in peripheral regions of developed countries.

8.2 REGIONAL DEVELOPMENT EFFECTS OF AUTOMOTIVE FDI IN INTEGRATED PERIPHERIES

I have applied and further developed the conceptual insights from Chapters 1 and 2 by focusing on the European automotive industry in the rest of the book. In Chapter 3, I introduced the concept of integrated peripheries as peripheral spatial zones that have experienced rapid development of their automotive industry. By drawing on Harvey's theory of spatiotemporal fix and uneven development (Harvey, 1982; 2005b), and by combining it with the concept of strategic coupling from the GPN perspective, I have explained the profit-seeking spatial strategies of automotive lead firms and their large FDI in the development of the automotive industry in integrated peripheries. Integrated peripheries have been conceptualized as lower-cost production areas located in the proximity of core automotive industry regions and large lucrative markets, which have been integrated into the existing automotive GVCs/GPNs through FDI, trade and production linkages. This transnational integration has been made possible by the inclusion of new peripheries in trade blocs or free-trade arrangements allowing for tariff-free movement of raw materials, components and finished vehicles, and by technological changes that have lowered their transportation costs.

By drawing on the GPN approach, I have argued that integrated peripheries are articulated in GPNs via the assembly type of the structural mode of strategic coupling. The structural strategic coupling between TNCs and host country regions is typified by very uneven power distribution, in which power and control is concentrated in the hands of lead firms, while coupled regions are in a dependent and subordinate position. The uneven power distribution in structural couplings translates into greater economic benefits for TNCs than for coupled peripheral regions. As such, it is the least advantageous mode of strategic coupling from the position of coupled regions, which is typified by limited long-term positive economic effects in peripheral regions.

Empirically, I have examined automotive industry development in integrated peripheries in Eastern Europe by investigating FDI linkages in the Slovak automotive industry. The case study was based on firm-level data collected

through the survey of 299 firms and face-to-face interviews with fifty firms. These data allowed me to evaluate both the quantity and quality of supplier linkages in the automotive industry of Slovakia.

The data revealed weak backward and forward supplier linkages between domestic firms and foreign subsidiaries. Foreign automotive firms operating in Slovakia are strongly integrated in transnational GVCs/GPNs, which are however mostly made of other foreign firms located abroad as Slovakia-based foreign subsidiaries heavily rely on imports of raw materials and components from abroad. Foreign component suppliers that invested in Slovakia to satisfy the follow sourcing requirements of assembly firms have strong forward linkages with assembly firms in Slovakia. However, they have weak backward linkages with other foreign subsidiaries in Slovakia and almost nonexistent backward linkages with domestic Slovak firms, which also applies to the remaining foreign subsidiaries in Slovakia. Weak linkages of foreign firms with domestic suppliers translate into weak spillovers from foreign to domestic firms in Slovakia, which strongly undermines any potential long-term benefits of automotive FDI in Slovakia.

The firm-level empirical data collected in Slovakia have also allowed for the evaluation of the quality of linkages in those rare cases when linkages between foreign subsidiaries and domestic firms exist. The analyses of these linkages have revealed that developmental linkages are absent, and that most linkages are either dependent or detrimental. This further underscores the very limited potential for automotive FDI to generate FDI spillovers in Slovakia and therefore strongly points to limited long-term positive regional development effects of automotive FDI. The findings from Slovakia thus underscore the nature and weak long-term development potential of the structural mode of strategic coupling of integrated peripheries into GPNs.

8.3 Internationalization and Restructuring of the European Automotive Industry

In Chapter 4, I have argued that from the mid-1960s, the European automotive industry was progressively internationalized through the investment strategies of automotive industry lead firms, which were eager to increase or maintain their rate of profit by developing production in peripheral locations that had a labor surplus and lower labor costs than in the established core regions of the automotive industry. Lead firms, which are large automotive industry TNCs mostly from the automotive industry core countries, could pursue these transnational investment strategies in Europe for two fundamental reasons. The first was an economic integration in the European Union allowing for the free movement of capital across the European Union, which is an example of what I have called an institutional fix. The second was a technological change allowing for the rapid and low-cost movement of raw materials, parts,

components, preassembled modules, partially assembled vehicles and finished vehicles, which is an example of what I have called a technological fix.

Building on Chapter 3, Chapter 4 has conceptualized the uneven development of the European automotive industry through the formation of spatiotemporal fixes in peripheral lower-cost regions as automotive TNCs are eager to invest in these areas because of their potential for higher rates of profit than in existing locations. The formation of spatiotemporal fixes in peripheral regions is made possible by the development of technological, organizational and institutional fixes. These peripheral regions, which I have called integrated peripheries in Chapter 3, are then integrated through FDI, trade and production linkages in the transnational European automotive industry system and experience a rapid growth in output of vehicles and components. Eastern Europe represents the latest spatiotemporal fix that has been developed and exploited by lead firms in the European automotive industry.

However, as explained in Chapter 4, the growth of the automotive industry in integrated peripheries does not last because, over time, it exhausts the labor surplus, which pushes wages up and ultimately undermines the rate of profit. A decreasing rate of profit eventually forces lead firms to start looking for new areas with lower wages and surplus labor for new investments, resulting in the gradual territorial expansion of integrated peripheries over time and in the growth bouncing from region to region.

At the same time, I have explained how the growth of the automotive industry in integrated peripheries affects the existing production locations in core areas and in older integrated peripheries. Since the higher rate of profit achieved by investing in integrated peripheries contributes to the profitability of an entire automotive TNC, it supports the continuation of production in existing less-profitable high-wage core locations. Despite their higher costs and lower rates of profit, these core locations continue to hold strong advantages compared to integrated peripheries, such as their proximity to existing suppliers, large markets, skilled labor force and innovation capabilities. Additionally, large sunk costs in existing locations often make potential closures and relocations prohibitively expensive. Therefore, the restructuring of operations in existing locations is much more likely to lead to more labor-intensive and lower-value-added activities being relocated to integrated peripheries, while more skill-intensive and higher-value-added activities are being retained in core locations. The resulting more fine-grained division of labor and greater territorial specialization may contribute to the increased efficiency and profitability of an entire TNC and of the transnationally organized automotive industry as whole. Still, the existing locations might experience factory closures and job losses because some production might be relocated from core areas and older integrated peripheries to new integrated peripheries.

The empirical analysis of 2,124 restructuring events during the 2005–2016 period has supported this conceptual explanation of spatial change in

the European automotive industry. It has revealed that the European automotive industry has been in a constant spatial flux and its spatial restructuring has been driven by the transnational investment and disinvestment strategies of automotive lead firms from automotive industry core countries. The increased role of foreign firms in creating and eliminating jobs and the decreased role of large domestic firms at the same time point to an increasing level of internationalization in the European automotive industry. The data have also revealed a marginal role played by domestic firms in the rapid growth of the automotive industry in the Eastern European integrated periphery. This growth has almost exclusively been driven by foreign firms. These findings support the conclusions about the limited long-term effects of FDI in less developed countries and peripheral regions, which were presented in Chapters 1, 2 and 3 of this book.

8.4 THE CORE–PERIPHERY STRUCTURE OF THE EUROPEAN AUTOMOTIVE INDUSTRY

Chapter 5 has further extended the analysis of the European automotive industry by considering its core–semiperiphery–periphery structure. In the context of the GVC/GPN perspective, Chapter 5 has built on Friedmann's core–periphery model, Harvey's theory of the spatiotemporal fix and uneven development, and on spatial divisions of labor in spatial systems to develop, justify and test an innovative methodology to determine the relative positions of countries in the European automotive industry, and how their relative positions change over time.

The proposed methodology has been developed in several steps. First, the positional power of countries in automotive industry GVCs/GPNs is estimated as the average of their producer-driven and buyer-driven power, which is calculated from bilateral national trade data with automotive industry products. Second, the positional power of each country is normalized by its ownership and control power, which is measured by the index of foreign control in the automotive industry. Third, this normalized positional power of countries is further normalized by the index of innovation, which measures the innovation capacity of each country in the automotive industry. The resulting index, which I refer to as "automotive industry power," has been calculated for each country and every year between 2003 and 2017. In the final step, a cluster analysis has been applied on the descendent order of the natural logarithm of the average values of automotive industry power of European countries for the 2003–2017, 2003–2007, 2008–2012 and 2013–2017 periods to determine five clusters for each of these periods. The five clusters correspond with five spatial categories of a higher-order core, lower-order core, semiperiphery, periphery and lower-order periphery of the European automotive industry. The changes in the position of countries in these spatial

categories over time point toward their unstable positions, while unchanged positions over time point toward their stable positions in the core–semiperiphery–periphery system.

The empirical analysis has revealed the dominant position of Germany as a higher-order stable core of the European automotive industry during the 2003–2017 period. France and Italy represent a much weaker but still stable lower-order core. Sweden and Britain have been delimited as being unstable core countries close to the core–semiperiphery borderline position and trending toward the semiperiphery. The stable semiperiphery is concentrated in Western Europe and includes some formerly integrated periphery countries that advanced into the semiperiphery over time, such as Spain and Belgium. The unstable semiperiphery includes countries in the borderline position between the periphery and semiperiphery, such as Czechia, which is likely to slip back into the peripheral position rather than to consolidate its position in the stable semiperiphery. Most European countries have been classified in the peripheral position, of which most are located in Eastern Europe. Some of these peripheral countries, such as Poland and Slovakia, have seen strong improvements in their positional power during the study period, due to the rapid development of the export-oriented automotive industry, both vehicle assembly and components production. In the case of Poland, for example, this might lead to its gradual advancement in the European semiperiphery over time.

The results of the analysis of relative positions of countries in the European automotive industry based on the estimated network position of firms in this system validate the analyses and conclusions about the restructuring and spatial change of the European automotive industry that were presented in Chapters 3 and 4 of this book.

8.5 VALUE CREATION AND VALUE CAPTURE IN THE AUTOMOTIVE INDUSTRY

Chapter 6 has turned to the question of value creation and capture in GVCs/GPNs, which is one of the crucial issues for the GVCs/GPNs approach when considering the implications of the integration of countries and regions in GVCs/GPNs for their long-term economic development. More specifically, Chapter 6 has explored relationships between a firm's position in GVCs/GPNs and its prospects for value creation and capture. Consequently, by building on and further developing conceptual thinking from preceding chapters of this book, Chapter 6 has developed an approach to measure value creation and capture in regional production networks based on firm-level indicators. The gross value added is used to measure value creation. Value capture is measured by wages, corporate tax revenues, reinvested profits and domestic sourcing.

The chapter then explored how the network position of firms in automotive industry GVCs/GPNs affects their value creation and capture. In other words, it investigated how different tiers of suppliers contribute to value creation and capture in GVCs/GPNs. The empirical study has been conducted by analyzing firm-level data from the Czech automotive industry.

The empirical analysis conducted in Chapter 6 has validated the theoretical assumptions of potential greater economic effects of vehicle assemblers and large tier-one component suppliers in automotive industry GVCs/GPNs. Larger firms create greater value in GVCs/GPNs than smaller firms because of their larger capital intensity of production compared to smaller firms, which constitute the bulk of tier-two and especially of tier-three suppliers. This is because wages and value added per employee tend to increase with the increasing capital intensity of production and decrease with the declining capital intensity of production. There is also a greater potential for value capture from vehicle assemblers and large tier-one suppliers because they account for significantly higher corporate tax revenues and have higher average wages per worker compared to lower-tier suppliers. At the same time, the importance of lower-tier suppliers in terms of value capture is in their larger direct employment and wage effects per unit of production and investment capital compared to higher-tier suppliers. Additionally, lower-tier suppliers are more numerous and spatially dispersed than assembly firms and tier-one suppliers, which increased their potential regional development effects.

However, while this interpretation explains the value creation and capture of different tiers of automotive firms in core regions of the automotive industry, value capture in peripheral regions is negatively affected by foreign ownership and control in producer-driven GVCs/GPNs, and by the international division of labor in the automotive industry. Foreign firms repatriate profits from their foreign affiliates, exploit tax holidays and employ various profit-shifting strategies, which significantly undermines the value capture potential from the automotive industry in regions and economies hosting these firms. Additionally, automotive lead firms conduct strategic nonproduction functions, which constitute a key source of value added for higher-tier firms, mostly in core regions and in their home economies rather than in foreign locations. Consequently, these high value-added nonproduction functions are usually weakly developed compared with lower-value-added production functions in peripheral automotive industry regions, such as integrated peripheries. This situation increases value capture potential in core regions compared to peripheral regions of the automotive industry.

A potential strategy to partially address this situation is through greater state support for the development of domestic firms through industrial policies in peripheral regions. In the Eastern European integrated periphery, however, state support has largely been aimed at the development of the foreign-controlled automotive industry through various forms of investment

incentives. The state support for the domestic sector has been either nonexistent or very limited (Pavlínek, 2016).

8.6 THE TRANSITION TO THE PRODUCTION OF ELECTRIC VEHICLES

Chapter 7 of the book has considered the implications of the transition to the production of electric vehicles for the European automotive industry. By building on conceptual arguments developed in preceding chapters, it has focused on this transition in the Eastern European integrated periphery.

The transition to the production of electric vehicles in Eastern Europe has been considered from the evolutionary perspective as being embedded in the nature and growth of the Eastern European automotive industry since the early 1990s, including the position of Eastern Europe in automotive GVCs/GPNs and in the international division of labor in the European automotive industry. The chapter has argued that the transition in Eastern Europe is also strongly affected by its peripheral position in the European automotive industry, which will affect its course in several important ways. First, it will mean that Eastern Europe is not and will not be the center of innovation for electromobility in Europe. This is because innovation activities related to electromobility already follow the spatial pattern of existing automotive industry innovations by being mostly concentrated in core areas of the European automotive industry. Some innovation activities related to electromobility are being selectively developed by automotive lead firms in Eastern Europe mostly for cost-cutting reasons. Overall, however, Eastern Europe lags and will likely continue to lag in innovation activities behind automotive industry regions in the core of the European automotive industry because, as explained in Chapter 5, core regions are typified by more favorable conditions for innovative activities compared to peripheral regions, which will ensure their higher rates of innovation related to electromobility than in the Eastern European integrated periphery.

Because of its peripheral position, Eastern Europe will experience the transition to the production of electric vehicles more slowly than the core and semiperipheral automotive industry regions of Western Europe. As a result, vehicles with internal combustion engines will be produced longer in Eastern Europe than in Western Europe. I have explained this situation based on the product life cycle model, according to which older technologies are exploited for longer in peripheral regions, while core regions more rapidly abandon more obsolete products and technologies and move toward the production of new products based on new technologies. A longer production of vehicles with internal combustion engines in Eastern Europe will be further reiterated by the existence of modern and efficient assembly factories for cars with internal combustion engines and engine factories built in the region mostly since the early 2000s. It will also be reinforced by a steadily high demand for cars with internal combustion engines and low demand for electric vehicles in Eastern

Europe because of their higher prices and lower purchasing power in the region. Finally, lower wages in Eastern Europe will contribute to the longer production of lower-priced and lower-profit-margin vehicles with internal combustion engines compared to higher-priced and higher-profit-margin electric cars. For all these reasons, we are likely to see a gradual transition to the production of electric cars in Eastern Europe, which will be based on the mixed production of cars with internal combustion engines and electric vehicles rather than on fully dedicated factories for electric cars. However, I have argued that this nature and gradual pace of transition toward electric vehicles might ultimately undermine the long-term competitive position of Eastern Europe in the European automotive industry by increasing the gap behind Western Europe, which will move to the production of electric cars in fully dedicated factories faster.

I have also argued that the transition to the production of electric vehicles is unlikely to change the peripheral position of Eastern Europe in European GVCs/GPNs and its overwhelming dependence on foreign capital and foreign automotive lead firms. Because of its continuing locational advantages, the Eastern European integrated periphery will continue to be attractive for automotive FDI, although there might be important changes in the structure of FDI source countries. This can already be seen in large investments in the battery industry by Chinese and South Korean lead firms in Hungary and Poland. I have argued that all these trends will ultimately ensure the continuing highly dependent peripheral position of Eastern Europe in European automotive industry GVCs/GPNs in the foreseeable future.

8.7 THE UNCERTAIN FUTURE OF THE EUROPEAN AUTOMOTIVE INDUSTRY

The overall picture of the European automotive industry developed in this book from the economic geography perspective has emphasized its relentless restructuring. This continual spatial change has been driven by investment and disinvestment strategies of global lead firms. Since the 1960s, these strategies have led to the geographic expansion of the automotive industry into new peripheral countries and regions in search of higher rates of profit while, at the same time, triggering the restructuring in the existing core and semiperipheral countries and regions. These spatial strategies of automotive lead firms have therefore played an important role in the competitive strategies of European and non-European lead firms and contributed to the continuing competitiveness of the European automotive industry.

However, the European automotive industry faces several important challenges, which will affect its long-term future, competitiveness and sustainability. While the trend toward the production of electric cars seems to be entrenched, the success of European automotive firms in this transition is far from certain. European lead firms face the danger of being outcompeted in both

European and foreign markets by Asian and American automotive firms and electric battery companies. An unsuccessful transition of European automotive firms to the production of electric cars would not necessarily mean the collapse of the European automotive industry but might undermine the position of Europe as one of the core areas of the global automotive industry and lead to its increased dependence on foreign capital and technologies. This might weaken the value capture from the automotive industry and its regional development benefits in Europe. Additionally, as I have mentioned in Chapter 5, the automotive industry is being affected by other important trends, including automation, robotics, digitalization (Industry 4.0), autonomous driving and new forms of car ownership, which are beyond the scope of this book, but which have the potential to affect the future structure, employment and the geography of production of the European automotive industry.

Finally, the war in Ukraine has sharply increased geopolitical risks for the European automotive industry and negatively affected its future prospects by triggering rapid geopolitical decoupling (Pavlínek, 2024) of European automotive lead firms from Russia. Geopolitical decoupling led to exit of automotive lead firms from Russia and disrupted automotive GVCs and GPNs, leading to large financial losses. Among European lead firms, Renault, Volkswagen, Mercedes-Benz and Stellantis collectively lost USD5.7 billion because of exit or the suspension of operations in Russia in 2022 and 2023 (Renault lost USD2.3 billion, Volkswagen USD2.2 billion, Mercedes-Benz USD693 million and Stellantis USD470 million). Additional large financial losses were recorded by European automotive suppliers, such as Bosch, Continental, Faurecia, Michelin, Siemens, Valeo and ZF (Sonnenfeld, 2023). The automotive industry in Eastern Europe is more susceptible to these increased geopolitical risks because of its relative proximity to Ukraine and Russia, its high dependence on Russian natural gas and oil and the landlocked location of many Eastern European countries that makes alternative supplies of oil and liquified natural gas more expensive than in Western Europe. Higher perceived geopolitical risks and higher energy costs might negatively affect future investment and location decisions of automotive lead firms.

Given these challenges, the future of the European automotive industry will largely depend on the ability of European lead firms to maintain their competitive position in the global automotive industry, ideally with the help of strong but sensible industrial policies at the national and European Union levels. Given the importance of spatial strategies of automotive lead firms in previous decades, there is no doubt they will continue to play an important role in the European automotive industry in the future as well.