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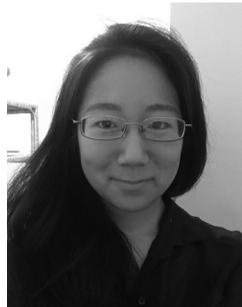
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BARRIERS TO GROWTH IN THE CZECH AUTOMOTIVE INDUSTRY

Christina Pak



Introduction

The Czech Republic has maintained a long tradition of excellence in industry, especially the automotive sector. Responsible for almost a quarter of total manufacturing output, the automotive sector is the single largest industry in the Czech Republic and employs more than 150,000 people. The nation belongs to the top 15 car producers by volume, producing slightly over 100 vehicles per capita (Schmid).

In 2010, the Czech Republic reached a new milestone in production and manufactured a million cars for the first time, most of which were exported (“The World Factbook...”). However, the nation’s dependence on foreign capital and the resulting foreign-controlled economy, lack of high-value-added research, and dependence on Western Europe to fuel its heavily export-based economy limit the nation to the periphery of the global core auto industry.

Nations that house the headquarters

of original equipment manufacturers and therefore generate high-value-added products and a high level of research and development (R&D) and exhibit high revenue capture as well as leadership in the field constitute the global core auto industry. These nations include the United States, Germany, France, and Japan. The periphery of the auto industry, in which the Czech Republic resides, is comprised of nations that do not house the headquarters of original equipment manufacturers and are largely limited to the production of automobiles rather than innovation within the field (Maxton and Wormald, p. 99).

Because more than 98 percent of automobiles produced in the Czech Republic are personal vehicles, in this article I largely focus on the auto industry in terms of the production of these vehicles rather than large commercial vehicles, such as trucks, and public transport vehicles, such as trams and buses (“Analysis of the Automotive Industry...”). I discuss barriers to growth in the Czech auto

industry from the perspectives of the Czech Republic as an export-oriented economy, the organization of the auto industry, the effects of foreign direct investment (FDI), spillovers between foreign-owned and domestic firms, and the unequal distribution of R&D. I suggest that the current organization of the industry gives too much power to foreign transnational companies, which wield this power to hold the Czech auto industry captive. I argue that the Czech government must strike a balance between continuing to attract FDI and supporting domestic-based firms. By investing in higher education as well as R&D, horizontal and vertical spillovers between firms may be better absorbed and utilized by domestic firms, thereby increasing competitiveness and allowing the Czech auto industry to reposition itself from the periphery closer to the core of the global auto production network.

Exports

The Czech Republic is an export-based economy. In 2013, the nation's export value reached \$150 billion, positioning the country as the 30th largest exporter in the world. Cars compose the largest portion of the total export value at 10 percent, with vehicle parts composing the second largest portion at 7.6 percent ("Where Does the Czech Republic Export Cars to?"). The Czech Republic's main trading partners include Germany, France, and the United Kingdom ("Main Development...", p. 3). Germany, a close neighbor and the Czech Republic's most important trading partner, is responsible for 31 percent of the entire Czech export value ("Main Development...", p. 5). In terms of the auto industry, Germany imports 24 percent of Czech-produced cars, or \$3.63 billion of a total \$15.1 billion auto export value. The U.K. comes in second at 8 percent, then Russia at 6.7 percent, Belgium-Luxembourg at 6.1 percent, and France at 5.5 percent ("Where Does the Czech Republic Export Cars to?"). Additionally Germany imports the majority of Czech-produced vehicle parts at 42 percent, then Slovakia at 11 percent, France at 7.1 percent, Hungary at 4.6 percent, and Russia at 3.8 percent ("Where Does the Czech Republic Export Vehicle Parts to?").

The Czech Republic must not only

diversify its trading partners but also decrease its dependence on the Western European region, in particular Germany, to maintain as well as increase demand for its exports. China, Russia, the U.S., and South American nations are promising markets ("Main Development...", p. 6). Škoda Auto has already started producing cars at three manufacturing plants in China, two plants in Russia, and two in India ("Škoda Annual Report 2014," p. 27). Although sales in Russia have declined recently due to economic and political conditions, demand in China and India continues to climb ("Škoda Annual Report 2014," p. 15).

The 2008 financial crisis served as a warning of the consequences of depending too heavily on a specific region. Banking failures in Europe and the U.S. ("Crisis-Proofing Financial Integration...", p. 25) caused demand for Czech exports in Europe to drop, and the Czech economy suffered as a result. GDP decreased by 5.8 percent, and the public debt increased by 40 percent from 2008 to 2010 ("Crisis-Proofing Financial Integration...", p. 28). Employment in the auto industry decreased by 15 percent from 2008 to 2009, which represented approximately 20,000 employees ("Analysis of the Automotive Industry..."). It was not until the rest of Europe recovered that the Czech Republic followed ("OECD Economic Surveys...", p. 37).

During the financial crisis, the Czech auto industry experienced the fastest recovery rates in exports to countries with scrapping schemes such as Germany and France ("OECD Economic Surveys...", pp. 34–35). Scrapping schemes allow consumers to trade in an old personal vehicle for a set amount of money that would go towards purchasing a new car ("Car Scrapping...", p. 1). In this manner, scrapping schemes boost new car sales and thus boost imports of new cars and car parts into these markets ("OECD Economic Surveys...", p. 35). Consumers tend to trade in their old vehicles for small, inexpensive cars, which the Czech Republic, in particular Škoda Auto, specializes in producing. Therefore, it appears that the Czech Republic would benefit highly from scrapping schemes. However, despite an initial spike in exports to countries that have implemented scrapping schemes, spikes have

been always followed by an eventual decrease in the export rate. The advantage of scrapping schemes is therefore temporary and transient (“OECD Economic Surveys...,” p. 35).

Facilitating trade may be a long-term solution to maintaining and increasing the export rate as well as global competitiveness. Even though operating in a completely landlocked economy presets a unique challenge, the Czech Republic boasts an excellent infrastructure and trade policies designed to make trading quick, efficient, and easy. With 55,717 km of roads and a density of 0.7 km of roads per square kilometer (“Investment in the Czech Republic,” p. 105), this nation within East–Central Europe (ECE) ranks thirty-seventh globally in quality of overall infrastructure, twenty-second in quality of railroad infrastructure, and twenty-first in quality of air transport infrastructure, according to the World Economic Forum (“Investment in the Czech Republic,” p. 7). The Czech Republic ranks forty-ninth globally in ease of trade, but compared with other landlocked countries, the Czech Republic comes in at fourth based on the amount of documents required, cost, and time to export or import (“Doing Business...,” p. 19).

Unlike most other landlocked economies, which require double the number of procedures to import and export goods compared with countries situated on the coast, the Czech Republic boasts fewer than ten procedures (Bilotserkivska, p. 13). Because the Czech Republic is a member of the EU Customs Union, goods transported to and from seaports are not subject to any border procedures while crossing through other member territories (Bilotserkivska, p. 8). The Czech Republic also has implemented an electronic system that allows traders to complete all documents required for customs clearance electronically, significantly expediting the process (Bilotserkivska, p. 10). Despite the Czech Republic’s strong position, traders must still hire a customs broker (Bilotserkivska, p. 18) to deal with customs procedures on their behalf (Bilotserkivska, p. 7), adding to cost; and goods must wait outside the seaport before entering it and then are handled at the seaport, adding to shipping time (Bilotserkivska, p. 21).

Organization of the Industry

The Czech auto supply chain is organized into three tiers. Tier 1 suppliers work closely with auto assemblers to design and produce highly sophisticated, high-value-added modules and auto components. Tier 2 suppliers supply Tier 1 suppliers and auto assemblers with lower-value-added components. Tier 3 suppliers supply the entire auto supply chain with the lowest-value-added, standardized components and thus are easily replaceable and face fierce competition within the market. A majority of domestic Czech auto suppliers are Tier 3 suppliers. Most Tier 1 and Tier 2 suppliers are foreign companies that followed foreign auto assemblers, with which they maintain an intimate and lasting buyer-supplier relationship, to the Czech Republic (Pavlínek and Žížalová, p. 9).

The Czech auto industry is controlled mostly by foreign firms. Transnational corporations (TNCs) account for approximately 82 percent of employment, 92 percent of value added, and 95 percent of turnover in the Czech auto industry. As a consequence of foreign domination of the auto industry, much revenue is lost in the form of dividends returned to TNCs. Thus the Czech Republic exhibits low value capture. As two authorities (Pavlínek et al.) put it, value capture is the “[share] of created value that is retained by firms or subsidiaries that originally created it and that has not been transferred outside the host region of those firms or subsidiaries” (Pavlínek and Ženka, p. 2).

Meanwhile, domestic firms contribute a meager ten percent of the total profit, assets, and R&D expenditures generated by the auto industry. Because of the close buyer-supplier relationships characteristic of the auto industry, foreign auto assemblers exhibit a preference for foreign supplier companies versus domestic suppliers, with the exception of Škoda Auto. Foreign suppliers are generally larger and therefore can produce auto components and modules with economies of scale, whereas smaller domestic suppliers cannot. Foreign suppliers also possess higher amounts of capital and have access to more resources because of their correspondence with other branches or subsidiaries abroad. Foreign suppliers enjoy

a long history with foreign auto assemblers. This enduring tradition of buying, selling, and exchanging information has enabled them to more easily reach the higher-quality standards imposed by foreign auto assemblers. Foreign suppliers have also been able to deliver components on the “just-in-time” schedule preferred by foreign auto assemblers that domestic firms could not match due to their smaller workforces and lower production rates (Pavlínek and Žižalová, p. 11).

Foreign Direct Investment

Since the privatization of the Czech economy at the turn of the twenty-first century, the Czech Republic has become a popular destination for FDI in ECE. The Czech Republic boasts a proud heritage of high-quality manufacturing and industry in combination with a highly developed infrastructure. Additionally, the Czech Republic possesses a skilled workforce with relatively low labor costs. With membership in both the EU and NATO, as well as various government incentives for brownfield and greenfield investments, the Czech Republic offers a multitude of financial services to foreign enterprises seeking to invest and thus receives the highest amount of FDI in ECE (“Factsheet No. 1...”).

More than 170,000 firms in the Czech Republic to date have attracted FDI (“Why Invest...”). The auto industry has received more than €8 million of FDI since 2012, with a total of approximately €4,761 million invested in auto components alone, making the auto industry third in terms of the sectors with the highest amount of FDI (“Factsheet No. 2...”). Driven by foreign capital, the Czech auto industry has become the fifth largest auto producer in Europe and, next to Slovakia, produces the most cars per capita in the world (“Automotive Industry”).

Through the transformative power of FDI, the Czech Republic has integrated into the global market, although it has remained in the periphery of the market (Pavlínek, “Foreign Direct Investment...,” p. 210). Billions of euros worth of investments and reinvestments by TNCs in the Czech auto industry have swept hundreds of domestic and foreign-controlled Czech firms into the auto global production

network, mainly in Western Europe (Pavlínek, “Foreign Direct Investment...,” p. 210). Tax holidays, grants, and other investment incentives, as well as the strategic devaluation of the Czech koruna, all combined to drive the Czech Republic’s previously struggling auto industry to become the well-oiled car manufacturing powerhouse it is today (Pavlínek, “Foreign Direct Investment...,” pp. 211, 220).

Although the rate of FDI inflow has slowed in recent years, especially during the 2008 financial crisis, FDI continues to be a major driving force in the Czech economy. The decline may be caused by the repatriation of profits abroad, either back to the home country of TNCs or to new ventures in developing nations further east or west (Pavlínek, “Foreign Direct Investment...,” p. 245). Reinvestment of profits into Czech-based firms or plants rather than repatriation would enable product, process, and functional upgrading and expansion within the industry; promote connections within the local community; and, therefore, promote utilization of domestic over foreign resources and prolong their lifespan within the host country (Pavlínek and Ženka, pp. 6–7).

Despite the many benefits, the Czech Republic’s dependence on FDI has led to an industry controlled almost entirely by foreign firms (Pavlínek, “Foreign Direct Investment...,” p. 215). Due to the country’s dependence on foreign capital, TNCs can exert considerable economic, corporate, and political pressure to improve their bottom line. TNCs use their corporate power to prevent wage increases and even reduce current wages through threats of relocation further east where labor costs are generally cheaper. As one authority reports, such threats are not specific to the Central and Eastern Europe (CEE) region, as German “workers are threatened with relocations to CEE” and Romanian “workers are threatened with relocations to North Africa” (Pavlínek, “Foreign Direct Investment...,” p. 238). It is also not uncommon for auto suppliers to be driven to near bankruptcy to meet demands for low prices of components or face being cut out of the supply chain (Pavlínek and Ženka, p. 12).

Wages in the Czech Republic have been

steadily climbing, from ten percent of the cost of German labor in 1996 to 26 percent in 2012. An increase in wages consequently decreases wage competitiveness, which is a major attraction for FDI. In 2013, the Czech National Bank devalued the Czech koruna by a tenth of its value to counter the increase in wages (Pavlínek, "Foreign Direct Investment...", p. 240).

The power wielded by foreign firms even extends beyond the Czech auto industry. TNCs push for favorable state policies, and funds are often funneled into driving the profits of TNCs when they could be utilized to improve education, welfare, and other areas that would ameliorate the nation's position on the periphery of the global economy as a whole. TNCs also recruit skilled workers from domestic firms, decreasing domestic competitiveness (Pavlínek, "Foreign Direct Investment...", p. 244). This discourages functional upgrading in their supplier base to maintain their position of power. Finally, this creates a crowding out effect by exerting selective pressure on suppliers to upgrade equipment and protocols and lower prices to meet their standards and demands within a short time frame. Suppliers that are unable to compete are either removed from the supply chain or forced to close due to expenses accrued from upgrading and drastically lowering prices (Pavlínek and Ženka, p. 3).

Thus, FDI comes with its advantages and disadvantages (Pavlínek, "Foreign Direct Investment...", pp. 243–44). A balance must be struck between continuing to attract FDI and improving the overall position of the Czech Republic by investing in its own people through targeted government subsidies and investment incentives (Pavlínek, "Foreign Direct Investment...", p. 245). Among the investment incentives currently offered by the Czech government to TNCs interested in FDI are corporate tax relief for up to ten years, subsidies for job creation, employee training, and land acquisition as well as incentives for investments in disadvantaged regions in the Czech Republic ("Investment in the Czech Republic," p. 17). EU structural funds provide tax deductions for R&D-related and educational activities ("Investment in the Czech Republic,"

p. 37). In 2014, Škoda Auto benefited from government subsidies to foster entrepreneurial activity, cut energy costs during production, and construct employee training facilities. Škoda Auto also received benefits for investing in private schools, supporting student mobility across national borders, and involvement in various R&D projects ("Škoda Annual Report 2014," p. 101). Despite these subsidies, other efforts, especially within the realm of R&D, would be welcome and beneficial.

Research and Development

In the Czech Republic, foreign domination of the auto industry and the consequent organization of R&D are severe limiting factors to furthering growth of the auto industry through increased production and sales (Pavlínek, "The Internalization...", p. 281). Despite the international distribution of R&D through the opening of subsidiary R&D centers in the periphery, R&D remains largely concentrated in the core. The core countries maintain the highest percentages of total R&D expenditures and personnel employed in R&D centers in the EU. In 2007, Germany led with 67.1 percent of total R&D expenditures and 53.3 percent of total employees. Meanwhile ECE accounted for 1.6 percent of R&D expenditures and 4.2 percent of employees, respectively (Pavlínek, "The Internalization...", p. 289).

Even though the Czech Republic produces more vehicles per capita and employs more auto personnel per capita than Germany, the country still lags behind in R&D (Pavlínek, "The Internalization...", p. 289). Basic research accounts for less than 1 percent of R&D in the Czech auto industry, with 2.3 percent of that figure dedicated to applied research and 97.1 percent dedicated to development (Pavlínek, "The Internalization...", p. 302). The result is that strategic research is centralized in the home countries of TNCs. Research involves the design of high-value-added products and thus generates higher revenue than development alone. In the 1990s, TNCs handled 75 percent of their R&D in their home countries. To this day, the majority of R&D is still conducted in the core (Pavlínek, "The Internalization...", p. 282).

R&D in the Czech Republic is mostly

limited to development: that is, the adaptation of foreign designs to suit the needs and demands of Czech consumers. These designs must also be adapted to meet the standards and regulations of the host country. Therefore, development is confined to individual plants. The need for establishing developmental centers near assembly plants in foreign markets has thus driven the decentralization and internationalization of R&D (Pavlínek, "The Internalization...", p. 282).

In comparison to other ECE countries, the Czech Republic spends more on R&D than the rest of the region combined and constitutes 70.4 percent of total R&D expenditures in ECE. The Czech Republic employs 50 percent of total R&D personnel in the region. Additionally, the Czech Republic allots 75 percent of its R&D to auto assembly instead of components. By way of contrast, Slovakia devotes 100 percent of R&D to components and Poland devotes 92 percent. High levels of R&D concentrated in low-value-added, standardized components rather than high-value-added automobiles echo the peripheral status of these countries in the global auto production network (Pavlínek, "The Internalization...", p. 290).

Škoda Auto in Mladá Boleslav expends the largest amount of R&D in the Czech Republic and is responsible for over 75 percent of total R&D expenditures (Pavlínek et al., 2010, p. 484). Škoda Auto establishes and organizes its own international production network and supplier base as well as conducting its own R&D. Nonetheless, much revenue is lost as dividends to foreign countries, thus limiting the contributions of lower-tier firms to the economic development of the host country (Pavlínek, "The Internalization...", p. 294).

Škoda Auto was purchased from the Czech government by Volkswagen Group (VW) in 1991 with several conditions that were essential to cementing Škoda's current status as a top-tier auto firm. Firstly, Škoda maintained its original brand. Secondly, VW incorporated the firm into its existing supply chain as an assembler of cheap passenger cars (Pavlínek et al., 2010, p. 485). VW also had to support and continue the existing Škoda model Favorit (Pavlínek, "The Internalization...", p. 294). Thus, Škoda's R&D remained in the Czech Republic rather than

relocating to VW headquarters in Germany. As Škoda cars have grown in popularity both domestically and abroad, the demand for new models has increased (Pavlínek et al., 2010, p. 486). Current R&D efforts focus on designing and testing new models as well as assimilating VW technologies into Škoda models (Pavlínek, "The Internalization...", p. 295).

Overall, Czech auto firms vary little from those of core countries in production, technology, and structure. However, the lack of "strategic, knowledge-intensive" functions in the Czech auto industry, such as design, marketing, and R&D, prevents domestic firms from improving their position in the global value chain (Pavlínek et al., 2010, p. 484). R&D is also essential for functional upgrading, which allows firms to obtain higher-value-added functions that by definition propagate higher revenues and elevate firms to higher positions in the value chain. Functional upgrading enables upward mobility in the value chain, not only at the level of the individual firm but also collectively for the level of entire countries (Pavlínek, "The Internalization...", p. 281).

Even though auto component suppliers constitute 61 percent of total R&D in the global auto industry, functional upgrading in Czech-based firms, a majority of which are auto suppliers, has proved limited (Pavlínek, "The Internalization...", p. 283). Lead firms, in this case TNCs, possess a vast amount of power and control over their smaller, dependent auto suppliers. TNCs control which suppliers they include in their production nexus by setting the standards for product quality, manufacturing operations, and delivery schedules (Pavlínek, "The Internalization...", p. 285). TNCs use their power to discourage functional upgrading and therefore limit upward movement of auto suppliers along the supply chain, which allows suppliers to compete with TNCs in areas of higher value added and greater value capture (Pavlínek, "The Internalization...", p. 285).

An example of the power TNCs hold over their subsidiaries and supply network is the recent "dieselgate" scandal that has caused shares in VW to plunge by 30 percent (Pollard). Due to the single shareholder structure of Škoda Auto, certain committee and supervisory powers have been shifted further up the chain

of command to VW for the sake of speed and efficiency. This is in direct conflict with the recommendations of the Code of Corporate Governance of OECD-based Companies, which the company adopted in 2007 (“Škoda Annual Report 2014,” p. 12).

VW’s power over Škoda Auto may explain the presence of a “defeat device,” or software that has been installed in the engines of 1.2 million Škoda cars; however, whether the device was installed without Škoda’s prior knowledge is unclear (Pollard). By monitoring internal conditions within a car, the software has been able to detect when a car was undergoing official testing and thus decrease the performance of a car appropriately to decrease the amount of nitrogen oxides emitted (Chappell). According to a test conducted by the British Broadcasting Company, an implicated car operating at normal performance emitted more than twice the amount of nitrogen oxide emissions permitted, 435 mg/km versus the 180 mg/km limit under current EU regulations (Westcott). VW has confessed to inconsistencies in emissions testing of carbon dioxide produced by their Škoda models (Chappell).

Moreover, tertiary education plays an important role in expanding R&D as well as bolstering economic growth in developed countries such as the Czech Republic. Nine universities in the Czech Republic provide technical studies to their students, a total of 94,579 students in the 2013–2014 academic year. Forty percent of 20,573 graduate students received a Ph.D. degree (“Investment Opportunities...,” p. 10). Five of these universities partner closely with major auto companies, such as Škoda Auto, Audi, and Porsche Engineering (“Investment Opportunities...,” p. 8).

As a consequence of this emphasis on education, the Czech Republic boasts a high worker education-to-pay ratio. The cost of labor is 45 percent that of the EU average, and Czech workers are paid 30 percent of the wages of German workers (“Investment Opportunities...,” p. 11). However, the average wage is expected to increase as the country’s popularity as a source of cheap skilled labor increases (“Czech Republic...,” p. 8).

Overall, 50 percent of Czech R&D workers

possess either a master’s degree or a doctorate; however, educated researchers are spread disproportionately throughout the auto supply chain. Researchers comprised 75 percent of the R&D workforce of Czech auto assemblers, whereas researchers comprised a mere 22 percent of the auto supplier R&D workforce. The lack of highly educated workers among auto suppliers illustrates a focus on low-level development, adaptation, testing, and technical support rather than design, marketing, logistics, and other high-value-added functions (Pavlínek, “The Internalization...,” p. 302). More educated workers would increase the “absorptive capacity” of firms and facilitate functional upgrading; thus, providing and incentivizing higher worker education should be viewed as a priority (Pavlínek, “The Internalization...,” p. 303).

Spillovers

The close correspondence between foreign TNCs and their Czech subsidiaries has led to a spillover phenomenon in the Czech auto supply chain. Because TNCs cannot fully insulate themselves within the market, competitive advantage, such as superior technology, production management and organization, and marketing strategies, spillover to other local companies, namely the domestic auto suppliers that supply the TNCs (Pavlínek and Žížalová, p. 2).

Spillovers can occur horizontally within a given sector and vertically across multiple sectors. Horizontal spillovers occur when the entry of a foreign enterprise into a particular market causes an increase in competition, spurring increased production standards and efficiency to maintain market positions. This leads to an overall increase in the quality of production and management within the sector. Additionally, domestic firms may learn from the foreign enterprise and adopt production, management, and marketing techniques unique to the foreign enterprise, thereby increasing their ability to compete within the market. Thus, horizontal spillovers can occur within a single sector (Sančík, p. 2).

However, domestic firms that are unable to compete can experience a crowding-out effect in which the foreign enterprise either

runs the domestic firms out of business or forces domestic firms to switch into a less competitive market. Firms may be unable to compete due to a number of factors. A lack of capital may prevent firms from upgrading to the level of the foreign enterprise. Low absorptive capacity may prevent firms from adopting or emulating the competitive advantages specific to the foreign enterprise. Size limitations may result in an inability to produce with economies of scale and contend with the production output and cheaper prices of the foreign enterprise. Domestic firms also may have trouble competing with foreign enterprises for buyers if foreign enterprises maintain strong, pre-established buyer-supplier relationships (Pavlínek and Žížalová, pp. 5, 12).

Vertical spillovers occur when other companies in direct contact with the foreign enterprise are affected positively by and/or adopt the competitive advantages specific to the foreign enterprise. Examples of such companies are suppliers and companies that provide services to the foreign enterprise as well as companies that are supplied by the foreign enterprise. In this manner, in contrast to horizontal spillovers, vertical spillovers occur across multiple sectors within an industry (Sančík, p. 2).

The Czech auto industry has experienced both horizontal and vertical spillovers and crowding-out effects with the entry of TNCs, such as VW, which acquired Škoda Auto company in 1991 (Návělek, p. 24); Hyundai Motor Company; and the Toyota Peugeot Citroën Automobile Czech joint venture ("Automotive Industry"). The rapid privatization of the industry after the fall of the Soviet Union, and the FDI boom that resulted, caused a significant portion of domestic auto suppliers to close down due to an inability to compete with foreign firms or to switch into other industries in order to survive (Pavlínek and Žížalová, p. 11).

Where foreign suppliers do not outcompete domestic suppliers, foreign suppliers often seek either to acquire or to form joint ventures with domestic suppliers (Pavlínek and Žížalová, p. 11). In the case of Škoda, the Czech government temporarily

protected its domestic suppliers from foreign competition by granting them a grace period. During this grace period, domestic suppliers continued to produce components for Škoda but eventually had to work their way up to meeting the higher-quality standards of VW. These efforts were undermined by the failure to promote strong linkages between foreign and domestic firms as well as linkages between universities and other research institutions, which limited the transfer of foreign technology and knowledge to domestic firms and thus limited positive horizontal spillovers (Pavlínek and Žížalová, p. 12).

Conclusion

Although the Czech Republic boasts a strong heritage of auto manufacturing, on a global scale the nation continues to operate on the fringes of the core auto industry. Dependence on foreign capital has resulted in excessive control exercised by large TNCs not only over the economy but also over the political sphere. This foreign domination of the auto industry keeps the nation's position on the periphery (Pavlínek and Ženka, p. 2).

To improve its peripheral position in the global automotive production network, the Czech Republic must invest further in high-value-added research and upper-level education. This can be done by offering government incentives to companies willing to invest in worker education and R&D and to enter into contracts with other companies or entities that heavily involve R&D. Future negotiations with TNCs for brownfield and greenfield investments should include clauses to either begin or maintain high-value-added research within the Czech Republic instead of transferring research to their headquarters in their home country. Additionally, the Czech Republic must support domestic firms to improve competitive conditions in the industry, all while continuing to attract FDI to drive the economy. Now that the country's industries have successfully been privatized and developed, the Czech Republic is in a better position to negotiate more beneficial terms in FDI agreements.

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