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R&D Activities as a Growth Factor of Foreign-Owned SMEs in Croatia

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Abstract

The aim of this paper is to explore the role of R&D activity as a factor of innovation and growth in foreign-owned SMEs in Croatia. In this paper, we try to confirm the hypothesis that there is a significant statistical difference (measured by the chi-square test) between high-growth foreign-owned SMEs and low-growth foreign-owned SMEs with regard to R&D activities. R&D activities are measured by annual expenditures on R&D and by the existence of R&D collaboration with external partners. In addition, the role of the firm as a source of technological knowledge for R&D activities and innovation for its partners is measured. The growth performance (i.e. increase of total revenues and number of employees) of foreign-owned SMEs in Croatia cannot be explained by R&D activities. However, a statistical difference has been observed in the case of high-growth SMEs as knowledge sources for foreign competitors.

Keywords: small and medium-sized enterprises, R&D activities, Croatia
JEL classification: O31, O32

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1 Introduction

SMEs are universally recognized as important drivers of national economies. The contribution of the SME sector to employment, exports, and the intensity and complexity of R&D may differ between countries. However, developed economies tend to have dynamic SME sectors that significantly contribute to both employment and the development of new technology. Thus, the development of the SME sector is paramount to economic development, which is a fact that should be reflected in economic policy. The increasing significance of SMEs in the emerging Central and Eastern European economies is a result of both the privatization and restructuring of existing companies and industries, and of the emergence of opportunities for the creation of new companies. Foreign direct investments (FDI) have played a significant role in these processes. However, their structure and prevailing motives were often unfavorable for export- and innovation-led growth. Namely, FDIs frequently comprised of privatization-related investments undertaken for market-seeking reasons, often in service sectors (e.g. finance, telecommunications, and retail). The crucial exception to this approach was provided by a population of foreign-owned manufacturing SMEs, some of which had previously undergone privatization, whereas others were founded as greenfield projects. These enterprises have become an important source of technology and knowledge transfer (from the parent company), but have also frequently undertaken their own R&D activities. Types of R&D activities include in-house and out-of-house R&D, where various types of R&D cooperation (e.g. with universities, suppliers, customers, and rivals) incorporate different firm strategies applying a choice between cost-reduction or long-term profit-optimization (cf. Narula, 2003). However, the existence of the R&D cooperation can be viewed as an important factor of enterprise growth, which justifies analysing the impact of R&D (as a knowledge creation activity) on the growth of these enterprises. Of course, firm growth depends on a number of internal factors, as well as on the environmental conditions in which the firm operates.

The aim of the paper is to explore the role of R&D activity as a factor of innovation and growth in foreign-owned SMEs in Croatia. The paper is based on the micro-level approach, i.e. it focuses on the research into types of R&D activities

as strategies in facilitating enterprise growth. This is done by utilising the results generated by a survey on knowledge transfers and innovation activities in manufacturing enterprises that have received foreign direct investments in the period from 2004 to 2006. In this paper, we examine the hypothesis that there is a significant statistical difference (measured by the chi-square test) between high-growth foreign-owned SMEs and low-growth (other) foreign-owned SMEs in Croatia with regard to R&D activities. R&D activities in enterprises are measured by annual expenditures on R&D and the existence of R&D collaboration with external partners (suppliers, customers, and research organizations). Moreover, the role of the firm as a source of technological knowledge for R&D and innovation activities for its suppliers, customers, and competitors is measured. Technological knowledge within firms can engender R&D and innovation activities, and thereby foster outstanding firm performance (i.e. a substantial increase in the firm's revenues).

The paper is organized as follows. First, we analyze the literature concerning R&D activities in the context of firm performance, which is followed by an analysis of SME growth. The subsequent section examines the statistical differences between foreign-owned high-growth SMEs, and other foreign-owned SMEs in Croatia with regard to R&D activities. Finally, concluding remarks are presented in the last section.

2 Literature Overview

The importance of innovation activities for firm performance has become widely acknowledged (Crepon, Duguet and Mairesse, 1998; Grifith et al., 2006). R&D activities have been recognized as a crucial factor of innovation activity and/or innovation capacity (Cohen and Levinthal, 1989). R&D activities can be conducted in-house or out-of-house (in cooperation with other firms or specialized institutions). The primary issue related to R&D cooperation is the choice between internal and external R&D activities, i.e. between the options of R&D stimulation and purchase (Veugelers, 1997; Veugelers and Cassiman, 1999). The choice between these options depends on the available technological knowledge, expected outputs,

as well as on the accompanying risks and costs of R&D and innovation activities. High risks and costs and a lack of available knowledge induce firms to seek external partners. Hereby, the key issue is how to create an optimal mix of external knowledge, resulting from market opportunities, and knowledge within the firm, resulting from business decisions which evolve in the future. The company must then be positioned accordingly, thus gaining a 'strategic fit' (cf. Porter, 1996).

The importance of R&D cooperation has risen steadily alongside with complexity, risk, and the cost of innovation activities. In terms of organizational modes, R&D cooperation varies from wholly-owned subsidiaries with full internalization of transaction, across various types of equity and non-equity agreements (which include team collaboration), to interpersonal collaboration (Lundin, Frinking and Wagner, 2005). The organizational modes of innovation cooperation are vital because of the different impacts they produce on the participating firms' innovation activities. Weak ties serve more as bridges to rapid exchange of novel information, while strong ties are useful for both social control and the exchange of tacit knowledge (Powell and Grodal, 2005: 69). Teece (1980) argues that organizational practices affect performance and can explain sustained performance differences within industries - due to the slow diffusion of best practices and difficulties in imitating complex organizational capabilities.

The literature on innovation examines various types of cooperation. R&D cooperation with suppliers through process innovation is aimed at cost-reduction (e.g. Hagerdon, 1993), while cooperation with rivals is motivated by the need to share R&D costs (Miotti and Sachwald, 2003). R&D cooperation with customers is a source of new ideas for innovation and/or reduces the risk associated with the market introduction of the innovations (Von Hippel, 1988), and ensures market expansion when products are novel and complex or when they require adaptations when used by the customer (Tether, 2002). Cooperation with universities is aimed at radical product innovation or at entering a new market or market segment (Monjon and Waelbroeck, 2003). Moreover, complementarities between various types of R&D cooperation have been observed. Complementarities were found for joint cooperation strategies with competitors and customers, and with customers and universities, in which case, the role of customer cooperation in facilitating

commercialization and quicker diffusion of product innovations may result from competitor and university cooperation (Belderbos, Carree and Lokshin, 2005)

In the last twenty years, R&D cooperation has become closely linked to the internationalization of business activities, as a process entailing coordinated activities undertaken by an enterprise to penetrate foreign markets or to benefit from resources originating from other markets (cf. Szabo, 2002). A paramount role in the internationalization of R&D cooperation has been played by multinational enterprises (MNE) and their subsidiaries created through FDI. According to UNCTAD (2005: 26), MNEs account for two-thirds of business R&D expenditures (around USD 450 billion); within Central and Eastern Europe, the share of foreign affiliates in total business R&D reached a considerable size in Hungary (62.5 percent) and in the Czech Republic (46.6 percent).

Several explanations for the internalization of R&D within MNEs are provided by the literature. The adaptation of existing technology (e.g. in MNE group) is motivated primarily by demand-side factors, such as the importance of proximity to final markets, a need for local responsiveness, and the support of local production and marketing operations (Ivarsson and Jonsson, 2003). On the other hand, supply-side factors, such as gains from exploitation of local opportunities (e.g. Cantwell, 1992) may enhance foreign R&D activities. The main reasons that explain the internalization of R&D activities include the potentially beneficial effects of continuous knowledge exchange within multinational networks (Hedlund, 1996; Bartlett and Ghoshal, 1990) and gains from cross-fertilization within individual technology or the recombination of knowledge across related technologies (Pavitt, 1991; Granstand et al., 1992).

The determinants of R&D activities and R&D cooperation are linked to the characteristics of firms and industries. Fritsch and Lukas (2001) and Vonortas (1997) find that the propensity to co-operate increases with firm size. Kleinknecht and Van Reijnen (1992) found this correlation between the size (number of employees) and cooperation only in the relationship between private firms and public research institutions. Several empirical studies find hardly any significant connections between R&D intensity and co-operation. Kleinknecht and Van Reijnen (1992) identify an important role for R&D intensity only for co-operation

between private firms and public research institutions, whereas Fritsch and Lukas (2001) obtain ambiguous positive results regarding the relationship between R&D intensity and the probability of co-operation. These results can be explained by the characteristics of technologies employed (Negassi, 2004: 270), but the choice between in-house R&D and R&D cooperation can also be linked to innovation costs and risks.

Innovation activities tend to be enhanced when a company is a part of a MNE. This is not only due to product mix and process standardization; many studies show that parent companies have a positive influence on local subsidiaries and their innovation activities through knowledge transfer (e.g. Blomström and Sjöholm, 1999; Girma, Greenaway and Wakelin, 2001; Damijan et al., 2003). A major challenge for MNEs is to find an organizational system capable of transferring know-how across units and locations, allowing locally generated know-how to be used throughout the multinational organization (Sanna-Randaccio and Veugelers, 2003). Ivarsson and Jonsson (2003) found two basic motives for foreign R&D units. These were local market adaptation of technology originally developed by the parent corporations in the home country, and access to technological expertise and exploitation of local comparative advantage.

The theories explaining innovation co-operation include the perspectives of transaction costs (which focus on cost-reduction), organizational capabilities, and a technology-based view of the firm (focusing on enhancing the value of a firm), and game theory (emphasising strategic considerations in competitive relationships) - cf. Jaklič, Rojec and Damijan (2008). The primary motivation for a customer-supplier network is likely to be cost-economization, whereas strategic agreements aimed at long-term profit optimization enhance the value of firm's assets (Narula, 2003). There are also several strategic reasons that explain the popularity of cooperative agreements. First, the increase of competition is due to liberalization processes (Buckley and Casson, 1998), which increases the risks and costs of innovation activities. The increasing number of alliances is motivated by reasons stemming from growing development costs and acquiring the resources and skills necessary to sell a new product and/or service (Narula, 2003). Second, declining transaction costs associated with contractual or quasi-internalized relationships in addition to falling profits margins has led to a disintegration of certain firms in

particular industries. Furthermore, growing technological convergence between sectors has also played an important role where the cross-fertilization of technological areas has meant that firms need to access an increasing range of competencies (cf. Granstard, Pavitt and Pattel, 1997). In this case alliances initially revolving around R&D may be a precursor to mergers and acquisitions (Hagerdoorn and Sadowski, 1999).

The impact of innovation cooperation on a firm's innovation activities seems to be related to both the pattern of collaborative relationships and to the type of partners involved (Vinding, 2002). Formal, strong, and direct ties tend to have a stronger impact on a firms' innovation activities than informal, weak, and indirect ties (Powell and Grodal, 2005: 68-69; Godoe, 2000); this relationship is mutually reinforcing - external linkages facilitate innovation, and at the same time innovative outputs attract further collaborative ties (Powell and Grodal, 2005: 67-68). As for the type of partners, Belderbos, Carree and Lokshin (2004: 11) found that cooperation with customers and universities (including research institutes) positively affects growth in sales per employee of innovative products and services new to a market. In addition, the influence of innovation cooperation on innovation activities may, for example, differ in terms of ownership type. In Slovenia, Jaklič, Damijan and Rojec (2008) have confirmed that there is a statistically significant influence of innovation cooperation on innovation activities for domestic partners only (and not for the international ones).

Empirical evidence about R&D cooperation and its influence on firm performance has been growing in recent years - with quite similar results appearing in different national contexts. In the Dutch economy, Belderbos, Carree and Lokshin (2005) found an overall positive impact of R&D cooperation on labor productivity growth, but different types of cooperation had different influences on labor productivity. Supplier and competitor cooperation enhance labor productivity growth, while competitor cooperation and collaboration with universities and research institutes positively affect growth in innovative sales per employee. In a study on foreign affiliates in Sweden, Ivarsson and Jonsson (2003) found that collaboration with customers has positive results on local market adaptation as well as on export activities. Researching Italian firms, Medda, Piga and Siegel (2005) obtained somewhat different results. They argue that only collaboration

with other firms significantly influences productivity, whereas cooperation in R&D with universities does not lead to productivity enhancements. The latter findings seem to be linked to the prevalence of radical innovation aimed at opening new markets and/or the creation of new products.

3 Methodology

This section analyzes the influence of R&D activities on SME growth in Croatia. Our methodology tries to depict the influence of various R&D activities on enterprise growth. Our empirical analysis is based on the postal survey of foreign investment enterprises in manufacturing in Croatia. This survey took place in April and May 2007 and was completed by a poll-taker who subsequently contacted every firm from the population of foreign-owned enterprises. The questionnaire consists of three parts: basic information about the firm, the relationship between the foreign investor(s) and the firm, and R&D and innovation activities, both at the time of the entry of the foreign company into the Croatian market and at the time of the questionnaire.

We analyze the population of foreign-owned SMEs in Croatia - SMEs are dominant in the population of foreign-owned enterprises in Croatia. They account for more than eighty percent (82.8 percent) of the total number of firms, as well as for 44.3 percent of the total number of employees and 52.2 percent of total revenues.[1] This questionnaire focused on the manufacturing sector with direct registered foreign ownership, totalling 220 entities.[2] For the purpose of this analysis, the SME population is divided into two groups. The first group consists of firms that have achieved high growth, and the remaining firms comprise the control group. The statistical significance of the difference between high-growth SMEs and low-growth SMEs is tested using the chi-square test.

[1] *Companies were identified using the Croatian Business Intelligence data base (http://www.poslovnahrvatska.hr). Unfortunately, the majority of Croatian SMEs (around 12.000 companies) are micro-companies, with 9 or less employees, with business activities in the service sector (mainly real estate, tourism, construction and finance).*

[2] *The questionnaire was sent to every firm in the dataset, and 145 firms filled in and returned the questionnaires, hence the response rate was 66 percent.*

High-growth enterprises are defined as ones that achieve a continuing, significant, and often outstandingly rapid increase in total revenues and/or in the number of employees as well as by other indicators of growth such as total assets and profits (cf. McMahon et al., 1993). For the purpose of the analysis, high-growth enterprises are defined by the simultaneous fulfilment of two criteria. The first one is an above-average, real sales growth (of more than 20 percent) in the period from 2003 to 2006; hereby, real sales growth is defined as the nominal sales growth (30 percent) subtracted by the cumulative producer price index (10 percent). The second criterion is the increase in the number of employees in 2006 in comparison to 2003.[3] Our initial results show that 40 percent of the researched SME population has met these high-growth criteria.

For the purpose of this research, R&D activities are measured by annual expenditures on R&D, the existence of R&D collaboration with external partners (suppliers, customers, and research organizations), and the significance of the firm as a source of technological knowledge for R&D activities and innovation activities of a firm's partners (suppliers and customers) and competitors, where these firms are divided between domestic and foreign.

3.1 The Impact of R&D Activities on the Growth of SMEs

In this section, we analyze the differences among high-growth SMEs and low-growth SMEs related to R&D activities (in-house) as well R&D cooperation (out-of-house). R&D cooperation is analyzed in relation to two groups of participants - firms (business entities) and other organizations (e.g. academic institutions). The domiciles of the business entities (domestic and foreign) were used as an additional division criterion.

Our analysis shows that there are no statistically significant differences between high-growth SMEs and low-growth SMEs regarding the share of their R&D expenditures in total expenditures. Almost sixty percent of population of foreign-owned SMEs does not perform R&D activities (58.6 percent). Moreover, high-growth SMEs are more frequent in the group of firms without R&D expenditures,

[3] *SMEs that have grown rapidly and exceeded the threshold of 250 employees by 2006 have not been excluded.*

whereas low-growth SMEs prevail in the group of firms using more than 10 percent of their expenditures on R&D. However, the value of the chi-square test is 1.322, and differences among observed groups of SMEs are not statistically significant (p=0.516).

Table 1 **Share of R&D Expenditure in Total Expenditures**

Share of R&D expenditure in total expenditures	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs	
0%	53.9	65.7	58.6
0.1-10%	5.7	5.7	5.8
10.1% and higher	40.4	28.6	35.6

It seems that achieving high growth performance is not a result of the use of knowledge created within a local, foreign-owned SME.[4] Moreover, these firms primarily focus on the manufacturing of innovative products or the facilitation of innovative processes, whereas other businesses functions[5] are usually controlled by foreign investors (Aralica, Račić and Redžepagić, 2007: 9). Therefore, growth performance can be explained by the use of external knowledge generated by foreign owners, mainly MNC's; implying that local subsidiaries need to adjust their innovation strategy (i.e. production of innovative products and/or processes) with foreign owners, who are in turn responsible for knowledge related business functions.

R&D cooperation is analyzed in relation to two groups (domestic and foreign firms). In general, R&D cooperation does not play a significant role. However, high-growth SMEs engage relatively more in cooperation with other domestic firms. Twenty five percent of them consider it very important, whereas low-growth SMEs largely consider such cooperation as not important (46.3 percent). But, the chi-square test value is 7.603, and the differences among high-growth and low-growth SMEs are not statistically significant (p=0.055).

[4] Similar results are achieved by analysing the differences between high-growth SMEs and low-growth SMEs related to innovative activities i.e. innovation of product, innovation of process. There are no statistical differences between high-growth SMEs and low-growth SMEs related to the innovation of a product (p=0.732); the chi-square value is 0.117 as well as for the innovation of process (p=0.320); the chi-square value is 2.227.

[5] These business functions in the questionnaire include basic and applied research, product development and process engineering activities closely related to R&D activities.

Table 2 **R&D Cooperation with Other Domestic Firms**			
R&D cooperation with other domestic firms	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs	
Not important	46.3	33.3	41.1
Somewhat important	5.6	19.4	11.1
Important	35.2	22.2	30.0
Very important	13.0	25.0	17.8

Similar results have been obtained in the analysis of R&D cooperation with other foreign firms. This result can be explained by the easier access to external knowledge (often from the parent company from abroad). However, the value of the chi-square test is 2.833, and there are no statistical differences between high-growth SMEs and low-growth SMEs (p = 0.418).

Table 3 **R&D Cooperation with Other Firms from Abroad**			
R&D cooperation with other firms from abroad	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs	
Not important	42.6	40.5	41.8
Somewhat important	11.1	16.2	13.2
Important	31.5	18.9	26.4
Very important	14.8	24.3	18.7

Foreign-owned SMEs are even less active in R&D cooperation with other organizations (e.g. academic institutions). Such cooperation is often closely connected with radical innovation[6] (cf. Monjon and Waelbroeck, 2003), and presents a minor proportion of the innovation activities.[7] Almost half of the respondents in both groups consider such R&D cooperation as not important, but other results do not show a consistent pattern. The value of the chi-quare test is 2.412, and there are no statistical differences between the two observed groups (p=0.491).

[6] *Innovations can be divided into radical and incremental ones. Radical innovation can appear as significant improvements of the existing product or the introduction of new products or processes that can change the competition dynamics thoroughly in a sector. Incremental innovations are small improvements of the existing products or processes (OECD, 2005).*

[7] *Račić, Aralica and Cvijanović (2007) find that 12.2 percent of all innovations in Croatia are radical.*

Table 4 **R&D Cooperation with Other Domestic Organizations**			
R&D cooperation with other domestic organizations	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs	
Not important	46.2	48.5	47.1
Somewhat important	5.8	12.1	8.2
Important	30.8	18.2	25.9
Very important	17.3	21.2	18.8

Foreign-owned SMEs in Croatia are the least likely to be involved in R&D cooperation with organizations from abroad. Half of them in both groups claim that such R&D cooperation is not important, and low-growth SMEs show a somewhat higher inclination towards considering such cooperation as important. The chi-square test result is 2.847, and the differences between high-growth SMEs and low-growth SMEs are not statistically significant (p=0.216).

Table 5 **R&D Cooperation with Other Organizations from Abroad**			
R&D cooperation with other organizations from abroad	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs	
Not important	50.0	50.0	50.0
Somewhat important	7.7	20.6	12.8
Important	28.8	14.7	23.3
Very important	13.5	14.7	14.0

3.2 Firms as a Source of Knowledge for Other Market Participants

In this section, our analysis focuses on the differences between high-growth SMEs and low-growth SMEs regarding their technological knowledge and influence on the R&D and innovation activities of other firms and organizations. In order to discern the dynamics of knowledge flows, the importance of firms as sources of knowledge is analyzed at the time of entry (i.e. the year when foreign investor entered the company) and at the present time. Moreover, a distinction is made between partners in the value chain (suppliers and customers) and competitors. Furthermore, the market participants are divided into domestic and foreign ones.

Significant proportions of foreign-owned SMEs emphasize that their knowledge is not important for R&D and innovation activities of domestic suppliers and customers – both at the time of entry and at the present time. However, in the entry period, high-growth SMEs seem to have a relatively stronger role as a knowledge source; there are statistically significant differences among observed groups (p=0.013), and the chi-square value is 10.789. The results for the present show increased levels of firms in both groups as knowledge sources for domestic suppliers and customers; however, the results are not related to firm performance. There are no statistically significant differences between two groups (p=0.316), and the chi-square value is 3.536.

Table 6 **The Firms as Sources of Knowledge for Domestic Suppliers and Customers – Entry and Present**

Source of knowledge for domestic suppliers and customers – entry and present	Entry			Present		
	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs		Low-growth SMEs	High-growth SMEs	
Not important	54.4	44.4	50.5	50.9	45.9	48.9
Somewhat important	8.8	33.3	18.3	7.0	18.9	11.7
Important	28.1	11.1	21.5	21.1	13.5	18.1
Very important	8.8	11.1	9.7	21.1	21.6	21.3

In general, the analyzed SMEs are a less important source of knowledge for foreign suppliers and customers in comparison to domestic suppliers and customers. At the time of foreign investment entry, high-growth SMEs more frequently act as a source of knowledge; the chi-square result is 11.554 and differences between the two groups are statistically significant (p=0.009). The results for the present show a stronger relevance for firms in both groups as knowledge sources for foreign suppliers and customers; however, the results are quite similar and thus unrelated to performance; the chi-square result is 4.516 and there are no statistical differences between high-growth SMEs and low-growth SMEs (p=0.211).

So we can conclude that high-growth SMEs are relatively more important knowledge sources to both domestic and foreign suppliers and customers in the entry period, but such differences tend to diminish in time, accompanied by overall increases in the relevance of both groups as knowledge sources.

Table 7 **The Firms as Sources of Knowledge for Foreign Suppliers and Customers - Entry and Present**

Source of knowledge for foreign suppliers and customers - entry and present	Entry			Present		
	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs		Low-growth SMEs	High-growth SMEs	
Not important	61.4	47.2	55.9	57.9	48.6	54.3
Somewhat important	12.3	38.9	22.6	10.5	24.3	16.0
Important	21.1	5.6	15.1	22.8	13.5	19.1
Very important	5.3	8.3	6.5	8.8	13.5	10.6

Regarding the relevance of firms as sources of knowledge for domestic competitors, there are no statistically significant differences between high-growth and low-growth SMEs. This is true for both the time of entry and the present time; the values of chi-square test are 1.803 (p=0.614) and 2.010 (p=0.570), respectively. Given the low levels of R&D capability and the involvement of many Croatian firms (including both those locally owned and foreign-owned), it is understandable that R&D and innovation cooperation rarely exists; and, when it does, it has a minor influence on performance.

Table 8 **The Firms as Sources of Knowledge for Domestic Competitors – Entry and Present**

Source of knowledge for domestic competitors - entry and present	Entry			Present		
	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs		Low-growth SMEs	High-growth SMEs	
Not important	57.9	47.2	53.8	50.9	48.6	50.0
Somewhat important	17.5	22.2	19.4	12.3	13.5	12.8
Important	17.5	16.7	17.2	19.3	10.8	16.0
Very important	7.0	13.9	9.7	17.5	27.0	21.3

The most important difference between the two groups is the higher importance of high-growth SMEs as sources of knowledge for foreign competitors in the two periods - entry and the present. High-growth SMEs much more frequently report being a very important source of knowledge for foreign competitors – both during the entry of foreign investors and at present. In the first case, the chi-square result is 8.351, and there are statistically significant differences between high-growth and

low-growth SMEs (p=0.039). This is likely to be related to the utilization of local R&D capabilities within the overall strategies of their parent companies abroad; some Croatian, foreign-owned SMEs participate in international R&D and innovation cooperation, which involves other participants from the same industry; and this cooperation seems to have a positive effect on their performance.

Table 9 **The Firms as Sources of Knowledge for Foreign Competitors – Entry and Present**

Source of knowledge for foreign competitors - entry and present	Entry			Present		
	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)	Shares of groups of SMEs (in %)		Shares in total number of SMEs (in %)
	Low-growth SMEs	High-growth SMEs		Low-growth SMEs	High-growth SMEs	
Not important	61.4	47.2	55.9	57.9	45.9	53.2
Somewhat important	19.3	30.6	23.7	8.8	18.9	12.8
Important	17.5	8.3	14.0	26.3	10.8	20.2
Very important	1.8	13.9	6.5	7.0	24.3	13.8

4 Concluding Remarks

This analysis shows that R&D activities cannot explain the growth performance (i.e. the increase of total revenues and number of employees) of foreign-owned SMEs in Croatia. Only about two-fifths of them perform R&D at all; and low-growth SMEs do so more frequently (65.7 percent) than high-growth SMEs (53.9 percent). This can be explained by the business strategies of foreign-owned firms in Croatia, which are predominantly focused on manufacturing; whereas more knowledge-intensive functions (e.g. product development, process engineering, and basic and applied research) tend to be controlled by the parent company. This implies reliance on external knowledge (i.e. R&D activities of the foreign investors) to improve performance, whereby local subsidiaries adjust their innovation strategy with foreign owners, who are in turn responsible for knowledge related business functions.

Regarding R&D and innovation cooperation, the analyzed SMEs are more frequently involved in such cooperation with other firms (both domestic and foreign) than with other organizations (e.g. academic institutions). This can be

explained by the predominantly incremental nature of product and process innovations that occur through R&D cooperation.

In the case of the analysis of the firm's importance as a knowledge source for domestic and foreign suppliers and customers, statistical differences between high-growth and low-growth groups appear only in the period of entry of the foreign investors. That may signify that the R&D capabilities of the firm receiving FDI and their growth implications play a role in investment evaluation and at the entry of the foreign investor. Over time, however, due to experience, the overall relevance of firms as sources of knowledge to suppliers and customers increases, but the differences between low- and high-growth SMEs decrease.

A statistical difference between high-growth and low-growth SMEs has been observed in the case of high-growth SMEs as knowledge sources for foreign competitors. This implies that R&D and innovation cooperation tend to appear within the given industry and at the international level. More propulsive foreign-owned SMEs also participate and reap the accompanying performance rewards, although the level of participation is quite low. The activities of most foreign-owned SMEs revolve around manufacturing, with more knowledge-intensive functions assuming a less important role. The performance of high-growth SMEs, thus, primarily involves the adoption of external knowledge into firm practice.

Therefore, further research needs to adopt the methodology used in this paper and should attempt to investigate the influence of external knowledge (i.e. MNE headquarters, their units as well as other firms i.e. suppliers and customers, as knowledge sources) on the R&D and innovation activities of high-growth SMEs (both domestic and foreign-owned) in Croatia. In addition, this methodology could be further improved by forging stronger links between R&D and innovation activities and business functions. Finally, comparative studies covering several transitional economies in Eastern Europe with similar experiences regarding FDI would further enhance the relevance of these findings, and potentially yield better insights into the links between R&D investments and growth.

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