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**Relationships Between Multinationals and Indigenous
Suppliers in the Automotive Sector of Emerging Countries
The Czech Case**

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Abstract

A growing number of studies using panel econometric techniques have detected the existence of positive backward spillovers emerging through the contact of multinational companies with local suppliers linked to the foreign-owned firms in the production chain. Yet, the MIT Industrial Performance Center (see for example Sturgeon's and Gereffi's research) emphasizes the soaring role played by global sourcing in developing countries thus reducing the need to source from local suppliers. The multinational companies tend to rely increasingly on large Western suppliers present in the host country or import the intermediate products. This orientation of the production structure challenges the supplier-oriented industrial upgrading paths that Asian economies have pursued in the past and that several South-American and transition countries are privileging for the time being. The reduction of the local implication of the multinational corporations may limit spillovers from the foreign-owned firms to indigenous suppliers. This article aims to analyze the relationships of multinationals with the automotive components suppliers in the Czech automotive industry.

1. Introduction

The Czech Republic has progressively emerged as one of the leading passenger car industries of the former communist world. Nowadays, the passenger car sector plays the prevailing role in the macroeconomic performances of the Czech manufacturing sector as well as in its new international specialization. The Czech success has been triggered by the massive investments by original equipment multinationals and automotive components multinationals which have taken over the motor vehicle producers and the biggest and least inefficient Czech automotive component producers.

The Czech car industry restructuring offers a particularly interesting case study regarding the spillovers of foreign-owned firms on the indigenous automotive component suppliers. The automotive sector has idiosyncratic characteristics that enhance the multinationals' potential catalyst impact: the weight and size of thousands of sophisticated components and materials oblige the carmakers to source, at least partially, some inputs locally. At the same time, the Czech Republic has a long-standing car-building tradition which should facilitate local sourcing.

Yet a new production paradigm emerged after the crisis in the 1970s and led to a reconfiguration of the division of labor between carmakers and component suppliers. Carmakers have delegated a growing share of activities to a core group of highly competent first tier suppliers who have progressively become big suppliers. With this paradigmatic

change, the automotive system, though always hierarchized, has transformed into a highly hierarchical structure, with on the one hand, a limited number of systemic suppliers actively cooperating with the carmakers and, on the other hand, suppliers having only very casual relationships with them.

The aim of this paper is to analyze the place of the indigenous component suppliers in the automotive system in the Czech Republic by defining the relationships linking the indigenous component suppliers with the multinationals and by comparing the characteristics of the foreign-owned suppliers and indigenous suppliers. Did the foreign-owned suppliers eject the indigenous suppliers? Did the foreign-owned firms provide some assistance to the indigenous suppliers? Did the indigenous firms benefit from the technological, organizational and managerial practices and other tacit and codified know-how that multinationals bring with them?

This article is divided into five sections. Section two provides the analytical background of the literature of spillovers of multinationals on domestic firms with special attention paid to the automotive industry. In section three we focus on the place of the motor vehicle industry in the Czech manufacturing sector and on the sourcing practices of the carmakers in the country. Section four aims at analyzing the indigenous firm's position in the Czech automotive labor division. Section five suggests some political orientation in order to reduce the fragility of the indigenous firms in the automotive sector.

2. Analytical background

2.1. Spillovers of multinationals on domestic firms

Countries that base their development on FDI (foreign direct investment) may reap lasting benefits if the technological, organizational and managerial practices and other tacit and codified know-how that multinationals bring with them spill over to indigenous firms. Economic literature has identified two major channels of spillovers: horizontal spillovers to local competitors and vertical spillovers to indigenous suppliers and customers linked to foreign-owned firms in the production chain. Impacts on the host industrial structure may be positive, negative or severely limited. The impact is weak when affiliates of multinationals are located in an enclave and work isolated from the local firms. Multinationals have positive

crowding-in effects when some elements of their assets leak out and stimulate the efficiency of indigenous firms. The crowding-out effects may take the form of anti-competitive impacts such as the displacement of indigenous firms, the cornering of scarce resources, the channeling of skilled labor from indigenous firms and the squeezing out of domestic-supply networks as new foreign entrants bring with them integrated upstream and downstream supply chains.

Since multinationals want to prevent information and technology from leaking over to potential local competitors, FDI is more likely to be vertical than horizontal in nature (Javorcik, 2004). Econometric studies tend to confirm this theoretic hypothesis: empirical approaches fail to find evidence of positive horizontal spillovers in developing countries (Görg and Greenway, 2003) and transition countries (Halpern and Muraközy, 2005; Görg *et al.*, 2006; Vahter and Masso, 2006). In several cases, multinationals attract demand away from indigenous firms, force them to reduce production and depress the scale economies.

Multinationals generate vertical spillovers if they increase the productivity of local suppliers and customers linked to them in the production chain. Vertical knowledge spillovers result from direct knowledge transfer from foreign-owned firms to local suppliers (when they provide technical assistance to their suppliers), higher requirements regarding product quality (local firms have to upgrade their management and productivity), movement of labor and positive competition effects (Rugraff *et al.*, 2008b, Table 2). Vertical pecuniary spillovers - also called 'vertical linkages'- result from an increased demand for intermediate products addressed to local firms which raise their scale economies and deliver cheaper products to local buyers. Markusen and Venable (1999) propose a model in which the activity of multinationals generates derived demand for intermediate goods leading to the extension of the intermediate goods sector in the host country. In another model, Rodriguez-Clare (1996) emphasizes the production by multinationals of complex goods that require the production by domestic firms of specialized intermediate inputs.

A growing number of studies using panel econometric techniques have detected the existence of positive backward spillovers which emerge through the contact of multinationals with local suppliers in the upstream industries. Javorcik (2004) for example finds that a rise of ten per cent in foreign presence in downstream industries in Lithuania over the period 1996-2000 is associated with a 0.38 per cent increase in output in each domestic firm in the upstream sector. Kugler (2001) and Blalock and Gertler (2003) also detect positive backward spillovers respectively in Colombia (1974-98) and Indonesia (1988-96). Alfaro and

Rodriguez-Clare (2004) suggest that the multinationals linkage potential in Brazil, Chile and Venezuela is higher than the catalyst effect of locally-owned companies.

For vertical spillovers the evidence is also mixed. Ayyagari and Kosova (2006) for example fail to find forward or backward spillovers in the Czech manufacturing industry even if the country, unlike most of the developing countries, has a long-standing industrial base. In certain countries, multinationals even have negative backward spillovers when they crowd out domestic firms which were used to purchasing more abundantly from local firms than multinationals do: the more foreign-owned firms develop, compared to locally-owned firms, the more the demand for inputs addressed to indigenous suppliers decreases¹.

2.2. Spillovers in the modern automotive industry

The potential of spillovers is particularly high in the automotive industry: this explains that the sector offers a specific interest in the study of the impact of multinationals on indigenous firms.

The automotive sector still occupies a leading role in the manufacturing production of major developed countries like the US, Germany, France, Italy and Japan. Car companies originating in these countries have become major players in the world economy² and have in the last 20 years accelerated their international development by localizing production facilities in the developing and transition countries. The catalyst effect in developing and transition countries is potentially important due to the fact that a motor vehicle is a sophisticated product that is made of thousands of parts and components: a small car (entry level segment) is made up of 15 000 parts and a luxury car necessitates between 25 000 and 30 000 parts. Carmakers do not possess the necessary capabilities to internalize all the operations and may *de facto* generate spillovers by buying products from suppliers. Moreover, the weight and size of components and materials oblige the carmakers to source, at least partially, at the local level. The car production may be organized on a national or regional basis (Europe, North America, etc.), but the complexity of the product as well as the regional (or even national) differences

¹ Vertical spillovers depend on the strategy of multinationals, the sector of investment and the local environment. Several studies suggest that the impact is positive for indigenous firms when the technology gap between the country of origin of FDI and the host country is not too wide and when indigenous firms are able to absorb new technologies. Domestic-market oriented subsidiaries, affiliates with a large degree of autonomy and subsidiaries which are relatively distant from their headquarters often buy more abundantly from local suppliers (UNCTAD, 2001).

² In 2005, ten out of the top 50 multinational companies ranked by foreign assets belong to the automotive sector (UNCTAD, 2007).

in the consumer tastes and the transportation costs exclude the possibility of a world-wide organization of the production. The necessity to source at least some inputs locally gives the opportunity to local suppliers in developing and transition countries in which the carmakers have created subsidiaries to become component suppliers. Spillovers may result from the necessity to buy some large or weighty parts from suppliers located in the near proximity of the production affiliate of a multinational.

In low-technology, labor-intensive industries such as footwear, clothing or furniture, the necessity to coordinate the 'production plans' of a multinational and of the suppliers is limited: the different parts of the product are relatively simple and the assembly process is not complex. In the automotive industry the quality of the final product does not only depend on the quality of the different parts and components but also on the carmaker's capacity to manage the coordination of its production process with that of its suppliers. Carmakers are therefore stimulated to exchange information, management practices, know-how with their suppliers. They may even provide their suppliers with assistance programs aiming to increase the quality of the coordination and the quality of production.

The new production paradigm which emerged after the crisis in the 1970s and which redefined the division of labor between carmakers and components suppliers has offered new opportunities to the automotive components suppliers and to the diffusion of spillovers in host economies. At the beginning of the 1980s the Western carmakers realized that they were less competitive than the Japanese car manufacturers and decided to engage in a deep reorganization of their model of production³. Western carmakers who were more vertically integrated than their Japanese counterparts engaged in a 'deverticalization' process and developed more cooperative and structured relationships with component suppliers (Sturgeon and Lester, 2003). This evolution led to a progressive reduction in employment of the carmakers and an increase in the component suppliers' production and employment⁴. At the same time, the adoption of the lean manufacturing (Womack *et al.*, 1990) led to some clustering of activities in the automotive sector. The just-in-time delivery that car

³ The Industrial Performance Center of the Massachusetts Institute of technology (<http://web.mit.edu/ipc>) and the GERPISA international network -Permanent group for the study of the automotive industry and its employees- (www.gerpisa.univ-evry.fr) have been the major observers of the strategic, organizational and technological changes in the automotive industry over the last 20 years.

⁴ In Germany for example, the second car producer in the world, the employment of car manufacturers decreased from 400 000 units in 1980 to 392 000 units in 2006 whereas over the same period employment in the automotive component industry increased by 111 000 units from 210 000 to 321 000 (VDA, 1999, 2007).

manufacturers require is one reason many suppliers have been adopting right-next-door strategies when deciding where to locate their manufacturing plants. The economics of proximity explains how proximity improves the quality of inter-firm coordination (Gilly and Torre, 2000). The consequences for the economics of spillover in developing and transition countries is obvious: Western or Asian carmakers who invest in less developed countries source a higher share of their inputs in the host country than they used to do some decades ago.

Yet the growth of outsourcing has led to a deep transformation in the supply system. The automotive system has always been organized hierarchically. But in recent years it has transformed to a highly hierarchical structure where each carmaker relies on a core group of highly competent first tier suppliers to whom new responsibilities on research, design, manufacturing and assembly have been delegated (Gereffi, 1999; Lung, 2003). This new division of labor between carmakers and components suppliers has created new business opportunities and generated a surge in merger and acquisition which has dramatically reduced the number of suppliers (Volpato, 2003:25). This has led to the rise of ‘mega-suppliers’ (Sturgeon and Lester, 2001:16) able to co-locate and co-produce with their customers on a global scale and to assume progressively the prime responsibility for selecting lower tier suppliers and coordinating their activity. The ‘Original equipment manufacturers-automotive components suppliers’ relationship has progressively split into two complementary behavioral models: the ‘Voice’ behavioral model and the ‘Exit’ model (Hirschman, 1970).

The ‘Voice’ behavioral model⁵ characterizes the relationships between carmakers and their first tier suppliers. An overwhelming part of the carmakers and the first tier suppliers are Western and Japanese mega-firms. The interaction between the carmakers and the suppliers aims at consolidating their partnership on a world scale. They exchange competencies and information and organize a common development of parts of the motor vehicle. The extension of the suppliers’ area of responsibility along the supply chain reinforces the existence of collaborative relations. The drive toward modularity⁶ –by which a supplier does not only produce parts but is responsible for the production of a range of parts forming a module of the

⁵ The ‘Voice’ behavioral model has characterized the Japanese carmakers’ behavior.

⁶ 75% of a vehicle’s value is made up of 12 modules which can be regrouped in four systems (Sturgeon and Lester, 2001:21):

- Interior system: seat, interior trim and cockpit modules, etc.;
- Electronic and electromechanical system: ignition, chassis electronics, interior electronics;
- Body system: skin, finish (paint, etc.), trim;
- Chassis system: drive train, rolling chassis, front and rear end modules.

vehicle– reinforces the intensity of the collaboration between a carmaker and a supplier (Frigant and Lung, 2002). Close relationships even generate co-locations, with the localization of the supplier’s productive facility inside or in the same site of the assembly plant.

The positive effects of industrial cooperation between firms is largely documented in industrial economics (Richardson, 1972; Aoki, 1988). Aoki (1988) for example argues that cooperative relations give rise to a relational quasi-rent, which is the inter-firm form of the organizational quasi-rent created in the Japanese firm. The quasi-rent is a result of the informational efficiency of the operational coordination between a prime manufacturer and its subcontractors. The quasi-rent is partially due to the employee’s contextual skills. The informational efficiency is unique and creates relation-specific economic returns. In the context of a long-term relation, partners are encouraged to engage in relation-specific investments in expertise, equipment and research and development. The relationship is quasi-permanent; the prime manufacturer would lose the quasi-rent if he decided to internalize the subcontractor’s activity, whereas in a pure market-operation the subcontractor would not invest in relation-specific activities.

The ‘Exit’ behavioral model⁷ is based upon the interchangeability of suppliers depending on their capacity to satisfy needs expressed in any single case by carmakers and first tier suppliers (Volpato, 2003:21). Carmakers and the mega-suppliers privilege arm’s-length relationships with lower tier suppliers in order to cut costs and benefit from competitive switching. First tier suppliers, as in the case of carmakers, focused on their ‘core competencies’ (Prahalad and Hamel, 1990) and abandoned the less interesting activities to lower tier suppliers. Small-size and medium-size lower tier components suppliers have taken over high volume production of simple components which requires low labor costs and a high flexibility. Indigenous firms are typically specialized in the production of simple automotive components in developing countries (Salerno *et al.*, 1998; Barnes and Kaplinsky, 2000) and in transition countries (Pavlinek, 2003, 2005). In the ‘Exit’ model, information and technology exchanges between carmakers/first tier suppliers and the lower tier suppliers are poor and the former can save the costs of explicit assistance. The buyers want to keep fluid relationships and easily connect to and disconnect from the suppliers.

⁷ Western managerial styles in the automotive industry were inspired by the ‘Exit’ model.

Although the spillover potential in the automotive industry is higher than it used to be in the past, the new organization of the production may jeopardize the firms of developing and transition countries and consequently limit vertical spillovers in the host country. Indeed, indigenous suppliers in developing and transition countries are often unable to attain the technical sophistication necessary to design and produce complex parts and modules and to coordinate activities on a global scale. They may be reduced to focusing on low-technology activities and on forming the second tier or third tier suppliers who do not benefit from the technological, organizational and managerial practices of the multinationals.

3. Motor vehicle industry and sourcing practices in the Czech Republic

3.1. The leadership of the Czech motor vehicle industry in Central Europe

Automotive production has dramatically increased in the Central European countries since the mid-1990s. Automotive activity has become decisive in the performance of the former planned economies: in 2005, it represented 16% of the output, 10% of the value added and 8% of the employees in the manufacturing sector of the Visegrad group -Czech Republic, Hungary, Poland and Slovakia- (Tirpak, 2006).

The emergence of a competitive automotive sector in Central Europe is a result of massive FDI (Radosevic and Rozeik, 2004). This sector has been the leading manufacturing sector of investment by multinational companies. In 2006, 34 foreign-owned manufacturers of motor vehicles and of accessories for motor vehicles belong to the top 500 companies in Central and Eastern Europe (Table 1). Half of them are carmakers (Original equipment manufacturers) and the other half manufacture accessories for the motor vehicle. The 17 foreign-owned subsidiaries of multinationals produced in 2006, 11% of the motor vehicles of the EU-27 (OICA, 2007) and the 34 firms together employed approximately 130 000 people and generated a revenue of €42,6 billion in Central Europe.

Table 1. Carmakers and automotive suppliers in Central Europe, 2006

Foreign-owned firm	Country	Sector	Revenue € billion	Number of employees	Motor vehicle production
Skoda (VW Group)	Czech Republic	OEM	7,375	23 304	556 375

Volkswagen	Slovakia	OEM	5,248	8650	210 354
Audi Hungaria	Hungary	OEM	4,893	5204	23 675
Fiat Auto Poland	Poland	OEM	2,374	3646	308 294
Volkswagen Poznan	Poland	OEM	2,227	5584	167 423**
Toyota-Peugeot Citroën Auto	Czech Republic	OEM	1,764	3278	193 207
Magyar Suzuki	Hungary	OEM	1,578	3898	163 771
Dacia Group (Renault)	Romania	OEM	1,576	11 423	188 461
Barum	Czech Republic	Supplier	1,536	4448	/
Continental Jabil Circuit	Hungary	Supplier	1,237	4445	/
Volkswagen Motor	Poland	OEM	1,104	1087	167 423**
General Motors	Poland	OEM	1,087 *	90*	186 413
Revoz (Renault)	Slovenia	OEM	1,008	2577	153 127
Delphi	Poland	Supplier	0,828	6898	/
Bosch Diesel	Czech Republic	Supplier	0,803	6185	/
Johnson Controls	Czech Republic	Supplier	0,666	3500*	/
Michelin	Poland	Supplier	0,647	3100*	/
TRW Polska	Poland	Supplier	0,560	2891	/
Magneti Marelli	Poland	Supplier	0,477	1473	/
DaimlerChrysler	Poland	OEM	0,456	205	/
Volvo Polska	Poland	OEM	0,445	2495	720
Visteon-Autopal	Czech Republic	Supplier	0,425	4318	/
GM Powertrain	Hungary	Supplier	0,422	683	/
Continental	Czech Republic	Supplier	0,417	361*	/
Toyota Motor	Poland	OEM	0,410	99	/
Siemens VDO	Czech Republic	Supplier	0,406	2655	/
Renault Polska	Poland	OEM	0,402	175	/
Faurecia	Poland	Supplier	0,397	1793	/

Isuzu	Poland	OEM	0,386	749	/
Valeo	Czech Republic	Supplier	0,371	112*	/
Lear	Hungary	Supplier	0,370	4817	/
Continental Teves	Czech Republic	Supplier	0,357*	1312*	/
Valeo	Poland	Supplier	0,356	2635	/
Peugeot	Slovakia	OEM	/	3300	52 037
Total			42,608	128 399	2 036 434

Note: * in 2005; ** total production of Volkswagen in Poland.

Sources: Compiled by the author from Deloitte, 12/9/2007, Top 500 companies in Central and Eastern Europe, and from: OICA, 2007: production statistics, www.oica.net.

The Czech Republic has progressively emerged as the leading country of motor vehicle production in Central and Eastern Europe. In 2006 of all the new members of the EU, the Czech Republic produced 36.2% of the motor vehicles. The automotive industry contributes massively to the Czech economic performances: it makes up 19.3% in receipts from sales and 10.3% of the employment in the manufacturing sector and represents 17.9% of the Czech exports (MIT, 2007). The recovery of the motor vehicle industry has been, as in the other former communist countries, FDI-driven (Pavlinek, 2002): In 2006, the total stock of FDI in the motor vehicle industry stood at €5,6 billion and at 24.2% of the FDI in the Czech manufacturing sector (Ceska Narodni Banka, 2007).

Volkswagen's investment in Skoda in 1991 triggered the transformation process of the Czech motor vehicle industry⁸. The Greenfield investment in the mid-2000s of *Toyota-Peugeot Citroën Automobile*⁹ has further consolidated the Czech automotive industry. *Hyundai* will become the third big carmaker at the end of the decade: the Korean firm has planned to invest €1 billion in Nosovice in order to produce around 200 000 cars a year as from and after March 2009. The foreign investors have invested more modestly in the commercial vehicle industry. Yet the sector is foreign-dominated: *Skoda Auto* (light trucks),

⁸ Volkswagen invested in Skoda in April 1991 by creating a joint venture with the Czech state which held initially 61% of Skoda's capital. The Czech government agreed to reduce its share progressively and in 1999-2000 Skoda was 100%-owned by the Volkswagen Group.

⁹ A joint venture agreement between PSA Peugeot Citroën and Toyota was signed in 2002 which led to the construction of a common plant in Kolin-Ovcary (production of Peugeot 107, Citroën C1 and Toyota Aygo). The production started in February 2005.

Tatra and *Avia* (heavy trucks), and *Karosa-Iveco* (busses), the four main foreign-owned companies, represent over 90% of the Czech commercial vehicle production¹⁰.

Table 2 highlights the success of the Czech automotive industry. The value added has soared and the number of employees has sharply increased. The growing export-orientation of the vehicle industry clearly demonstrates that the Czech Republic has transformed into an export base of vehicles and accessories. *Skoda* has become the largest Czech exporter with 7.7% in total exports in 2006 (MIT, 2007:298). Beside its specialization in the car production, the country has developed a new comparative advantage in the manufacture of accessories for motor vehicles. The sector has created 50 000 new jobs over the last 12 years (-9% for the carmakers) and the net balance has increased by 250 % between 2000 and 2006. In 2006, almost two-thirds of the automotive components were exported (MIT, 2007:298). The rise of the value added has also been higher in the automotive component sector than in the car production sector.

Table 2. Production indicators of the Czech motor vehicle industry

	Manufacture of motor vehicles and engines NACE 34.1	Manufacture of auto-parts NACE 34.3	Total NACE 34
Employees			
1994	34 548	23 099	61 180
2000	31 417	44 751	78 676
2006	31 227	73 857	110 478
Value added (1994=100; current prices)			
1994	100	100	100
2000	353	535	415
2006	647	1300	890
Net balance (current prices, CZK million)			
1995	-80	1017	1411
2000	55 664	17 829	77 556
2006	108 478	63 047	175 163

Note: NACE 34 is composed of NACE 34.1, NACE 34.2 (manufacture of bodies for motor vehicles, trailers and semi-trailers) and NACE 34.3; CZK: Czech Koruna.

Source: MIT, 2001, 2007.

3.2 Sourcing practices of the passenger carmakers in the Czech Republic

¹⁰ The commercial vehicle sector is composed of ten manufacturers (the four main foreign-owned firms and *Magma Alficar*, *Ekobus*, *SOR Libchavy*, *Schwartzmüller*, *Panav*, *Metaco*) which produced 8 500 trucks and buses in 2006 and 2 500 trailers and semi-trailers (OICA, 2007). The commercial vehicle industry employs a rough 6 000 people (excluding *Skoda Auto*).

Western component suppliers were pressured by *Volkswagen* to follow them in Central Europe and especially in the Czech Republic (Bohata, 2000; Pavlinek, 2003). The emergence of a competitive automotive components industry results from the investments in the Czech Republic of global players like *Bosch*, *Johnson Controls*, *Visteon*, *Valeo*, *Siemens*, *Continental* (see Table 1), which organized their settlement in order to supply the *Skoda* plants¹¹ and to use the country as an export-platform of components to Central Europe and the rest of Europe. Being the first to invest in the former communist world after the fall of the Berlin wall, gave *Volkswagen* a ‘first mover advantage’ and the Czech automotive industry benefited from this early impulse. This advantage has been reinforced by the pre-existence of a Czechoslovakian automotive tradition (Courtaux-Kotbi, 2005; Fava, 2005), the government industrial priorities put on the automotive sector and the shift in the policy towards FDI in 1997-1998 leading to open the door widely to foreign capital in order to privilege an FDI-managed transformation process.

The massive presence in the Czech Republic of foreign-owned automotive component suppliers (see Table 1 and 3) explains that the local sourcing ratio of the carmakers is high: in 2006, *Skoda auto* bought 62.6% of its inputs in the Czech Republic (*Skoda Auto annual Report, 2006:31*) and *Toyota-Peugeot Citroën Automobile* a rough 80% (*TPCA annual report, 2006*). Figure 1 gives an overview of the sourcing practices of a carmaker, with the prime example of *Skoda* in the Czech Republic.

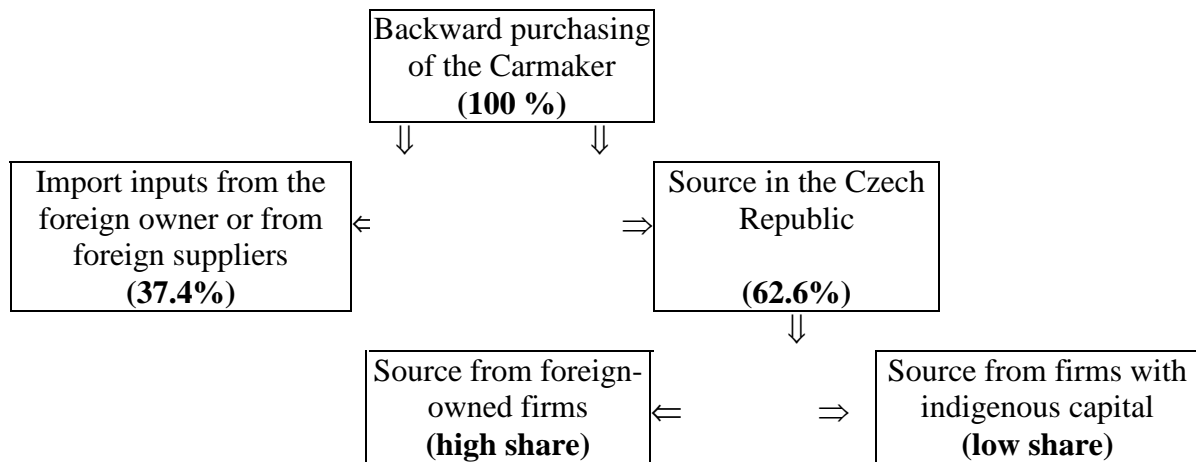
International comparisons of local content in the automotive industry present several limitations. Local content requirements artificially (and sometimes temporarily) increase the local sourcing ratio, whereas the ‘deverticalization’ degree of carmakers influence their outsourcing level and the amount of inputs bought from suppliers¹². Yet the local sourcing ratio in the Czech Republic stands indisputably among the highest of the developing and the transition economies. A comparison with Hungary which presents many common features with the Czech Republic (number of inhabitants, FDI-led transformation process, priority given to the automotive sector, etc.) is enlightening: in Hungary the local content of the main

¹¹ *Skoda* possesses three plants, the main plant being in Mlada Boleslav (production of the *Octavia* and *Fabia* models), and the smaller plants in Vrchlabi (*Octavia*) and Kvasiny (*Skoda Superb*).

¹² Inter-sectoral comparisons make no sense: the idiosyncratic characteristics of the automotive industry explain that carmakers source more locally when they invest in developing countries and transition countries than multinationals of other industries used to do on average (for examples of the local content in other industries, see Battat *et al.*, 1996; UNCTAD, 2001:134-5; Rugraff *et al.*, 2008a).

motor vehicle producers –*Toyota, Opel* (engines) and *Audi* (engines)- is much lower than in the Czech Republic (Havas, 2004:6, 9, 11).

Figure 1. Sourcing practices of Volkswagen-Skoda, in 2006



Note: % of Skoda's production-related purchasing total (€3,839 billion in 2006).

Source: Skoda Auto annual Report, 2006:31.

We do not possess direct information about *Skoda's* and *Toyota-Peugeot Citroën Automobile's* purchasing share from foreign-owned suppliers *versus* indigenous firms. However indirect information concerning *Skoda's* purchasing suggests that the foreign-owned firms' share is by far the largest: out of *Skoda's* production-related purchasing total of €3,839 billion in 2006, half is bought from 20 large suppliers of which 18 are present in the Czech Republic and are foreign-owned suppliers¹³ (Skoda Annual Report, 2006:31).

4. Position of foreign-owned suppliers *versus* indigenous suppliers in the Czech automotive sector

4.1. Did the foreign-owned suppliers eject the indigenous suppliers?

With the emergence of US, European and Japanese mega-suppliers in the automotive industry who follow carmakers in their location throughout the world, the question of 'who provides the local contents?' becomes of central importance for the 'supplier-oriented industrial upgrading' strategy of countries highly specialized in the automotive activity like

¹³ 15 of the 18 suppliers are located in Mlada Boleslav and the surrounding area.

the Czech Republic. Carmakers may abundantly source in a host country (like *Skoda* and *TPCA*) although indigenous suppliers may be poorly involved in the local content. Multinationals can have high local contents and at the same time only poorly contribute to the emergence of a competitive indigenous industrial structure. Multinationals may even have a crowding-out effect if the Western global suppliers eject traditional suppliers.

In order to evaluate the position of the Czech-owned component suppliers in the automotive industry, we compiled the database of CzechInvest (2007) which contains information about 506 manufacturing firms in which car component production is the dominant activity (the data was collected in 2002-2003). CzechInvest (2007) has dispatched the suppliers in three tiers based on the intensity of the relationship with carmakers. We chose to work exclusively on the first tier suppliers, made up of 182 firms. Most of these firms are suppliers of *Skoda* and/or *Toyota-Peugeot Citroën Automobile* but also of carmakers located in other Central European countries or in the rest of Europe.

Yet the definition of first tier suppliers of CzechInvest does not strictly correspond to the usual definition. In the usual definition, first tier suppliers are systemic suppliers who deliver directly complex components or modules to the final assembly of the carmakers. A small number of systemic suppliers cooperate closely with the carmakers and purchase from lower-tier suppliers (tier two and tier three). In the CzechInvest classification, the 'first-tier suppliers' category is made up of every firm that provides products to carmakers. The database contains small size firms which provide only few products, like tools for example, to the carmakers. This explains that the number of first tier suppliers in our study is much higher than the number we would have if we only retained the systemic suppliers. It also explains that we excluded from the study tier two and tier three suppliers (they have only a weak connection to the automotive industry).

The missing information such as turnover and the nationality of the majority shareholders, was found in the Annual Reports of the companies.

We dispatched the 173 automotive first tier suppliers depending on the nationality of the shareholders¹⁴, the number of firms, the number of employees and total revenue in the Czech republic (Table 3). Then we put aside the small- and medium-size firms and focused our

¹⁴ In our definition foreign-owned firms are corporations with a foreign person or a conglomerate owning more than 50% of the outstanding shares.

attention on the large firms (over 500 employees in our definition) and we applied the same criteria.

Table 3. The automotive component first tier suppliers in the Czech Republic, mid-2000

	Foreign-owned firms in the Czech Republic		Czech-owned firms		Total
Number of firms	89	51.4 %	84	48.6 %	173
Number of Employees	71 308	78.2 %	19 894	21.8 %	91 202
Number of Employee per firm	810	/	237	/	527
Total revenue € billion	7,060 (n = 82)	88.8 %	0,893 (n = 83)	11.2 %	7,953
Suppliers over 500 employees					
Number of firms	41	78.4 %	10	21.6 %	51
Number of Employees	61 860	87.0%	9 205	13.0 %	71 065
Number of employee per firm	1547	/	921	/	1 424
Total revenue € billion	6,310 (n = 37)	93.5%	0,436 (n = 10)	6.5 %	6,746

Sources: own calculation based on the auto supplier database (CzechInvest, 2007) and compilation from Annual Reports of the companies.

The Czech-owned automotive component suppliers represent half of the component suppliers located in the Czech Republic...

In the communist period the automotive production system was totally distorted. Although Czechoslovakia had developed a car-making tradition with *Skoda*, *Tatra* and *BAZ*, the quality of the production of motor vehicles and components was low in comparison to the Western standard¹⁵ (Courtaux-Kotbi, 2005; Fava, 2005). The number as well as the size of the automotive component companies reflected political priorities and did not correspond to the criteria of economic efficiency to be found in developed market economies. The Czechoslovakian automotive component sector was even more obsolete than the carmakers' sector due to the fact that the motor vehicle industry was a priority activity in the planned

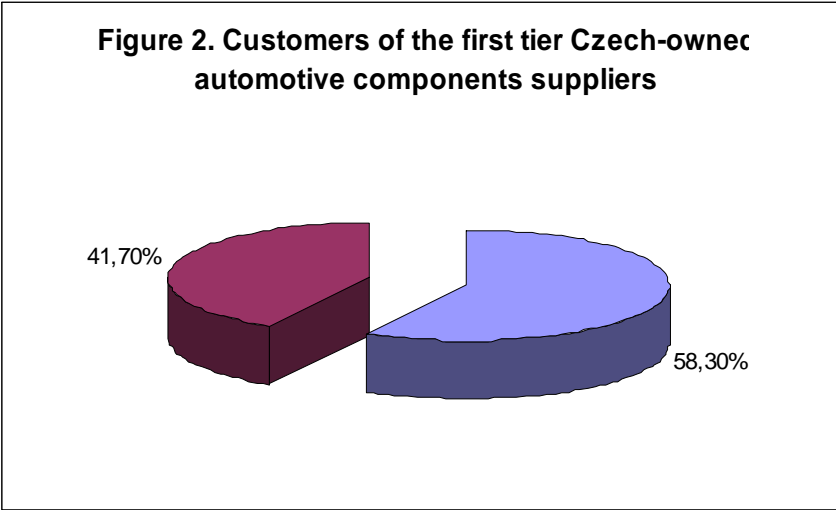
¹⁵ ...but high in comparison to the rest of the communist world.

economy (Pavlinek, 2003:188). *De facto* the component sector emerged at the beginning of the 1990s with severe weaknesses: a low capacity of innovation, a weak productive efficiency, a quality and variety of components insufficient to be exported and a low level of specialization coming from the production of a large range of products not related to automotive production.

The survival capacity of some Czech-owned automotive component suppliers was held up by the Czech-FDI policy in the early 1990s as well as by *Volkswagen* strategic choices in *Skoda*'s takeover. The deal with the Czech government included *Volkswagen*'s commitment to source from Czech suppliers for a certain time and to further develop the component industry (Van Tulder and Ruigrok, 1998:27). This agreement provided the suppliers with time to reorganize their activity by importing capital equipment and by buying know-how in the form of patents or licenses from Western countries. Due to the fact that the Czech suppliers produced *Skoda*-specific components, *Volkswagen* was obliged to source locally. However, *Volkswagen* also built their development strategy in Central Europe on a sourcing strategy requiring indigenous production (Pavlinek, 2003:197-201). Following the investment of the leader *Volkswagen*, Central Europe has emerged as the low-end of the European car complex (Van Tulder and Ruigrok, 1998). In *Volkswagen*'s European labor division, *Skoda* specializes in the mass production of small and cheap cars for which competition is fierce and margins are small (Layan, 2003). *Volkswagen* chose initially to encourage indigenous production in order to accede to less sophisticated and less expensive components and to take advantage of their bargaining power in their relationship with small- and medium-size indigenous firms (Pavlinek, 2005:86). By being in a dominant position towards local component producers, *Volkswagen-Skoda* may easily impose their requirements such as flexibility, reactivity and low costs. *Volkswagen*'s choices explain to a large extent that despite their massive initial under-efficiency in the production and marketing activities some suppliers have survived and that in the mid-2000s the first tier is composed of 84 Czech-owned firms which represent 48.6% of the first tier suppliers (Table 3).

The existence (and survival) of an indigenous supplier-base also results from the massive investments of foreign-owned suppliers who have followed *Volkswagen* -and more recently *Toyota-Peugeot Citroën Automobile*- in their location in the Czech Republic. In the mid-2000s 58.3% of the 84 first tier Czech-owned firms also sell their production to foreign-owned component suppliers (Figure 1). The emergence of the Czech Republic as a major automotive production area in Central Europe and as a global export base for automotive

components has created a ‘threshold effect’ above which the demand for automotive parts has become sufficiently large and diverse to allow incumbent indigenous firms to stay in the sector. The high growth rate of the sector and its size also have contributed to reduce the barriers to entry of new indigenous companies.



Note: 58,3% of the Czech suppliers sell products to foreign carmakers and suppliers whereas 41,7 % of the Czech firms supply exclusively the carmakers.
Source: own calculation based on the auto supplier database (CzechInvest, 2007)

...But Czech-owned automotive component suppliers represent only one-fifth of the total employment and one-tenth of the total revenue of the automotive component suppliers

The foreign-owned suppliers have not totally crowded-out the indigenous suppliers. Yet the indigenous firms’ position in the automotive complex is much weaker and more fragile once we take into account the firm size. The Czech-owned firms represent half of the suppliers but only one-fifth of the employees and a very limited share of the total revenue of the companies (11.2%). The size advantage of the foreign-owned firms is even more obvious, when we focus our attention on the large firms (over 500 employees). In this category the Czech-owned firms represent only one-fifth of the firms, 13% of the employees and a very low share of the total revenue. Czech activity is concentrated on small-and-medium scale operations whereas foreign-owned operators privilege large-scale activities. The Western mega-suppliers have crowded out the large Czech firms either directly by buying them or indirectly by replacing them in the supplier group of the carmakers.

In the mid-2000s only ten large automotive component suppliers belonged to Czech shareholders (Table 5). These ten companies were already producing car components in the communist period and had, in order to survive, to reduce massively the number of employees. Today they belong to the large-firm category (over 500 employees), but their medium size is much lower than the medium size of the foreign-owned suppliers (see Table 3). Moreover, since the early 1990s not one Czech-owned newcomer has succeeded in integrating the large-firm automotive components sector. The absolute domination of the large-scale activities by foreign-owned suppliers has prevented new Czech firms from entering the sector.

The foreign investors cherry-picked the best Czech suppliers in the 1990s in order to eliminate potential rivals and to continue to provide the carmakers: *Magneton Kromeriz* (approximately 6000 employees in 1989), *Barum* (3700), *PAL Praha* (2000), *Kablo Velké Mezířici* (1600), *Metal Usti*, *FAB*, which have been part of the 20th century Czechoslovakian-motor-vehicle-tradition, have been take over by foreign investors. The Western mega-suppliers have also massively invested through Greenfield operations. 15 US and 14 German global suppliers have subsidiaries of over 500 employees in the Czech Republic. The US automotive component suppliers *Visteon* (4500 employees in the Czech Republic in the mid-2000), *Delphi* (3350), *Johnson Controls* (3070), *TRW* (2170), *Tyco* (2000), *Alcoa* (1670), *Parker Hannifin* (1200) and the German *Bosch* (7190 employees), *Continental* (5330), *Siemens VDO* (2400), *CGS* (2200), *Peguforn* (1800), *Kostal* (1500), *Automotive lighting* (1500) belong to the country's leading firms. Even Japanese world leading companies like *Denso* and *TRCZ* have production facilities in the Czech Republic.

4.2. The new labor division in the Czech automotive component industry

In order to avoid an 'enclave development', indigenous firms have to be linked to foreign-owned firms. In the former section, we have suggested that at least some small and medium-sized Czech suppliers have successfully managed their integration in the automotive value system. Yet the connection to the automotive network does not represent a guarantee that the Czech-owned automotive component suppliers will gain access to the technological, organizational and managerial practices encased in the foreign investments. The 'closeness' of the relationships between foreign and indigenous agents is determinant for spillovers of the multinationals' ownership advantages in the host economy. Multinationals remain reluctant to transfer technology in a standard market relationship, but may accept to transfer technology in

a long-term relationship. A cooperative relationship may accelerate the acquisition by indigenous firms of technology in its specific and tacit dimension. Section 2.2. suggests that carmakers will engage in close relationships with suppliers able to take over new responsibilities in research and design and with the capacity to follow leading companies in their international location.

We have evaluated the ‘closeness’ of the relationship of the carmakers/foreign-owned suppliers with the indigenous suppliers by benchmarking two indicators:

- (i) The value added (total revenue/total number of employees) of the 84 Czech owned suppliers *versus* the 89 foreign-owned suppliers (Table 3).

The value added of the Czech-owned firms amounts to €44 888 as opposed to €99 007 for the foreign-owned firms. The gap of 2.2 between the two sets of agents suggests that indigenous suppliers are specialized in ‘price-driven subcontracting’ whereas foreign-owned firms are engaged in ‘design-driven subcontracting’ (Best, 1990).

- (ii) [Czech FDI stock abroad of the motor vehicle industry/total Czech FDI stock abroad] * 100.

In 2006 the ratio stood at €0,007/5,592 billion = 01% (Ceska Narodni Banka, 2007). This clearly demonstrates that the Czech firms of the automotive industry have not invested abroad, suggesting that they have not the capacity to co-locate and co-produce with their customers on a global scale.

On a micro-level, the comparison of the ten major Czech-owned suppliers (over 500 employees) with the two major foreign-owned component suppliers in the Czech Republic confirms the Czech-owned firm’s weaknesses in the production and internationalization fields (Table 5). The ten firms are specialized in the production of parts and tools for which they have been certified and ranked in *Skoda*’s ‘A category’ corresponding to the high-quality component suppliers¹⁶. However, they do not possess the financial, managerial and technological capacities to produce sophisticated modules and sub-systems and to participate in R&D and design. Their R&D potential is poorly developed: the automotive system division

¹⁶ Most of the Czech-owned firms are certified under the German standard DIN EN ISO 9001 complemented with the requirements of the automotive industry VDA 6.1 and the American standard QS-9000. *Skoda*’s suppliers have been ranked in four categories (A, B, C and not classified).

of *Bosch*, the major foreign automotive component producer in the Czech Republic spent a world total €2,7 billion in R&D activities in 2006 while *Brano Group*, the biggest Czech supplier has a total number of 154 employees working in the R&D division (Table 5). Although the ten Czech-owned firms are export-oriented¹⁷, they remain poorly internationalized: only one of the ten Czech-owned firms possesses two production facilities abroad, compared to a world total of 120 and 36, respectively for the automotive system division of *Bosch* and *Continental* (Table 5).

Table 5. Comparison of the performances of the two major foreign-owned suppliers and the ten major Czech-owned supplier, 2006

	Revenue € billion	Total number of employees	R&D expenditures/ sales	Production facilities abroad	Production of parts (P) or systems (S)
The two major foreign-owned firms					
Bosch AG Automotive system division	27,220	150 000	10.1%	120	S (electrical steering systems, braking systems)
Continental AG Automotive system division	5,994	30 220	8.0%	36	S (safety systems, powertrain & chassis)
The ten major Czech-owned suppliers					
Brano Group	0,152	2424	154 employees	0	P (Door parts, plastics parts, tools)
Fatra (Agrofert)	0,110	1800	/	0	P (PVC belts, PVC granulates)
Karsit*	0,070	800	/	2	P (Body spare parts)
Kovolit	0,038	650	/	0	P (Tools, metal parts)
Isolit-Bravo	0,035	550	/	0	P (Moulding)
Plastik HT	0,030	550	/	0	P (Tools, mould from plastic)
Massag**	0,029	546	42 employees	0	P (tools)
Brisk	0,025	750	80 employees	0	P (Spark plugs, ignition electrodes, sensors)
Kdynium	0,020	610	/	0	P (Tools)

¹⁷ *Isolit*, *Massag*, *Kovolit* and *Fatra* export share in the mid-2000s stood respectively at 75%, 60%, 60% and 50% (Annual Reports of the companies, 2006).

Spokar*	0,020	500	/	0	P (Brushes, injection-moulding)
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Note: *2003-2004; **2005.

Sources: own calculation based on the auto supplier database (CzechInvest, 2007) and compilation from Annual Reports of the companies.

The empirical evidence suggests the emergence of a highly hierarchical automotive component sector in the Czech Republic: 100% of the systemic suppliers are foreign-owned suppliers while the Czech-owned suppliers, although selling some products to carmakers, belong in reality to a lower tier. The ‘Voice’ behavioral model which characterizes the relationships between carmakers and their first tier suppliers concerns exclusively multinationals while the ‘Exit’ model characterizes the carmakers/first tier suppliers relationships with their Czech counterparts. Table 6 gives an overview of the dual supplying automotive system which has been emerging in the Czech Republic in recent years.

The ‘Exit’ model has stimulated rivalry in the Czech supplying sector and has offered 84 indigenous companies the opportunity to become suppliers of carmakers (Table 3). Yet the absence of strong partnerships between multinationals and indigenous suppliers represents a severe limit to spillover from FDI in the Czech Republic and consequently to the indigenous industrial upgrading. In order to manage their industrial upgrading successfully, automotive component suppliers must raise their innovation potential and move up from a ‘price-driven subcontracting’ to a ‘design-driven subcontracting’. They must also go ahead in the internationalization process and be able to co-locate and co-produce with their customers on a regional -or even global- scale.

However, the position of the Czech suppliers in the supplier network does not encourage their innovation potential and their internationalization: The foreign-owned firms no longer need to improve local capabilities by providing technical assistance to the indigenous suppliers because it is easy to find tailor-made products by foreign counterparts who have invested massively in the Czech Republic and with whom they are engaged in ‘Voice’ practices. In a ‘Exit’ relationship, indigenous suppliers do neither benefit from transfer of skills and technologies from the carmakers or from the foreign-owned suppliers, nor from direct help to market their products abroad. Their relationships with multinationals are highly exposed to market fluctuations, cost and price considerations, whereas suppliers from transition countries would need a long-term perspective to acquire new capacities and to progressively increase their settlements abroad. With the presence of mega-suppliers engaged

in ‘Voice’ relationships with the carmakers in the Czech Republic it becomes increasingly difficult for the indigenous firms to climb up the value-added scale. The lack of ‘closeness’ in the relationship between foreign-owned and indigenous firms increases their vulnerability and at the same time reduces the spillovers of FDI in the host economy.

Table 6. The dual automotive component supplier industry in the Czech Republic

Foreign-owned suppliers ‘Voice’	Indigenous suppliers ‘Exit’
Mega-suppliers	Small-scale suppliers
Presence in multiple localization	Weak internationalization
Connected to the leading firms in their home country: participate in the design of components and modules	Not connected
Follow carmakers in their internationalization	Export components
Close technological relationships : -co-research & development -co-design -co-production -co-localization	Loose technological relationships : -confined to simple, standardized, slow changing components - weak exchange of information and knowledge
Partnerships	Market relationships
Need to improve the global-suppliers’ capabilities	No need to improve local capabilities
First tier suppliers	Second and third tier suppliers

5. Conclusion

In the Czech Republic policies aiming at creating competitive indigenous suppliers and linking them to the automotive system have succeeded in facilitating the survival of an indigenous supplying base but have failed to create firms able to integrate the first tier network. Policymakers have to realize that the rules of the game have changed in the automotive sector: a limited number of mega-suppliers forming the top of a highly hierarchized system co-design, co-produce and co-locate with the automotive manufacturers

throughout the world, leaving only little space to the lower tier suppliers. The Czech firms are totally absent from the first tier suppliers and are only linked by casual technological relationships to multinationals. This kind of relationship limits the diffusion of spillovers of multinationals and only weakly contributes to the country's upgrading. That is why an FDI-strategic policy in the automotive sector in the Czech Republic should take into account two main features:

- Policymakers should not overestimate the economic and technological impacts of multinationals on indigenous suppliers. The country should accelerate its sectoral diversification in order to limit its dependence on the automotive sector.
- The industrial policy in the automotive sector should be focused on the emergence of a limited number of Czech medium and large size firms with advanced competencies. These kinds of firms could progressively become major Central European players capable of co-locating and co-producing with carmakers on a regional scale. The transition countries have probably not individually the financial and technical competencies to foster the creation of 'regional suppliers'. Yet several Central European countries endowed with an flourishing automotive activity could cooperate in order to promote a supplier-oriented upgrading strategy aiming at creating regional companies able to become systemic suppliers of the first tier.

Bibliography

- Alfaro L. and Rodriguez-Clare A., 2004, 'Multinationals and Linkages: An Empirical Investigation', *Economia*, 4(2), 113-169.
- Aoki M., 1988, *Information, Incentives and Bargaining in the Japanese Economy*, Cambridge University Press, Cambridge, MA.
- Ayyagari M. and Kosova R., 2006, 'Does FDI Facilitate Domestic Entrepreneurship? Evidence from the Czech Republic', *Working Paper Series of the Social Science Research Network*, Sept.
- Barnes J. and Kaplinsky R., 2000, 'Globalization and the Death of the Local Firms? The Automobile Component Sector in South Africa', *Regional Studies*, 34(9), 797-812.

- Battat J., Frank I. and Shen X., 1996, 'Suppliers to Multinationals- Linkage Programs to Strengthen Local Companies in Developing Countries', *Foreign Investment Advisory Service Occasional Paper*, 6, The World Bank, Washington, D.C.
- Best M., 1990, *The New Competition: Institutions of Industrial Restructuring*, Padstow, Cornwall, T.J. Press, UK.
- Blalock G. and Gertler P., 2003, *Technology from Foreign Direct Investment and Welfare Gains through the Supply Chain*, Mimeo, Cornell University.
- Bohata M., 2000, 'Skoda Automobilova a.s.', In: Estrin S., Richet X. and Brada J.S. (Eds), *Foreign Direct Investment in Central Eastern Europe: Case Studies of Firms in Transition*, Sharpe, New York, 128-175.
- Ceska Narodni Banka, 2007, *Foreign Direct Investment 2005*, March, Prague.
- Courtaux-Kotbi G., 2005, 'Modèles productifs et variété du capitalisme : le cas des secteurs automobiles tchèque et est-allemand', *Actes du GERPISA*, 39, Université d'Evry-Val d'Essone.
- CzechInvest, 2007, Database of car components producers in the Czech Republic, Prague, <http://automotive.czechinvest.org>.
- Deloitte, 2007, *Top 500 Companies in Central and East Europe*, 12/9.
- Fava V., 2005, 'In Search of a Czechoslovak People's Car Skoda Auto and the Soviet Model of Management', *Actes du GERPISA*, 39, Université d'Evry-Val d'Essone.
- Frigant V. and Lung Y., 2001, 'Geographical Proximity and Supplying Relationship in Modular Production', *Actes du GERPISA*, 34, Université d'Evry-Val d'Essone.
- Gereffi G., 1999, 'International Trade and Industrial Upgrading in the Apparel Commodity Chain', *Journal of International Economics*, 48, 37-70.
- Gilly J-P. and Torre A. (Eds), 2000, *Dynamiques de proximité*, L'Harmattan, Paris.
- Görg H. and Greenaway D., 2003, 'Much Ado about Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment?', *World Bank Research Observer*, 19, 171-197.
- Görg H., Hijzen A. and Muraközy B., 2006, 'The Productivity Spillover Potential of Foreign-Owned Firms: Firm-Level Evidence for Hungary', *Research Paper of the University of Nottingham*, 8.
- Halpern L. and Muraközy B., 2005, 'Does Distance Matter in Spillover?', *Discussion Paper of the Center for Economic Policy Research*, 4857, London.
- Havas A., 2004, 'Buyer-supplier Relationships in the Hungarian Automotive Industry and Prospects for the Suppliers', *12th Gerpisa International Colloquium*, 9-11 June, Paris.

- Hirschman A.O., 1970, *Exit, Voice and Loyalty: Responses to Decline in Firms Organizations and States*, Harvard University Press, Cambridge MA.
- Javorcik B., 2004, 'Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages', *American Economic Review* 94, 605-627.
- Kugler M., 2001, *The Diffusion of Externalities from Direct Foreign Investment: The Sectoral Pattern of Technological Spillovers*, Mimeo, University of Southampton.
- Layan J-B., 2003, 'L'intérêt stratégique des périphéries du système automobile européen', *Actes du GERPISA*, 35, Université d'Evry-Val d'Essone.
- Lung Y., 2003, 'The Changing Geography of the Automobile System', *Actes du GERPISA*, 35, Université d'Evry-Val d'Essone.
- Markusen J. and Venables A., 1999, 'Foreign Direct Investment as a Catalyst for Industrial Development', *European Economic Review*, 43, 335-356.
- Ministry of Industry and Trade (MIT), 2001, *Panorama of the Czech Industry 2000* (manufacture of transport equipment), Prague.
- Ministry of Industry and Trade (MIT), 2007, *Panorama of the Czech Industry 2006* (manufacture of transport equipment: 291-301), Prague.
- OICA (International Organization of Motor Vehicles Manufacturers), 2007, Production Statistics, www.oica.net.
- Pavlinek P., 2002, 'The Role of Foreign Direct Investment in the Privatization and Restructuring of the Czech Motor Industry', *Post-Communist Economies*, 14(3), 359-379.
- Pavlinek P., 2003, 'Transformation of the Czech Automotive Components Industry Through Foreign Direct Investment', *Eurasian Geography and Economics*, 44(3), 184-209,
- Pavlinek P., 2005, 'Transformation of the Central and East European Car Passenger Industry: Selective Peripheral Integration through Foreign Direct Investment', In: Turnock D. (Ed.), *Foreign Direct Investment and Regional development in East Central Europe and the Former Soviet Union*, Ashgate, London, 71-102.
- Prahalad C. and Hamel G., 1990, 'The Core Competence of the Corporation', *Harvard Business Review*, May-June, 3, 79-91.
- Radosevic S. and Rozeik A., 2004, *FDI and Restructuring in the Automotive Industry in Central and Eastern Europe*, EU DG Employment, Social Affairs and Equal Opportunities, Contract No VC/2003/0367.
- Richardson G., 1972, 'The Organization of Industry', *Economic Journal*, 327(82), 883-896.

- Rodriguez-Clare A., 1996, 'Multinationals Linkages and Economic Development', *American Economic Review*, 86(4), 852-873.
- Rugraff E., Sanchez-Ancochea D. and Sumner A. (Eds.), 2008a, *Transnational Corporations and Development Policy: Critical Perspectives*, Palgrave Mac Millan, Basingstoke.
- Rugraff E., Sanchez-Ancochea D. and Sumner A., 2008b, 'What Do We Know About Development Impacts?', in: Rugraff E., Sanchez-Ancochea D. and Sumner A. (Eds.), *Transnational Corporations and Development Policy: Critical Perspectives*, Palgrave Mac Millan, Basingstoke, Chap. 2.
- Salerno M-S., Zilbovicius M., Arbix G. and Carneiro Dias A.V., 1998, 'Changes and Persistences on the Relationship between Assemblers and Suppliers in Brazil', *Actes du GERPISA*, 35, Université d'Evry-Val d'Essone.
- Skoda Auto, 2006, Annual Report, <http://new.skoda-auto.com/Documents/AnnualReports>
- Sturgeon T.J. and Lester R.K., 2003, 'The New Global Supply-Base: New Challenges for Local Suppliers in East Asia', *MIT Special Working Papers Series*, 03-006(October), MIT Industrial Performance Center.
- Tirpak M., 2006, *The Automobile Industry in Central Europe*, November, IMF External Document, IMF.
- Toyota-Peugeot Citroën Automobile (TCPA), 2006, Annual Report, <http://www.tpca.cz/en>
- UNCTAD, 2001, *World Investment Report: Promoting Linkages*, United Nations, New York.
- UNCTAD, 2007, *World Investment Report: Transnational Corporations, Extractive Industries and Development*, United Nations, New York.
- Vahter P. and Masso J., 2006, 'Home versus Host Country Effect of FDI: Searching for New Evidence of Productivity Spillovers', *William Davidson Institute Working Paper*, 820, University of Michigan.
- Van Tulder R. and Ruigrok W., 1998, 'European Cross-National Production Networks in the Auto Industry: Eastern Europe as the Low End of European Car Complex', *Berkeley Roundtable on the International Economy*, 121, University of California, Berkeley.
- Verband der Automobilindustrie (VDA), 1999, *Auto Jahresbericht*, Frankfurt an Main.
- Verband der Automobilindustrie (VDA), 2007, *Auto Jahresbericht*, Frankfurt an Main.
- Volpato G., 2003, 'The OEM-FTS Relationship', *Actes du GERPISA*, 35, Université d'Evry-Val d'Essone.
- Womack J.P., Jones D.T. and Roos D., 1990, *The Machine That Changed the World: The Story of Lean Production*, Harper: New York.