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FDI and Supplier-Oriented Upgrading in the Czech Motor Vehicle Industry

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Abstract

The Czech Republic has succeeded in building a new comparative advantage in the motor vehicle and motor component production. Yet the Czech-owned companies only weakly contribute to the Czech upgrading. The Czech-owned companies are totally absent from the first tier suppliers and are only linked by casual technological relationships to foreign-owned multinational subsidiaries. This kind of relationship limits the vertical spillovers from foreign-owned multinational subsidiaries and is responsible for the existence of a weak link in the Czech automotive system that may foster the relocation of foreign-owned subsidiaries in foreign countries.

Czech motor vehicle industry, Upgrading, FDI, Indigenous firms

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6 RUGRAFF捷克的对外直接投资 (FDI) 以及以供给为导向的机动车产业升级 , 区域研
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9 究。捷克共和国在机动车以及机动车配件领域成功地构建出了新的比较优势。然而捷
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11 克本土企业对于捷克产业升级的贡献却微乎其微。捷克本土企业彻底从首级供应商领
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13 域中退出 , 仅与外资跨国公司之间保持常规的技术联系。这种联系制约了外资跨国企
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15 业在纵深方向的发展 , 同时也导致捷克机动车产业体系内部联系微弱 , 进而潜在地促
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17 成了外资向他国的转移。
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30 捷克机动车产业 升级 对外直接投资 (FDI) 本土企业
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35 Résumé (title to follow, have contacted author, Roos)
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40 La République tchèque a développé avec succès son avantage comparatif dans la construction
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42 et les équipements automobiles, alors même que les firmes à capitaux tchèques n'ont que
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44 faiblement contribué à la remontée de filière. Les firmes à capitaux tchèques sont totalement
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46 absentes du groupe des équipementiers de premier rang et sont faiblement connectées aux
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48 filiales des firmes multinationales. L'absence de relations partenariales réduit les externalités.
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50 Les firmes à capitaux locaux sont le chaînon faible dans le système automobile tchèque. Avec
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52 un faible enracinement local, les firmes multinationales pourraient plus facilement songer à
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54 re-localiser leurs activités.
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Industrie automobile tchèque, Remontée de filière, IDE, Firmes à capitaux locaux

Ausländische Direktinvestitionen und lieferantenorientierte Aufwertungen in der tschechischen Automobilindustrie

ERIC RUGRAFF

Der Tschechischen Republik ist es gelungen, sich einen neuen komparativen Vorteil bei der Herstellung von Automobilen und Motorkomponenten aufzubauen. Allerdings tragen die Firmen in tschechischem Eigentum nur in geringem Ausmaß zur Aufwertung Tschechiens bei. Firmen in tschechischem Eigentum sind unter den First-Tier-Lieferanten überhaupt nicht vertreten und mit multinationalen Konzerngesellschaften in ausländischem Eigentum nur im Rahmen gelegentlicher technischer Beziehungen verknüpft. Diese Art von Beziehung begrenzt die vertikalen Übertragungen von multinationalen Konzerngesellschaften in ausländischem Eigentum und ist für eine Schwäche der tschechischen Automobilindustrie verantwortlich, die die Abwanderung ausländischer Konzerngesellschaften ins Ausland begünstigen könnte.

Keywords:

Tschechische Automobilindustrie

Verbesserung

Ausländische Direktinvestitionen

Einheimische Firmen

IDE y mejoras de proveedores en la industria checa de vehículos motorizados

Eric Rugraff

La República Checa ha conseguido con éxito crear una nueva ventaja comparativa en la producción de vehículos de motor y de componentes de motores. Sin embargo, las empresas en manos checas solamente contribuyen débilmente al auge del país. Las empresas de propiedad checa están totalmente ausentes para proveedores de primera línea y sólo están vinculadas con filiales multinacionales de propiedad extranjera por relaciones tecnológicas casuales. Este tipo de relación limita los desbordamientos verticales de las filiales multinacionales de propiedad extranjera y es responsable de un punto débil en el sistema automotriz checo que podría fomentar la reubicación de filiales de propiedad extranjera en países extranjeros.

Keywords:

Industria checa de vehículos motorizados

Mejora

IDE

Empresas autóctonas

JEL Classifications: F23, L23, L62, P31

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3 INTRODUCTION
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8 This paper attempts to demonstrate that the Czech Republic has succeeded in building a
9 competitive motor vehicle industry in less than two decades, although the Czech-owned firms
10 have only marginally contributed to this success. The Czech motor vehicle recovery is due to
11 the massive foreign direct investments (FDI) which flooded into the country and deeply
12 restructured the local industry. In the 1990s all the Czech motor vehicle manufacturers were
13 overtaken by multinational companies and from 1998 onwards the Czech Republic
14 implemented a liberal foreign-direct-investment framework in order to accelerate foreign
15 participation of component suppliers. In the Czech development strategy, foreign-owned
16 multinational subsidiaries have been seen as the central vector able to trigger a supplier-
17 oriented industrial upgrading. Moreover, since the motor vehicle industry has had
18 idiosyncratic characteristics that should facilitate the diffusion of vertical spillovers, most
19 firms in the sector should be encompassed in the upgrading process. Indeed, the weight and
20 size of thousands of sophisticated components and materials oblige the manufacturers, but
21 also the component suppliers, to source, at least partially, some inputs locally. At the same
22 time, the Czech Republic has a long-standing car-building tradition which should facilitate
23 local sourcing.
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45 According to the industrial economics and economic geography tradition, the paper
46 suggests that foreign-owned multinational subsidiaries will cause vertical spillover if they
47 source locally, especially if they develop close relationships with the indigenous suppliers.
48 Yet a new production and organization paradigm emerged in the 1980s in the motor vehicle
49 industry that led to a deep reconfiguration of the multinational-developing country
50 relationship. Motor vehicle manufacturers have delegated a growing share of activities to a
51 core group of highly competent first tier suppliers who have progressively become 'mega-
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3 suppliers'. With this paradigmatic change, the automotive system, though always
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5 hierarchized, has transformed into a highly hierarchical structure, with on the one hand, a
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7 limited number of systemic suppliers actively cooperating with the motor vehicle
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9 manufacturers on a world scale and, on the other hand, suppliers having only very casual
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11 relationships with them.
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15 In order to highlight the position of the Czech-owned automotive component suppliers in
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17 the motor vehicle industry, the paper evaluates the position of indigenous suppliers in the
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19 local procurement and the 'closeness' of the relationships linking the foreign-owned
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21 multinational subsidiaries to indigenous suppliers. The main empirical section of the paper is
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23 based on the compilation of a Czech database which contains information about 506
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25 automotive component suppliers. The database has been complemented by annual reports of
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27 the Czech-owned and multinational companies. On the base of the analysis of the 173 main
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29 component suppliers and a detailed case study of the ten major Czech-owned suppliers, the
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31 paper suggests that the foreign-owned multinational subsidiaries are in a totally dominant
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33 position and that Czech-owned firms have only casual technological relationships with
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35 foreign-owned multinational subsidiaries. The paper suggests that the weakness of the Czech-
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37 owned suppliers fragilizes the Czech automotive system and increases the risk of the
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39 relocation of activities in foreign countries.
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50 CZECH FDI POLICY AND THE MOTOR VEHICLE INDUSTRY

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55 The initial choice in the Czech Republic
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3 Czechoslovakia developed a car-making tradition during the communist period with the
4 companies Skoda, Tatra and BAZ. Yet the quality of the production of motor vehicles and
5 components was low compared to the Western standard. The sector emerged at the beginning
6 of the 1990s with severe weaknesses: a low capacity for innovation, a weak productive
7 efficiency, a quality and variety of products insufficient to be exported and a low level of
8 specialization coming from the production of a large range of products not related to
9 automotive production (PAVLINEK, 2002, 2005; COURTAUX-KOTBI, 2005; FAVA,
10 2005). The number as well as the size of the motor vehicle companies reflected political
11 priorities and did not correspond to the criteria of economic efficiency to be found in
12 developed market economies. During the communist period the automotive production
13 system was totally distorted: in ex-Czechoslovakia the degree of centralization was so high
14 that an 'inverse pyramid' was built with a limited number of very large organizations and a
15 shortage of small and medium-sized firms (ECONOMIC COMMISSION FOR EUROPE,
16 1994, p. 185). The restructuring of state-owned enterprises, meaning the creation of viable
17 companies capable of competing in a market environment, has been much more difficult than
18 expected. The production drop in the first half of the 1990s and the institutional instability has
19 led a majority of privatized enterprises, feeling that they had 'no chance' under the market
20 conditions, to choose a survival strategy (ICKES and RYTERMAN, 1993): the management
21 and employees engaged in a coalition aiming to limit lay-offs as long as possible and to
22 postpone the indispensable reforms.

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51 The Czech Republic opted at the beginning of the 1990s for a rapid liberalization of the
52 economy and the integration into world trade. Yet the technological gap between the West
53 and the Czech Republic was too wide to sell Czech motor vehicles on the international
54 market. Therefore the policymakers decided to privatize the main motor vehicle
55 manufacturers rapidly. Volkswagen was authorized to invest in Skoda in April 1991 by
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3 creating a joint venture with the Czech state which initially kept 61% of Skoda's capital. The
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5 Czech government agreed to reduce its share progressively and in 2000 Skoda belonged
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7 100% to the Volkswagen Group. The Government also sold the commercial vehicle producers
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9 Tatra and Avia (heavy trucks), and Karosa (buses) to foreign investors during the 1990s.
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11 Although all the motor vehicle manufacturers were sold to foreign investors, the country did
12
13 not apply an 'open door policy' to foreign investors during the period 1991-1998. Compared
14
15 to other Central European countries such as Hungary and Poland, the Czech Republic sold a
16
17 limited number of large state companies to foreign investors. The incentive policy also was
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19 relatively restrictive compared to other transition countries: the Czech Republic offered
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21 incentives depending on each particular situation and they were subject to governmental
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23 approval. Over this period, the country privileged voucher privatization, by which the national
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25 assets were transferred initially to the citizens, who then transferred them to Investment
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27 Privatization Funds. An overwhelming part of these funds were managed by banks in which
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29 the state participation was still dominant. These state-owned banks provided firms with cheap
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31 credits allowing them to postpone the indispensable restructuring. This explains the
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33 disappointing economic performance in the 1990s (OECD, 1998). In 1998, the solution of a
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35 balanced development path which aimed at attracting a limited number of foreign investors
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37 and fostering the emergence of a national industry was abandoned.
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48 The turning point in 1998
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53 From 1998 onwards the policymakers decided to implement a liberal-FDI policy in order to
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55 accelerate the industrial recovery and improve the macroeconomic performances. FDI
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57 restrictions were dramatically reduced¹ inducing massive Greenfield investments and
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59 contributing to the acceleration of the takeover by foreign investors of the least under-efficient
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3 large Czech privatized companies. The shift in Czech behavior towards FDI was accompanied
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5 by the implementation of regulatory reforms in order to be more conducive to product market
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7 and labor market competition (OECD, 2005, p. 142). In 2000 a package of incentives was
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9 offered to come in line with the other regional competitors for inward investments.
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12 The effects of the new FDI-policy have been the most visible in the motor vehicle industry.
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14 The total stock of FDI in the motor vehicle industry rose from €0.8 billion in 1998 to €5.6
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16 billion in 2006, which represented a quarter of the FDI stock in the Czech manufacturing
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18 sector (CESKA NARODNI BANKA, 2000, 2007). The country successfully attracted two
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20 main industrial projects: a joint venture between Toyota and Peugeot Citroën (the agreement
21
22 was signed in 2002) which led to the construction of a common plant in Kolin-Ovcary (the
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24 production of Peugeot 107, Citroën C1 and Toyota Aygo started in 2005); Hyundai plans to
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26 invest €1 billion in Nosovice in order to produce around 200 000 cars a year as from and after
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28 March 2009. Global automotive component suppliers like Bosch, Johnson Controls, Visteon,
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30 Valeo, Siemens, Continental (Table 1) also increased their investments at the end of the 1990s
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32 in order to supply the Skoda and Toyota-Peugeot Citroën plants and to use the country as an
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34 export-platform of components to Central Europe and the rest of Europe.
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TABLE 1.

As a consequence of the massive foreign investments, 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 totals 19.3% in receipts from sales from all branches of
manufacturing industry, 10.3% of the employment in the manufacturing sector and represents

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3 17.9% of the Czech exports (MINISTRY OF INDUSTRY AND TRADE, 2007). Table 2
4
5 highlights the acceleration of the production since the beginning of the 2000s due to the
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7 massive foreign investments. The value added has soared and the number of employees has
8
9 increased sharply. The growing export-orientation of the vehicle industry clearly
10
11 demonstrates that the Czech Republic has become an export base for vehicles and accessories.
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13 In 2006, almost two-thirds of the automotive components were exported and Skoda was the
14
15 largest Czech exporter (MINISTRY OF INDUSTRY AND TRADE, 2007, p. 298). Beside its
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17 specialization in the car production, the country has developed a new comparative advantage
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19 in the manufacture of accessories for motor vehicles. The sector has created 29 000 new jobs
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21 over the last six years and the net balance has increased by 250% over the same period.
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TABLE 2

CZECH UPGRADING STRATEGY

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38 The backward vertical spillover potential of foreign-owned multinational subsidiaries
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44 Multinational companies' subsidiaries have been indisputably contributing to the Czech
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46 upgrading strategy (see Tables 1 & 2 and *infra*). Yet the success of an upgrading strategy is
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48 also related to the catalyst effect of these subsidiaries on the local industry and especially to
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50 the backward vertical knowledge and pecuniary spillovers, whereby foreign-owned
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52 companies increase the productivity of local suppliers linked to them in the production chain.
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54 Indeed, since foreign-owned multinational subsidiaries want to prevent information and
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56 technology from leaking over to potential local competitors, spillover is more likely to be
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58 vertical than horizontal in nature (JAVORCIK, 2004). Backward vertical spillovers should
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3 have the highest catalyst impact. MARKUSEN and VENABLES (1999) present a model in
4
5 which foreign-owned multinational subsidiaries generate derived demand for intermediate
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7 goods leading to the extension of the intermediate goods sector in the host country. In
8
9 RODRIGUEZ-CLARE's model (1996) the catalyst impact emerges through the production by
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11 foreign-owned multinational subsidiaries of complex goods that require the production by
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13 domestic companies of specialized intermediate inputs.
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17 The catalyst effect may result from direct knowledge transfer from foreign-owned
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19 multinational subsidiaries to indigenous suppliers when the former:
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- 21
22 - provide technical assistance to their suppliers;
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25 - demand higher requirements regarding product quality, obliging indigenous companies to
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27 upgrade their technological capacities by investing in new technology and management
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29 practices;
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32 - improve the human capital of employees who create companies or move over to
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34 indigenous companies;
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37 - force indigenous companies, as a result of competition, to reduce their inefficiency and to
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39 adopt new production methods and management practices.
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43 The strengthening of the industrial upgrading may also be triggered by pecuniary
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45 spillovers -vertical linkages- which are emerging through increased demand for intermediate
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47 products addressed to local companies raising their economies of scale and delivering cheaper
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49 products to local buyers.
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54 The backward vertical spillover potential in the motor vehicle sector

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59 The motor vehicle industry offers idiosyncratic characteristics that explain the Czech
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preference for an FDI-led supplier-oriented upgrading strategy. The catalyst effect is

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3 potentially strong due to the fact that a motor vehicle is a sophisticated product that is made
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5 up of thousands of parts and components: a small car is made up of 15 000 parts and a luxury
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7 car necessitates between 25 000 and 30 000 parts. The motor vehicle manufacturers do not
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9 possess the know-how to internalize all the operations and generate de facto vertical spillovers
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11 by buying products from suppliers. Moreover, the weight and size of components and
12
13 materials oblige the carmakers to source, at least partially, at the local level. Economists and
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15 geographers have demonstrated that car production is mostly organized on a national or
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17 regional basis (Europe, North America, etc.) owing to the complexity of the product as well as
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19 the regional (or even national) differences in consumer tastes and transportation costs that
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21 tend to foster the geographical proximity of the plants (FRIGANT and LUNG, 2001;
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23 LAYAN, 2003; LUNG, 2003). The necessity to source at least some inputs locally gives the
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25 opportunity to local companies of becoming component suppliers of foreign-owned
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27 multinational subsidiaries. Spillovers may result from the need to buy some large or weighty
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29 parts from suppliers located in the near proximity of a foreign-owned multinational
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31 subsidiary.

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34 Moreover, in low-technology and labor-intensive industries such as footwear, clothing or
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36 furniture, the necessity to coordinate the 'production plans' of a foreign-owned multinational
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38 subsidiary and of his suppliers is limited: the different parts of the product are relatively
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40 simple and the assembly process is not complex. In the motor vehicle industry the quality of
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42 the final product does not only depend on the quality of the different parts and components
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44 but also on the motor vehicle manufacturers' capacity to manage the coordination of their
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46 production process with that of their suppliers. Motor vehicle manufacturers are therefore
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48 stimulated to exchange information, management practices and know-how with their
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50 suppliers. They may even provide their suppliers with assistance programs aiming to increase
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52 the quality of the coordination and the quality of production.
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3 A superficial evaluation of the sourcing figures of the foreign-owned motor vehicle
4 manufacturers in the Czech Republic could lead one to believe that vertical backward
5 spillovers from multinationals' subsidiaries to the indigenous suppliers are large. Indeed, in
6 2006 Skoda auto bought 62.6% of their inputs in the Czech Republic (SKODA AUTO
7 ANNUAL REPORT, 2006, p. 31) and Toyota-Peugeot Citroën Automobile a rough 80%
8 (TPCA ANNUAL REPORT, 2006). A comparison of the Czech figures with other countries
9 is a risky task. In some countries local content requirements artificially increase the local
10 sourcing ratio, whereas the degree of internalization of the production influence the
11 outsourcing level of manufacturers and the amount of inputs bought from suppliers.² Yet the
12 local sourcing ratio in the Czech Republic stands indisputably among the highest of the
13 developing and the transition economies. A comparison with Hungary which presents many
14 common features with the Czech Republic (number of inhabitants, FDI-led transformation
15 process, priority given to the automotive sector, etc.) provides an interesting result: the local
16 content of the main motor vehicle manufacturers –Toyota, Opel (engines) and Audi (engines)-
17 is much lower than in the Czech Republic (HAVAS, 2004, p. 6-11).

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39 Volkswagen's sourcing practices have played a leading role in the sourcing pattern in the
40 Czech Republic. Since 1992 Skoda have purchased over two-thirds of their purchasing total in
41 the Czech Republic (SKODA AUTO ANNUAL REPORTS, 1993 to 2006). The initial deal
42 with the Czech government included Volkswagen's commitment to source from Czech
43 suppliers for a certain time and to further develop the component industry (VAN TULDER
44 and RUIGROK, 1998, p. 27). This agreement provided the suppliers with time to reorganize
45 their activity by importing capital equipment and by buying know-how in the form of patents
46 or licenses from Western countries. Yet Volkswagen mainly encouraged indigenous
47 production in order to accede to less sophisticated and less expensive components and to take
48 advantage of their bargaining power in their relationship with small- and medium-sized
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3 indigenous companies (PAVLINEK, 2005, p. 86). By being in a dominant position with
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5 regard to local component producers, Volkswagen-Skoda easily imposed their requirements.
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8 In Volkswagen's European labor division, Skoda have specialized in the mass production of
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10 small and cheap cars for which competition is fierce and margins are small (LAYAN, 2003),
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12 although Volkswagen also allowed Skoda to produce upper-medium cars (PAVLINEK, 2003,
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14 p. 205).

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17 In the next section we will demonstrate that although the foreign-owned multinational
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19 subsidiaries abundantly source in the Czech Republic they purchase only a limited share of
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21 their inputs from Czech-owned suppliers.
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29 POSITION OF THE INDIGENOUS SUPPLIERS IN THE MOTOR VEHICLE INDUSTRY

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34 With the emergence of US, European and Japanese mega-suppliers in the automotive industry
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36 who come with motor vehicle manufacturers wherever they may be (STURGEON and
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38 LESTER, 2003), the questions of 'who provides the local content?' and 'what is provided by
39
40 whom?' become of central importance for the understanding of the upgrading dynamic of a
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42 country highly specialized in the automotive activity such as the Czech Republic.
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46 In order to evaluate the position of the Czech-owned automotive component suppliers in
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48 the motor vehicle industry, we compiled the database of CZECHINVEST (2008) which
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50 contains information about 506 manufacturing companies for which component production is
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52 one of their main activities (the data was collected in 2002-2003). CZECHINVEST has
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54 classified the suppliers in three tiers based on the intensity of their relationship with motor
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56 vehicle manufacturers. We worked exclusively on the so-called 'first tier suppliers' category,
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58 made up of 182 companies. Most of these companies are suppliers for Skoda and Toyota-
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3 Peugeot Citroën Automobile but also for manufacturers located in other Central European
4 countries and in the rest of Europe. Yet the definition of ‘first tier suppliers’ of
5 CZECHINVEST does not strictly correspond to the usual definition. In the usual definition,
6 the ‘first tier suppliers’ category corresponds to a very small number of systemic suppliers
7 who deliver complex components directly to the final assembly line of the manufacturers
8 (STURGEON and LESTER, 2003). In the CZECHINVEST classification, the ‘first-tier
9 suppliers’ category is made up of every company that provides products –even if it represents
10 only a very small share of their turnover- directly to motor vehicle manufacturers. The
11 database contains small-sized companies which provide only few products, such as tools for
12 example, to the manufacturers. This explains why the number of first tier suppliers in our
13 study is much higher than the number we would have if we only retained the systemic
14 suppliers. It also explains why we excluded from the study tier-two and tier-three suppliers
15 (they are only weakly and indirectly connected to the motor vehicle manufacturers). The
16 missing information such as the turnover and the nationality of the dominant shareholders was
17 found in the Annual Reports of the companies.

18
19 In Figure 1 we classified the 173 first tier suppliers for who no information was missing
20 based on the nationality of the dominant shareholder³ (foreign versus Czech-owned) and the
21 companies’ size (small- and medium-scaled companies under 500 employees versus large
22 companies over 500 employees).

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FIGURE 1

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3 Figure 1 shows that the Czech-owned companies represent half of the suppliers but only
4 one-fifth of the employees. The advantage of the foreign-owned companies is even more
5 obvious when we focus our attention on the large companies (over 500 employees). The large
6 Czech-owned companies only represent a rough 5% of the 173 companies and 10% of the 91
7 202 employees. The Czech activity is concentrated on small- and medium-scale operations
8 whereas foreign-owned operators privilege large-scale activities. The Western mega-suppliers
9 have crowded out the large Czech companies either directly by buying them or indirectly by
10 replacing them in the supplier group of the motor vehicle manufacturers obliging them to
11 drastically reduce their production. An overwhelming part of the largest Czech companies
12 survived (e.g. Magneton Kromeriz, Barum continental, PAL Praha, Kablo Velke Mezirici)
13 and were overtaken by foreign investors. Few of them disappeared. A handful of companies
14 survived and stayed in Czech hands: in the mid-2000s only ten large automotive component
15 suppliers belonged to Czech shareholders (Table 3). These ten companies were already
16 producing motor vehicle components during the communist period and, in order to survive,
17 had to reduce massively the number of employees. Today they belong to the large-companies
18 category (over 500 employees), but their average size is much lower than the average size of
19 the foreign-owned multinational subsidiaries (921 employees versus 1547). Moreover, since
20 the early 1990s not a single Czech-owned newcomer has succeeded in integrating the large-
21 firm automotive component sector. The absolute domination of the large-scale activities by
22 foreign-owned suppliers has prevented new Czech companies from integrating the sector.
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50 The foreign investors cherry-picked the best Czech suppliers in the 1990s in order to
51 eliminate potential rivals and to continue to supply the manufacturers: Magneton Kromeriz
52 (approximately 6000 employees in 1989), Barum (3700 in 1989), PAL Praha (2000), Kablo
53 Velké Mezirici (1600), Metal Usti, FAB, which were part of the 20th century
54 Czechoslovakian-motor-vehicle-tradition, have been taken over by foreign investors. The
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3 Western mega-suppliers have also massively invested through Greenfield operations. 15 US
4 and 14 German global suppliers have subsidiaries of over 500 employees in the Czech
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6 Republic. The US automotive component suppliers Visteon (4500 employees in the Czech
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8 Republic in mid-2000), Delphi (3350), Johnson Controls (3070), TRW (2170), Tyco (2000),
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10 Alcoa (1670), Parker Hannifin (1200) and the German Bosch (7190 employees), Continental
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12 (5330), Siemens VDO (2400), CGS (2200), Peguform (1800), Kostal (1500), Automotive
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14 lighting (1500) belong to the country's leading companies. Even world-leading Japanese
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16 companies such as Denso and TRCZ have located production facilities in the Czech Republic.
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27 THE RELATIONSHIPS BETWEEN THE FOREIGN-OWNED MULTINATIONAL 28 29 SUBSIDIARIES AND THE INDIGENOUS SUPPLIERS 30 31 32 33

34 We have demonstrated in the former section that foreign-owned manufacturers and suppliers
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36 clearly dominate the Czech motor vehicle industry although some Czech-owned suppliers,
37
38 essentially of small and medium size, have survived. According to the work of several
39
40 scholars in the field of industrial economics and economic geography (DICKEN, 1988;
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42 FRIGANT and LUNG, 2001; KRISTENSEN and ZEITLIN, 2005), we estimate that the
43
44 'closeness' of the relationship between foreign and indigenous companies will determine the
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46 multinationals subsidiaries' spillovers into the host economy and consequently the solidity of
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48 the upgrading process.
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55 The new organization paradigm in the motor vehicle industry
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3 At the beginning of the 1980s the Western motor vehicle manufacturers realized that they
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5 were less competitive than the Japanese manufacturers and decided to engage in a total
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7 reorganization of their model of production.⁴ Western manufacturers, who were more
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9 vertically integrated than their Japanese counterparts, engaged in an externalization process
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11 and developed more cooperative and structured relationships with component suppliers
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13 (STURGEON and LESTER, 2003). This evolution led to a progressive reduction in
14
15 employment for the motor vehicle manufacturers and an increase in the component suppliers'
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17 production and employment. At the same time, the adoption of lean manufacturing
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19 (WOMACK et al., 1990) led to some clustering of activities in the motor vehicle sector. The
20
21 just-in-time delivery that motor vehicle manufacturers require is one reason why many
22
23 suppliers have been adopting right-next-door strategies when deciding where to locate their
24
25 manufacturing plants. Proximity improves the quality of inter-firm coordination (GILLY and
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27 TORRE, 2000). The positive effects of industrial cooperation between companies are largely
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29 documented in industrial economics (RICHARDSON, 1972; AOKI, 1988). AOKI (1988) for
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31 example argues that cooperative relations give rise to a relational quasi-rent, which is the
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33 inter-firm form of the organizational quasi-rent created in the Japanese firm. The quasi-rent is
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35 a result of the informational efficiency of the operational coordination between a prime
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37 manufacturer and his subcontractors. The quasi-rent is partially due to the employee's
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39 contextual skills. The informational efficiency is unique and creates relation-specific
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41 economic returns. In the context of a long-term relationship, partners are encouraged to
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43 engage in relation-specific investments in expertise, equipment and R&D. The relationship is
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45 quasi-permanent; the prime manufacturer would lose the quasi-rent if he decided to
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47 internalize the subcontractor's activity, whereas in a pure market-operation the subcontractor
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49 would not invest in relation-specific activities. The consequences for vertical spillover is
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51 obvious: Western or Asian motor vehicle manufacturers who invest in less developed
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3 countries source a higher share of their inputs in the host country than they used to do some
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5 decades ago.
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8 Yet the growth of outsourcing has led to a deep transformation in the supply system. The
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10 motor vehicle system has always been organized hierarchically. But in recent years it has
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12 transformed to a highly hierarchical structure where each manufacturer relies on a core group
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14 of highly competent first tier suppliers to whom new responsibilities on research, design,
15
16 manufacturing and assembly have been delegated (GEREFFI, 1999; LUNG, 2003). This new
17
18 division of labor between manufacturers and component suppliers has created new business
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20 opportunities and generated a surge in merger and acquisition which has dramatically reduced
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22 the number of suppliers (VOLPATO, 2003, p. 25). This has led to the rise of mega-suppliers
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24 able to co-locate and co-produce with their customers on a global scale and to progressively
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26 assume prime responsibility for selecting lower tier suppliers and coordinating their activity.
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28 The 'motor vehicle manufacturers-automotive component suppliers' relationship has
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30 progressively split into two complementary behavioral models: the 'Voice' behavioral model
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32 and the 'Exit' model (the 'Voice' and 'Exit' conceptions are rooted in the work of
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34 HIRSCHMAN, 1970). The Voice/Exit scheme has been initially developed by HELPER
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36 (1990) and HELPER and SAKO (1995) in a comparative perspective of the automakers'
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38 subcontracting system in the US and in Japan, whereby a customer may respond to a problem
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40 with his suppliers in two ways: Exit, whereby the customer's response to a problem with a
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42 supplier is to find another supplier, and Voice, whereby the response is to work with the
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44 supplier until the problem is solved.
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53 The 'Voice' behavioral model characterizes the relationships between motor vehicle
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55 manufacturers and their first tier suppliers. An overwhelming part of the manufacturers and
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57 the first tier suppliers are Western and Japanese mega-companies. The interaction between
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59 them aims at consolidating their partnership on a world scale. They exchange know-how and
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3 information and organize a common development of parts of the motor vehicle. The extension
4
5 of the suppliers' area of responsibility along the supply chain reinforces the existence of
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7 collaborative relations. The drive toward modularity –by which a supplier does not only
8
9 produce parts but is responsible for the production of a range of parts forming a module of the
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11 vehicle– reinforces the intensity of the collaboration between a motor vehicle manufacturer
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13 and a supplier (FRIGANT and LUNG, 2001). Close relationships even generate co-locations,
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15 with the localization of the supplier's productive facility inside or on the same site as the
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17 assembly plant.
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22 The 'Exit' behavioral model is based upon the interchangeability of suppliers depending on
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24 their capacity to satisfy needs expressed in any single case by motor vehicle manufacturers
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26 and first tier suppliers (VOLPATO, 2003, p. 21). Manufacturers and the mega-suppliers
27
28 privilege arm's-length relationships with lower tier suppliers in order to cut costs and benefit
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30 from competitive switching. First tier suppliers, as in the case of motor vehicle manufacturers,
31
32 focused on their 'core competencies' (PRAHALAD and HAMEL, 1990) and abandoned the
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34 rest to lower tier suppliers. Small- and medium-sized lower tier component suppliers have
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36 taken over the high volume production of simple components which is based on low labor
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38 costs and a high flexibility. Indigenous companies are typically specialized in the production
39
40 of simple automotive components in developing countries (SALERNO et al., 1998; BARNES
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42 and KAPLINSKY, 2000) and in transition countries (PAVLINEK, 2003, 2005). In the 'Exit'
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44 model, information and technology exchanges between foreign-owned companies and the
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46 lower tier suppliers are poor and the former can save the costs of explicit assistance. Buyers
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48 want to maintain fluid relationships and easily connect to and disconnect from the suppliers.
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54 The consequence of the above stylized facts for the Czech-owned suppliers is obvious: in
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56 order to increase the benefit from vertical spillovers, Czech-owned suppliers must be able to
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58 co-design, co-produce and co-locate with the major manufacturers and first tier suppliers on
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3 the world scale or at least on a regional scale. Unfortunately the Czech-owned suppliers are
4
5 neither innovation-oriented nor internationalized. This explains that the manufacturers do not
6
7 really have the choice between the two forms of behavior in their relationships with
8
9 indigenous suppliers. Since the Exit/Voice terminology only really makes sense when agents
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11 can use both forms and choose one of them, in the next section focusing on the Czech motor
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13 industry we will use a terminology that refers to the organizational form of the relationship.
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18 19 20 The specialization of the Czech-owned suppliers 21

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24 We have evaluated the Czech suppliers' innovative capacities by benchmarking the Czech-
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26 owned to the foreign-owned companies' value added and the Czech internationalizing
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28 potential by looking at the Czech FDI stock abroad in the motor vehicle industry. The value
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30 added (total turnover/total number of employees) of the Czech-owned companies amounts to
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32 €44 888 as opposed to €99 007 for the foreign-owned companies in the mid 2000s (Figure 1).
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34 The massive difference between the two sets of companies tends to demonstrate that
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36 indigenous suppliers are specialized in 'price-driven subcontracting' whereas foreign-owned
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38 companies are engaged in 'design-driven subcontracting' (BEST, 1990). Moreover the Czech
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40 companies fail to internationalize. In 2006 the Czech FDI stock abroad of the motor vehicle
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42 industry stood at €7 million and represented only 0.1% of total Czech FDI stock abroad
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44 (CESKA NARODNI BANKA, 2007). These two figures clearly demonstrate that the Czech
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46 companies of the automotive industry have not invested abroad, suggesting that they have not
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48 the capacity to co-locate and co-design with their customers on a global scale.
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55 On a micro-level, the comparison of the ten major Czech-owned suppliers (over 500
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57 employees) with the two major foreign-owned component suppliers in the Czech Republic
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59 confirms the huge differences in the R&D, design and internationalization fields (Table 3).
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3 The ten Czech-owned suppliers are specialized in the production of parts and tools of good
4 quality.⁵ However, they do not possess the financial, managerial and technological capacities
5 to produce sophisticated modules and sub-systems and to participate in R&D and design.
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8 Their R&D potential is poorly developed, although some companies like the Brano Group
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10 have a real activity focused on applied research (Table 3). Although the ten Czech-owned
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12 companies are export-oriented, they remain poorly internationalized. Only one of the ten
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14 Czech-owned companies possesses two production facilities abroad, compared to a world
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16 total of 120 and 36, respectively for the automotive system division of Bosch and Continental
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22 (Table 3).
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30 TABLE 3
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36 The empirical evidence suggests the emergence of a highly hierarchical automotive
37 component sector in the Czech Republic. All the systemic suppliers are foreign-owned
38 suppliers while the Czech-owned suppliers, although they sell some products to the motor
39 vehicle industry, belong to the lowest tiers. Partnerships which characterize the relationships
40 between manufacturers and their first tier suppliers concern exclusively foreign-owned
41 multinational subsidiaries while arm's length relationships characterize the carmakers/first tier
42 suppliers relationships with their Czech counterparts. The absence of strong partnerships
43 between foreign-owned multinational subsidiaries and indigenous suppliers considerably
44 limits spillovers from FDI to the indigenous industrial sector. Foreign-owned manufacturers
45 and suppliers no longer need to improve local capabilities by providing technical assistance to
46 the indigenous suppliers since it is easy to find tailor-made products by foreign counterparts
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3 who have invested massively in the Czech Republic and with whom they are engaged in
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5 partnerships. In Market relationships, indigenous suppliers neither benefit from transfer of
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7 skills and technologies from the motor vehicle manufacturers or from the foreign-owned
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9 suppliers, nor from direct help to market their products abroad. Their relationships with
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11 foreign-owned multinational subsidiaries are highly exposed to market fluctuations, cost and
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13 price considerations, whereas suppliers from transition countries need time to acquire new
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15 capacities and to progressively internationalize. With the presence of mega-suppliers engaged
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17 in partnerships with the manufacturers in the Czech Republic it becomes increasingly difficult
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19 for indigenous companies to climb up the value-added scale.
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27 The Achilles' heel of the Czech upgrading process

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31 The upgrading has been essentially realized through the development of the multinationals'
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33 subsidiaries capabilities. They have dramatically improved the quality standards thanks to the
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35 integration of new technologies and management practices. Subsidiaries have also
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37 progressively increased their autonomy vis-à-vis the head company as well as the research &
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39 development activities (CZECHINVEST, 2007). Yet the automotive sector must be seen as
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41 forming a system. Its global competitiveness depends on all the actors of the system, and poor
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43 vertical spillovers are responsible for the existence of a weak link in the Czech chain.
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45 Regarding CARRILLO and GOMIS' (2001) work on the Maquiladoras in Mexico, one may
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47 consider that the more the Czech automotive industry is technology-, innovation- and
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49 qualified labor-oriented, the better it is prepared to confront competitive pressure. An
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51 innovative-oriented system may more easily resist to external shocks such as the entry of new
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53 competing countries or downturns in the Western economy (especially in the German
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55 market), but also to internal shocks such as an increase in labor costs or changes in the FDI
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3 policy. If, in the long term, the only main advantage of Czech-owned suppliers remains based
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5 on non-specific capacities such as cheap labor and low cost production, foreign-owned
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7 subsidiaries may decide to relocate the production in country with lower labor costs such as
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9 Romania, or even move further East. Moreover, specialization in a low-value added
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11 production may lock the country in a peripheral position in the European automotive
12
13 complex. In comparison with purely domestic firms, companies with cross-border operations
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15 should be relatively flexible. They have an enhanced ability to shift production between
16
17 various locations within the firm. Only few studies have examined whether foreign-owned
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19 plants are really more likely than indigenous plants to exit the domestic market. Yet, two
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21 main studies tend to support this view. GÖRG and STROBL (2003) find that in the Irish
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23 manufacturing sector foreign majority-owned plants are more likely to exit than indigenous
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25 companies. BERNARD and SJÖHOLM (2003), using data from 1975-1989 for the
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27 Indonesian manufacturing sector (controlling for size and productivity) consider that foreign-
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29 owned plants are 20% more likely to close than domestic plants. The presence of foreign
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31 owners substantially decreases the plant survival rate.
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43 CONCLUSION

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48 The bulk of the empirical literature related to the motor vehicle industry tends to suggest that
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50 with globalization the room for locally-owned component suppliers in developing countries
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52 and transition economies has decreased. In the Czech Republic also, a limited number of
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54 Western mega-suppliers forming the top of a highly hierarchized system co-design, co-
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56 produce and co-locate with the motor vehicle manufacturers, leaving little room for the lower
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58 tier indigenous suppliers. The Czech-owned suppliers have been cornered in a system of
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3 'price-driven subcontracting' and have failed to produce innovative-intensive products and to
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5 localize production facilities abroad. The Czech-owned companies are totally absent from the
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7 first tier suppliers and are only linked by casual technological relationships to foreign-owned
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9 multinational subsidiaries. This kind of relationship has limited vertical spillovers of foreign-
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11 owned multinational subsidiaries on the indigenous industry. The weakness of the Czech-
12
13 owned companies drags the competitiveness of the Czech automotive system down, increases
14
15 the risk of relocations of plants in other countries and locks the Czech automotive complex in
16
17 a peripheral position. The policies of the Czech government, inspired by the Irish and the UK
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19 experiences, aiming at developing high value added supply chains in key sectors such as the
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21 automotive sector have now to go a step further. The Czech government encourages the
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23 different forms of cooperation between Czech and foreign entities, whether they are
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25 companies, universities or research institutes. Yet, although partnerships have emerged, the
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27 relationships with the local actors are still shaky. Unfortunately, there is no consensus among
28
29 scholars and practitioners on the best solution to foster the emergence of innovative firms in
30
31 Central Europe. Is it simply a question of time for the indigenous firms to overcome their
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33 initial backwardness? Or must the Czech government embark on voluntary policies by using
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35 carrots and sticks? Should they put the emphasis on the improvement of the local Research &
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37 development potential, on the development of the specific capabilities of the human resources
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39 in the automotive activities or on the creation of clusters?
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37 the 'restrictiveness indicator', see GOLUB, 2003; KOYAMA and GOLUB, 2006).
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40 ² Inter-sectoral comparisons make no sense: the idiosyncratic characteristics of the automotive
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42 industry explain that motor vehicle manufacturers source more locally when they invest in
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44 developing countries and transition countries than foreign-owned multinational subsidiaries of
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46 other industries used to do on average (for examples of the local content in other industries,
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48 see BATTAT et al., 1996; UNCTAD, 2001, p.134-5; RUGRAFF et al., 2009).
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52 ³ In our definition, foreign-owned companies are corporations with a foreign person or a
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54 conglomerate owning more than 50% of the outstanding shares.
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57 ⁴ For an insight into the main strategic, organizational and technological shifts in the motor
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59 vehicle industry over the last 20 years, see the websites of the Industrial Performance Center
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(IPC) of the Massachusetts Institute of Technology (<http://web.mit.edu/ipc>) and of the GERPISA

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9 ⁵ Most of the Czech-owned companies are certified under the German standard DIN EN ISO
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11 9001 complemented with the requirements of the automotive industry VDA 6.1 and the
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13 American standard QS-9000.
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Table 1. The Top ten companies in the Czech motor vehicle industry, 2006

Company	Nationality of the owner	Activity	Turnover € billion	Employment	Motor vehicle production
Skoda (VW Group)	Germany	manufacturer	7,375	23 304	556 375
Toyota-Peugeot Citroën Auto	Japan/France	manufacturer	1,764	3278	193 207
Barum Continental	Germany	Supplier	1,536	4448	/
Bosch Diesel	Germany	Supplier	0,803	6185	/
Johnson Controls	USA	Supplier	0,666	3500*	/
Visteon-Autopal	USA	Supplier	0,425	4318	/
Continental	Germany	Supplier	0,417	361*	/
Siemens VDO	Germany	Supplier	0,406	2655	/
Valeo	France	Supplier	0,371	112*	/
Continental Teves	Germany	Supplier	0,357*	1312*	/

Note: * in 2005.

Sources: Compiled by the author from DELOITTE (2007) and from INTERNATIONAL ORGANIZATION OF MOTOR VEHICLE MANUFACTURERS (2008).

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

Notes: 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.

Sources: MINISTRY OF INDUSTRY AND TRADE (2001, 2007).

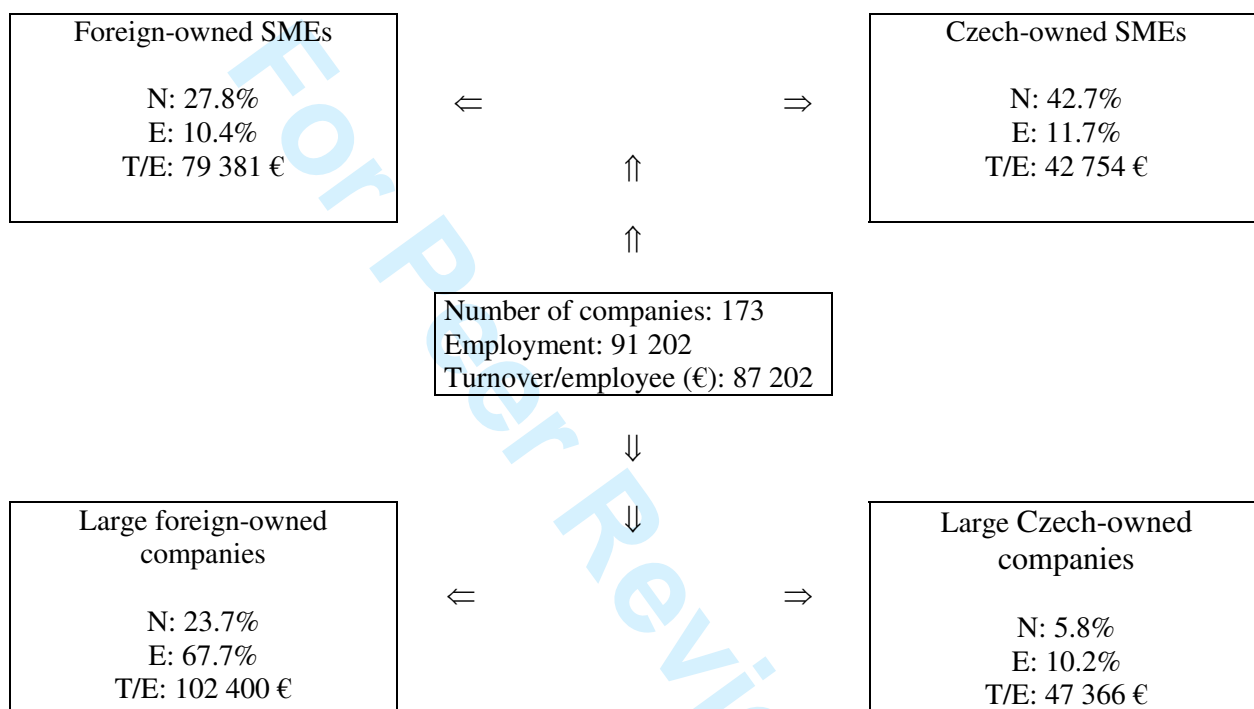
Table 3. Comparison of the world performances of the two major foreign-owned suppliers and the ten major Czech-owned suppliers, 2006

	Turnover € billion	Employment	R&D expenditures/ sales	Production facilities abroad	Production of parts (P) or systems (S)
The two major foreign-owned companies					
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)
Spokar*	0,020	500	/	0	P (Brushes, injection- moulding)

Note: *2003-2004; **2005.

Sources: own calculation based on CZECHINVEST (2008) and compilation from the Annual Reports of the 12 companies.

Figure 1. The automotive component ‘first-tier’ suppliers in the Czech Republic, mid-2000



Note: Large foreign-owned companies (over 500 employees) represent 23.7% of the component ‘first-tier’ suppliers, 67.7% of the total employment and their turnover per employee amounts to 102 400€.

Sources: own calculation based on (CZECHINVEST, 2008) and compilation from Annual Reports of the companies.