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**Foreign Affiliates versus Domestic Firms
in the Information and Communication Services Sector
in Central and Eastern Europe**

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Foreign Affiliates versus Domestic Firms in the Information and Communication Services Sector in Central and Eastern Europe

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Abstract: Given the important role of foreign direct investment in Central and Eastern Europe, the paper explores the performance of foreign affiliates versus domestic firms in the information and communication services sector in eleven countries in the region. Based on Eurostat data for the period 2010-2020, the paper conducts descriptive and comparative analysis of foreign-owned and domestic firms in terms of size, productivity and profitability, as well as their dynamics over time. The results reveal that, on average, foreign-owned firms in the sector tend to be bigger and perform better than their local counterparts, but in the same time there are significant variations across countries.

Keywords: Firm performance; Foreign direct investment; Multinational enterprises

JEL code: L25; F21; F23

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1. Introduction

The prevailing view in both academic research and policymaking with regard to the role of foreign direct investment (FDI) is that it can bring various benefits to the host countries such as job creation, transfer of technology, knowledge and skills, productivity spillovers, improved access to foreign markets etc. Such expectations were at the core of the investor-friendly policies that many countries in Central and Eastern Europe (CEE) adopted in the beginning of their market transition. At present the accumulated FDI in their economies is substantial and according to UNCTAD data in 2021 the average share of inward FDI stock in GDP in the CEE region is 57%. This indicator reflects high level of foreign capital penetration and raises the question about the role of foreign-owned companies in CEE and how their performance differs from domestic firms.

While there is a large number of empirical studies about the impact of inward FDI on CEE economies (e.g. Damijan and Rojec, 2007; Acarvaci and Ozturk, 2012; Curwin and Mahutga, 2014; Miteski and Stefanova, 2017; Jude, 2019; Jovanović and Hanzl-Weiss, 2022), research about the performance gaps between foreign affiliates and domestic firms in the region is more limited. One of the few examples is the study of Horobet (2018) which finds that foreign-owned companies in CEE, on average, have higher turnover, employ a higher number of persons, generate more value added and perform better than local firms. Even more scarce is similar research on a sectoral level, especially about the services sector (Belascu, 2018).

Given the relatively limited number of studies about the relevance of foreign ownership for firms' performance in CEE, the paper aims to complement the literature in the field by providing a comparative analysis of foreign affiliates and domestic firms in the information and communication (IC) services sector in eleven CEE countries in the period 2010-2020. The choice to focus on this sector stems from several factors. First, it is well established in empirical research that information and communication technologies have a positive and significant effect on productivity, which is also increasing over time (Cardona, Kretschmer and Strobel, 2013). What is more, it has been suggested that IC services can play an important role for some of CEE countries' participation and relative position in global value chains (Cieślík, 2022). Second, according to Eurostat data in 2020 the IC services sector in CEE ranks third in terms of its share in total value added (9%), after manufacturing (29%) and trade (21%). Moreover, it is among the leading economic activities in CEE in terms of labour productivity, outstripping most of the other types of services, as well as manufacturing. Third, compared to other sectors, foreign-owned firms in the IC services sector in CEE have

the highest contribution to the sectoral value added (55 % on average for CEE in 2020 according to Eurostat), which makes it worth studying their activities in more details.

To conduct the comparative analysis of foreign-owned and domestic firms in the IC services sector, the paper uses Eurostat's Foreign Affiliates Statistics in the period 2010-2020 and covers the following CEE countries: Bulgaria, Estonia, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The analysis has the following objectives: first, to outline the importance of foreign firms in the IC services sector in CEE at an economy-wide level. Second, to compare foreign-owned and domestic firms in the sector in terms of size and how it has changed over time. Third, to analyse the performance of foreign affiliates versus domestic firms by focusing on the level of their productivity and profitability, as well as on its dynamics during the examined period.

The rest of the paper is organized as follows. Section 2 provides brief literature review about the importance of foreign ownership for firm's performance. Section 3 outlines the data and methodology used. Section 4 discusses the empirical results and section 5 concludes.

2. Literature review

Studying the performance gaps between foreign-owned and domestic firms has important practical implications as the results of such research could provide support to policy makers with regard to the implementation of specific FDI policies (Bentivogli and Mirenda, 2017). That is why, this topic has been explored in a large body of theoretical and empirical literature.

A key tenet of the theory of the MNE is that to undertake FDI and survive abroad against local competitors, a firm must possess specific advantages over its rivals which can compensate for the disadvantages of operating abroad (Dunning, 1988). Such firm-specific advantages result mostly from intangible assets and capabilities that bring a superior competitive position to the MNE (Rugman, Verbeke and Nguyen, 2011). Examples of firm-specific advantages include advanced technology, management and organizational skills, brands, reputation, special access to information, raw materials, distribution channels etc. (Adarkwah and Malonæs, 2022). From a theoretical point of view, it is the firm-specific advantage that leads to higher productivity of foreign-owned firms relative to their domestic counterparts.

Evidence of productivity differences in favour of foreign affiliates can be found in many empirical studies. For example, Davies and Lyons (1991) find that foreign firms in the UK manufacturing industry are on average 48,8% more productive than their domestic

counterparts. Another study of UK manufacturing is Oulton (1998) which uses data on a more disaggregated level and estimates that labour productivity of foreign-owned firms is 38% higher relative to domestic firms. Evidence of better performance of foreign firms in terms of labour productivity is also found in the study of Griffith and Simpson (2004) which explores all UK manufacturing industries. As noted by Criscuolo and Martin (2005), a shortcoming of such studies which compare foreign affiliates with all domestic firms is that they might suffer from a selection problem. While foreign affiliates are part of MNEs, the group of domestic firms includes both non-MNEs and MNEs. If MNEs have an intrinsic productivity advantage, the superior performance of foreign firms in terms of productivity may not be a foreign ownership advantage, but may simply reflect the advantage of being multinational. Hence, it is important to distinguish between domestic MNEs and non-MNEs. Examples of studies which take this into consideration include Bellak and Pfaffermayr (2002) for Austria, Temouri, Driffield and Higón (2008) for Germany, Criscuolo and Martin (2005) for the UK. Most of them conclude that while foreign affiliates are more productive than domestic non-MNEs, foreign and domestic MNEs differ only marginally.

Another question that has attracted considerable research interest is whether foreign-owned firms are not only more productive but also more profitable than their domestic counterparts. Although from a theoretical point of view, it can be assumed that because of MNE's distinct ownership advantages, foreign affiliates might enjoy better financial performance than local firms, empirical studies in this field produce mixed results. Some studies find evidence of lower profitability of foreign-owned firms relative to domestic businesses. For example, Emmanuel and Oyelere (2002) find that foreign-controlled firms in the UK significantly under-perform domestic firms of comparable size and industry. These results corroborate the findings of previous empirical research for the USA such as Kim and Lyn (1990) and Crain and Stitts (1994). Other studies find that foreign affiliates have higher profitability than domestic firms. For example, Boardman, Shapiro and Vining (1997) explore such profitability gaps in the case of Canada and conclude that foreign-owned firms are more profitable than their domestic counterparts. Douma, George and Kabir (2006) examine the effect of foreign ownership on the financial performance of Indian firms and find that foreign firms perform better than domestic ones. Focusing on firms in Japan, Kimura and Kiyota (2007) conclude that foreign affiliates show superior performance than domestic firms in terms of return on assets. There are also studies that find no profitability gap between foreign and domestic firms. For example, in a study for Turkey, Basti, Bayyurt and Akin (2011) explore the impact of foreign ownership on several measures of corporate performance,

namely return on equity, total factor productivity, basic earning power ratio and return on assets. The authors find that there is no difference between foreign-owned and domestically-owned firms in terms of profitability.

When discussing the profitability gaps between foreign affiliates and local firms, it is important to consider the various reasons for the differences in inter-firm performance that have been outlined in the literature. As noted by Dunning and Lundan (2008), such reasons include the following: transfer pricing practices of MNEs which might be used either to lower or to raise profits in subsidiaries; manipulation of the asset base of affiliates by MNEs which may increase or lower the rate of return on capital; differences in accounting conventions; deliberate use of the financial leverage of the MNE to change the costs, revenue or profits of foreign affiliates with the aim to improve its long-term competitive position etc. Among these, particular attention has been paid to the international transfer pricing manipulations as a possible explanation for the profitability differences between foreign-owned and domestic firms. As noted by Emmanuel and Oyelere (2002), the lower profit performance of foreign affiliates is usually presumed to reflect MNEs' income shifting strategies for tax-minimisation purposes. Empirical studies suggesting such income-shifting behaviour of MNEs include Grubert, Goodspeed and Swenson (1993), Jacob (1996) etc.

Compared to other countries, the CEE economies have received relatively less attention in the research about the impact of foreign ownership on firms' performance. In an econometric study about Romanian manufacturing firms, Mihai and Mihai (2013) do not find evidence of significant relationship between foreign ownership and firms' performance, measured by return on assets, return on equity and return on sales. In another study, Jasiniak and Pastusiak (2014) conclude that the hypothesis that foreign-owned firms are more profitable than domestic ones is verified positively in the case of large companies in Poland. However, the authors also find that the relationship between the capital origin and firm's profitability is more complex than linear function. There are also some studies that focus on a sample of counties from the CEE region. For example, Horobet (2018) examines the performance gaps between foreign-owned and domestic firms in eleven CEE countries between 2009 and 2014. The author finds that foreign-owned firms, on average, have higher turnover, employ more people, generate more value added and enjoy better performance compared to domestic firms. The research also concludes that domestic companies enjoyed higher annual growth rates after 2009 compared to foreign affiliates, which corrected to some extent the existing performance gap.

While the majority of past empirical studies focus on the manufacturing sector, as noted by Belascu (2018) there is less research about the importance of foreign ownership for firm's performance in the services sector in CEE. As suggested by Temouri, Driffield and Higón (2008), incorporating services in such research is important because this is a knowledge-intensive sector which plays an even more significant role in countries' economies and attracts large amount of FDI. A study that focuses on a particular economic activity from the services sector in CEE, namely wholesale and retail trade, is Belascu (2018). The research includes seven countries in CEE and studies the performance dynamics of foreign-owned and domestic firms. The author concludes that although local businesses are more dynamic compared to foreign-owned ones, the performance gap between them in productivity and profitability is still large. Given the scarcity of empirical studies about foreign-owned and domestic firms in the services sector in CEE, the present paper tries to complement the discussion in this field by focusing on the IC services sector. As outlined earlier, the share of foreign affiliates in the sector's value added, average for the CEE region, is 55% in 2020 according to Eurostat data. This makes IC services rank first among all other sectors in terms of foreign-owned firms' contribution to sectoral value added, outpacing manufacturing (47%) and trade (35%). Hence, it is worth shedding more light on the activities of foreign-owned versus domestic firms in the sector.

3. Data and methodology

The analysis of the performance of foreign-owned and domestic firms in the IC services sector in this paper uses data that covers the period 2010-2020 and includes eleven countries in the CEE region, namely: Bulgaria, Estonia, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. These countries provide a suitable context for the comparative study, as they are all post-socialist economies and current EU members, in which FDI was largely absent during the system of central planning but played an important role in their market transition afterwards. The main data source of the analysis is the Foreign Affiliates Statistics (FATS) of Eurostat. It considers as foreign affiliates those enterprises where the foreign investor owns more than 50% of ordinary shares or voting power.

For the purposes of the comparative analysis, data on the following indicators are collected for both foreign affiliates and domestic firms. First, to explore the overall presence of foreign-owned firms in the IC services sector in CEE at an economy-wide level, data are compiled on: number of enterprises (number of foreign controlled enterprises resident in the

compiling economy); turnover (market sales of goods and services supplied to third parties, including non-deductible taxes, duties and charges, rebates and discounts); value added at factor cost (gross income from operating activities after adjusting for operating subsidies and indirect taxes); number of persons employed (average yearly headcount of persons employed and paid, including unpaid workers and persons absent for a short time). The average share of foreign-owned firms in the sectoral value for each indicator between 2010 and 2020 is calculated.

Second, to compare foreign affiliates and domestic firms in terms of size, the averages of the following enterprise characteristics are calculated: turnover per enterprise, value added at factor cost per enterprise and persons employed per enterprise.

Third, to explore the performance of both types of firms, the averages of the following indicators are computed: turnover per person employed (turnover divided by the number of persons employed); apparent labour productivity (value added at factor costs divided by the number of persons employed); wage-adjusted labour productivity (apparent labour productivity divided by average personnel costs and expressed as a ratio in percentage terms); gross operating rate (the ratio of gross operating surplus to turnover).

As a last step, to analyze how the size and the performance of foreign affiliates and domestic firms have evolved over time, the compound annual growth rates between 2010 and 2020 for the above indicators are calculated for both types of firms.

4. Empirical results

To outline the overall importance of foreign affiliates in the IC services sector in CEE at an economy-wide level, the analysis starts with presenting the shares of foreign-owned firms in the total number of enterprises, turnover, value added and persons employed in the sector (Table 1). For each indicator the average value in the period 2010-2020 is calculated. As seen in Table 1, foreign-owned firms constitute 10% of the total number of firms in the IC services sector in CEE. However, significant country variations are observed. The presence of foreign affiliates in the sector is most pronounced in Estonia and Poland (43% and 21 % respectively) and least pronounced in Slovakia (just 1%). Although domestic firms dominate the IC services in terms of number, on average foreign affiliates in CEE generate 55% of the sectoral turnover and 58% of the sectoral value added. The highest contribution of foreign affiliates to the sectoral turnover is found in Estonia and Romania (69% and 66% respectively). Foreign-owned firms generate less than half of the sectoral turnover in only three countries – Czech Republic, Latvia and Slovenia, the lowest share being in Slovenia

(31%). With regard to value added, in ten out of the eleven countries in the sample foreign affiliates generate more than 50% of the sectoral value added. The highest shares are found in Estonia (73%) and Romania (69%). Domestic firms dominate the sector only in Slovenia, where just 27% of the value added is due to foreign-owned businesses. As far as employment is concerned, the CEE average share of foreign affiliates in the total number of persons employed in the IC services sector is 40%. In most countries domestic firms are responsible for more than 50 % of the sectoral employment. Only in Estonia foreign-owned firms dominate in terms of number of persons employed, generating 63% of the sectoral employment. In Poland and Romania, the employment in the IC services is equally distributed between foreign-owned and domestic businesses. As with the other indicators, the lowest contribution of foreign affiliates to the sectoral employment is found in Slovenia (18%).

Table 1. Importance of foreign affiliates in the IC services sector in CEE (2010-2020 averages)

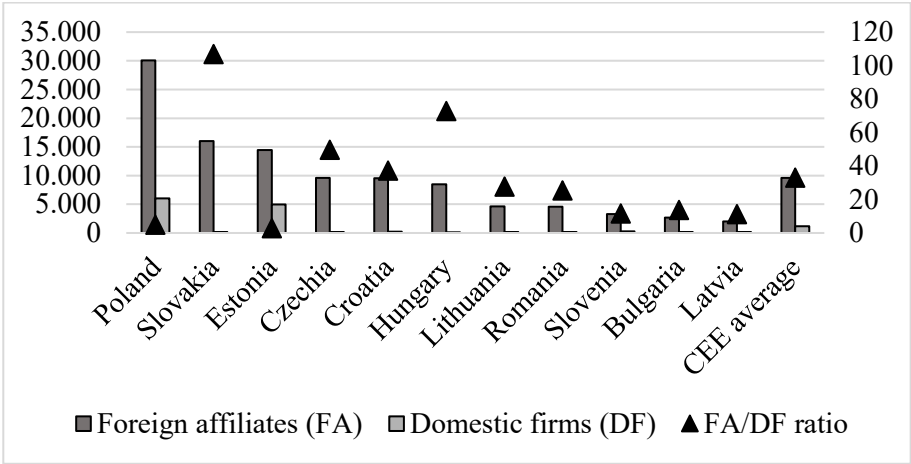
Country	Number of enterprises (%)	Turnover (%)	Value added at factor cost (%)	Persons employed (%)
Bulgaria	8	55	58	41
Croatia	3	55	55	30
Czech Republic	2	48	52	38
Estonia	43	69	73	63
Hungary	2	61	67	35
Latvia	7	48	50	36
Lithuania	5	61	65	39
Poland	21	57	60	50
Romania	7	66	69	50
Slovakia	1	54	61	40
Slovenia	4	31	27	18
CEE average	10	55	58	40

Source: Author's calculations based on Eurostat data

In order to compare foreign affiliates and domestic firms in the IC services sector in terms of size, the study proceeds with analyzing data at an enterprise level. Figure 1 shows the average values of turnover per enterprise in thousand euro in the 2010-2020 period for both foreign-owned firms and domestic businesses, as well as the ratio between them. One can easily observe that in all countries foreign affiliates, on average, have higher turnover than domestic firms. At a CEE level, the average turnover per enterprise among foreign affiliates is 33 times higher relative to domestic firms. The difference between the two types of firms in terms of turnover is the highest in Slovakia, where the average foreign affiliate generates turnover that is 107 times larger than the average domestic firm, and the smallest in Estonia,

where the ratio between these values is only 3. At the same time, there are significant differences between the average turnover of both foreign affiliates and domestic firms across countries. As seen in Figure 1, foreign-owned firms in the IC services sector have the largest size in terms of turnover in Poland, where the average turnover per enterprise in the examined period is 30 083 thousand euro. Foreign-owned firms have the smallest size in Latvia, where the average turnover per enterprise is 2 036 thousand euro. The average domestic firm in the sector is the largest in terms of turnover in Poland (6 034 thousand euro) and the smallest in Hungary (116 thousand euro).

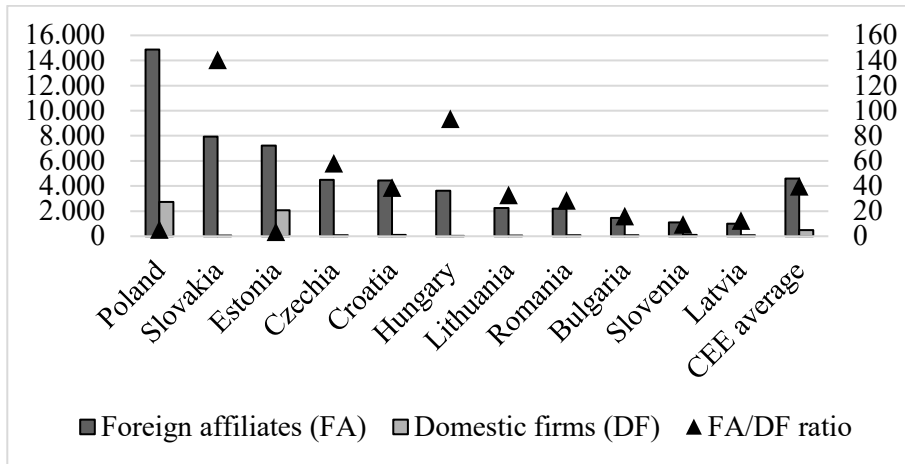
Figure 1. Turnover per enterprise (thousand euro) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



Source: Author’s calculations based on Eurostat data

Similar patterns are observed when value added at factor cost per enterprise is considered. As seen in Figure 2, foreign affiliates in IC services lead in terms of value added per enterprise in all countries considered. At a CEE level, the average value added per enterprise among foreign-owned firms is 40 times larger compared to domestic businesses. The difference between the two types of firms is most pronounced in Slovakia, where the average value added per enterprise for foreign affiliates is 140 times larger than for domestic firms. The smallest difference is found Estonia, where the ratio between the two values is 4. Additionally, one can observe similar country variations in value added per enterprise for both foreign-owned and domestic firms. Foreign affiliate’s size measured by this indicator varies between 14 869 thousand euro in Poland and 999 thousand euro in Latvia. In the case of domestic firms, average value added per enterprise is the highest again in Poland (2 725 thousand euro) and the smallest in Hungary (39 thousand euro).

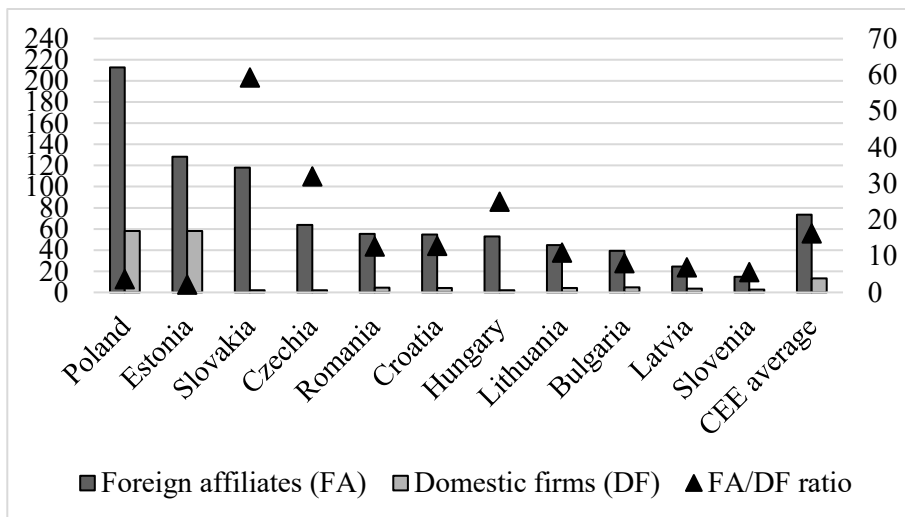
Figure 2. Value added at factor cost per enterprise (thousand euro) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



Source: Author's calculations based on Eurostat data

When the number of persons employed per enterprise is considered, as shown in Figure 3, in all CEE countries the average foreign-owned firm employs more people than the average domestic firm in the IC services sector. The data also shows that, at a CEE level, foreign affiliates, on average, employ 16 more people than domestic businesses.

Figure 3. Persons employed per enterprise in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



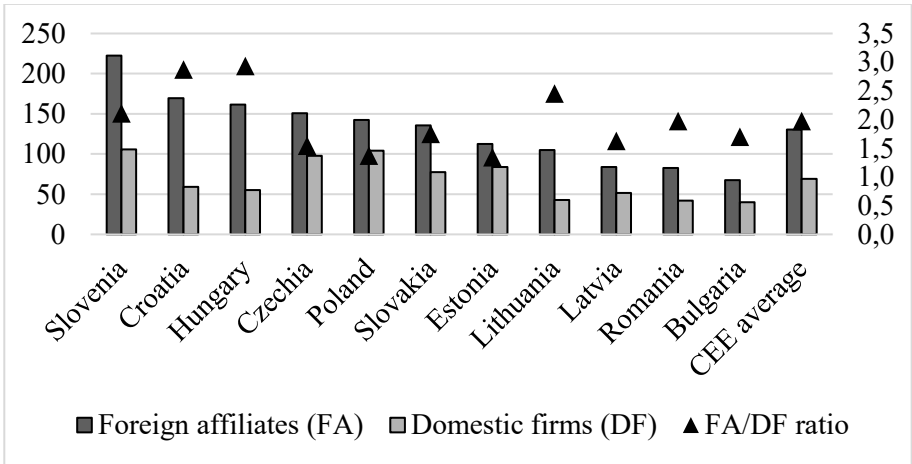
Source: Author's calculations based on Eurostat data

As for individual countries, Slovakia again leads in terms of the ratio between the size of foreign affiliates and domestic firms, measured by the number of persons employed per

enterprise (59), followed by the Czech Republic (32). The smallest difference between both types of firms is found in Poland and Estonia, where the ratio is 4 and 2 respectively. Foreign-owned firms in the IC services sector, on average, employ the largest number of persons in Poland (213) and the smallest one – in Slovenia (15). Domestic firms’ size in terms of the number of persons employed is the largest in Poland and Estonia (around 58 in both) and the smallest in Hungary, Slovakia and the Czech Republic (around 2 in all of them).

The analysis so far showed that foreign-owned firms in the IC services sector, on average, tend to be bigger than their domestic counterparts in all of the CEE countries. The next question that the paper seeks to answer is whether the larger size of foreign affiliates is also reflected in better performance against the domestic firms in the sector. Hence, the analysis proceeds with comparing foreign affiliates and domestic firms in the IC services sector in terms of the following indicators of firm’s performance– turnover per person employed, apparent labour productivity, wage-adjusted labour productivity and gross operating rate. As Figure 4 shows, the turnover per person employed, on average in CEE, is twice larger in foreign-owned firms than in domestic firms. Moreover, the performance gap in terms of this indicator is the largest in Hungary and Croatia (around 2,9 for both) and the smallest – in Estonia (1,3). Turnover per person employed is the highest in both foreign affiliates and domestic firms in Slovenia (223 and 106 thousand euro respectively) and the lowest - in Bulgaria (68 and 40 thousand euro respectively).

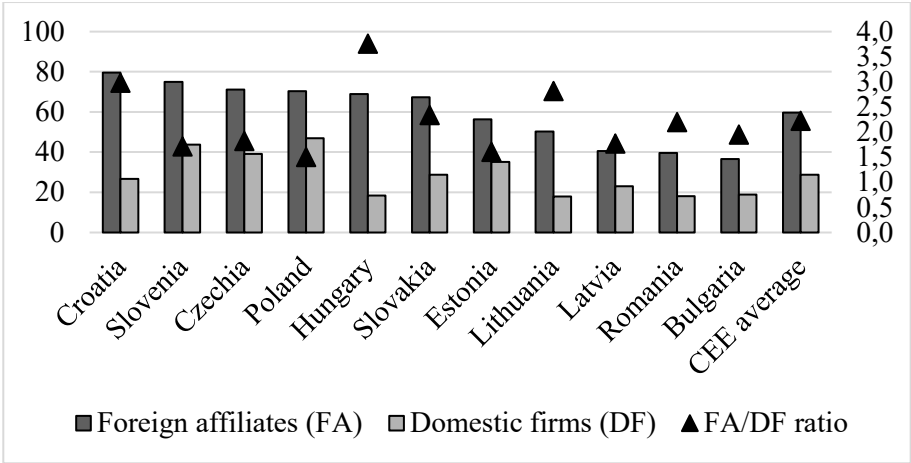
Figure 4. Turnover per person employed (thousand euro) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



Source: Author’s calculations based on Eurostat data

With regard to apparent labour productivity, in all CEE countries foreign affiliates in the IC services sector perform better compared to their domestic counterparts. Moreover, foreign-owned firms in the region are, on average, twice more productive than domestic businesses. As Figure 5 shows, the largest performance gap is found in Hungary, where foreign affiliates’ average apparent labour productivity during the examined period is 3,8 times higher than domestic firms. The lowest ratio between the values of this indicator for foreign and domestic firms (1,5) and hence, the smallest performance gap, is found in Poland. One can also observe significant country variations in terms of apparent labour productivity for both foreign-owned and domestic firms in the IC services sector. For example, the average gross value added per person employed generated by foreign affiliates is the largest in Croatia and amounts to 80 thousand euro, which is around twice larger than in Latvia, Romania and Bulgaria. As for domestic firms, they are the most productive in Poland, where the average gross value added per person employed is 47 thousand euro. This is around 2,6 times higher compared to the three countries, where domestic firms in the sector have the worst performance – namely Hungary, Romania and Lithuania (around 18 thousand euro in each).

Figure 5. Apparent labour productivity (thousand euro) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)

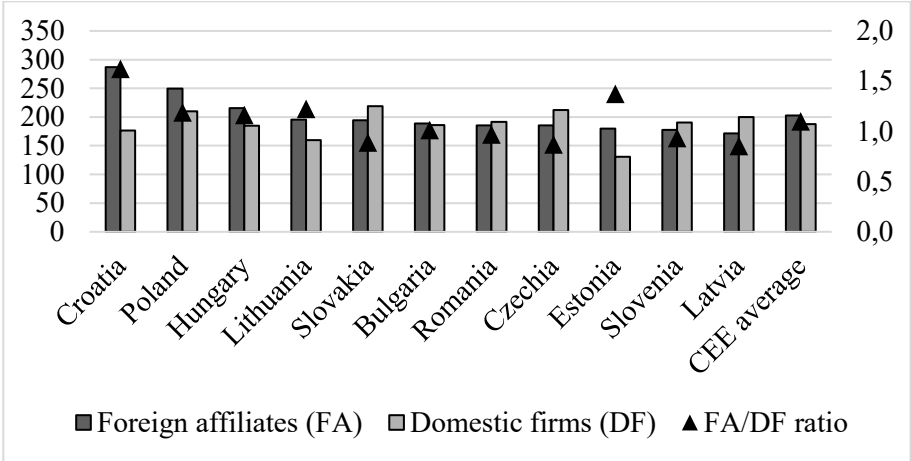


Source: Author’s calculations based on Eurostat data

To account for the cross-country differences in average personnel costs in both types of firms, wage-adjusted labour productivity is discussed next. For the period under study the average ratio between the values of this indicator for foreign-owned and domestic firms is 1,1. This suggests that in terms of wage-adjusted labour productivity, foreign affiliates in the IC services sector in CEE are approximately as productive as domestic firms. This is explained

by the fact that, on average for the IC services sector in CEE, personnel costs per person employed in foreign affiliates are twice higher than in domestic firms. Hence, while in terms of apparent labour productivity foreign affiliates are twice as productive as domestic ones, when adjusting for average personnel costs, there is almost no difference in performance. Figure 6 additionally shows that based on wage-adjusted labour productivity, domestic firms perform better than foreign-owned ones in four out of the eleven countries in the sample, namely Slovenia, Slovakia, Czech Republic and Latvia. In all of them the ratio between the values of the indicator for the two types of firms is around 0,9. In Bulgaria and Romania there is almost no difference in the wage-adjusted labour productivity of the two types of firms as the ratio between the two values is approximately 1. The largest performance gap is in Croatia, where foreign affiliates are 1,6 times more productive than domestic firms. With regard to the country variations in wage-adjusted labour productivity, foreign affiliates in the IC services sector are, on average, most productive in Croatia and least productive in Latvia (287% and 171% respectively). An interesting case is Slovenia, which is the second-best performing country in terms of foreign affiliates' apparent labour productivity, but based on wage-adjusted labour productivity it is the second worst performing country. This is due to the fact that average personnel costs in foreign affiliates in IC services in Slovenia are the highest in CEE. As for domestic firms, wage-adjusted labour productivity is the highest in Slovakia and the lowest in Estonia (219% and 131% respectively). The latter is explained by the fact that average personnel costs of domestic firms in the IC services sector in Estonia is the highest in the region.

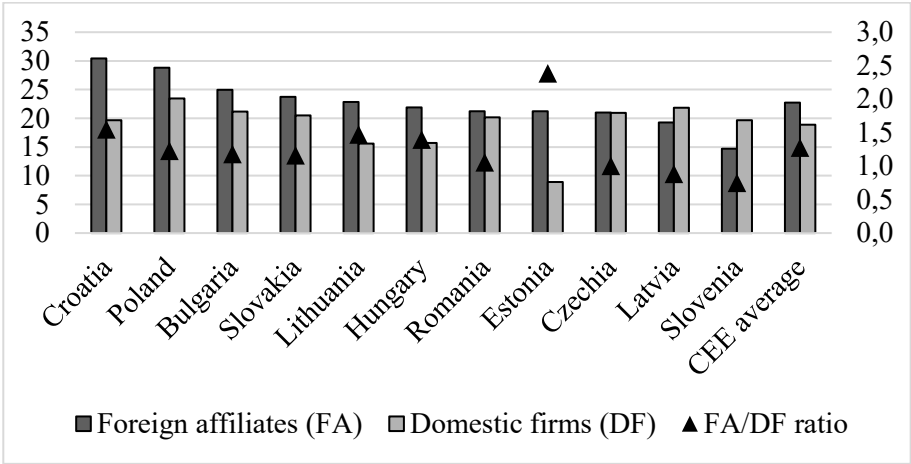
Figure 6. Wage-adjusted labour productivity (percentage) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



Source: Author’s calculations based on Eurostat data

In terms of profitability foreign affiliates in the IC services sector in CEE, on average, perform only slightly better than domestic firms, as the ratio between the values of gross operating rate for the two types of firms is 1,3. There are, however, significant country variations with regard to the performance gap based on this indicator (Figure 7). For example, in Estonia foreign affiliates' average gross operating rate is 2,4 times higher than for domestic firms. At the other extreme, in Slovenia and Latvia foreign-owned firms, on average, have lower profitability than domestic firms and the ratio between the values of the indicator for the two types of firms is 0,9 and 0,7 respectively. In the Czech Republic there is, on average, no difference in profitability of domestic and foreign-owned firms in the sector. Figure 7 also shows that foreign affiliates in the IC services sector have the highest average gross operating rate in Croatia (30%) and the lowest – in Slovenia (15%). Domestic firms in the sector are, on average, most profitable in Poland (23%) and least profitable – in Estonia (9%).

Figure 7. Gross operating rate (percentage) in foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020 averages)



Source: Author’s calculations based on Eurostat data

In addition to comparing foreign-owned and domestic companies in terms of the level of firm’s size, productivity and profitability, the analysis further outlines how these indicators have evolved over time. Table 2 presents the compound annual growth rates of the above-discussed indicators between 2010-2020 for both foreign affiliates and domestic firms in the IC services sector. On average at a CEE level, foreign affiliates have experienced a decline in turnover, value added and persons employed per enterprise, as shown by the negative compound annual growth rates (-2,6%, -1,2% and -0,5% respectively). The decline in all three

indicators has been the most substantial in Croatia. Domestic firms in CEE, on average, have also experienced a decline in turnover per enterprise but it was less pronounced than in the case of foreign affiliates (-0,5%). The largest decline was recorded in Croatia (-7,9%), while the highest positive growth rate – in Estonia (9,5%). In contrast to foreign affiliates, domestic firms' value added per enterprise has grown by 0,9% on average at CEE level. As in the case of foreign-owned firms, the highest positive growth rate was in Estonia (9,3%), while the most significant decline was in Croatia (-5,6%). Compared to foreign affiliates, the number of persons employed per enterprise in domestic firms has, on average, declined at a higher rate (-2,9%). On a country level, the largest decline was in Lithuania (-12,4%), while the highest positive annual growth rate was again in Estonia (3,6%).

Table 2. Compound annual growth rates of selected indicators for foreign affiliates and domestic firms in the IC services sector in CEE (2010-2020)

Country	Turnover per enterprise		Value added per enterprise		Persons employed per enterprise		Turnover per person employed		Apparent labour productivity		Wage-adjusted labour productivity		Gross operating rate	
	FA	DF	FA	DF	FA	DF	FA	DF	FA	DF	FA	DF	FA	DF
Bulgaria	0,5	0,2	1,6	2,8	0,9	-3,8	-0,4	3,8	0,7	6,5	-4,9	-3,3	-3,5	-1,3
Czechia	-3,6	5,6	-2,7	6,6	-1,8	1,1	-1,9	5,3	-1,0	6,3	-4,3	2,4	-3,8	3,2
Estonia	1,1	9,5	4,0	9,3	1,0	3,6	0,1	5,7	3,0	5,5	-3,5	-3,1	-1,4	-10,9
Croatia	-11,2	-7,9	-10,3	-5,6	-7,3	-5,2	-4,1	-3,1	-3,2	-0,7	-4,3	-0,3	-1,4	2,2
Latvia	-0,8	-3,7	1,9	-2,0	3,8	-4,8	-4,4	1,5	-1,8	3,3	-5,5	-2,4	-3,8	-1,0
Lithuania	-3,8	-7,1	-2,9	-5,1	-3,0	-12,4	-0,7	4,9	0,1	7,1	-4,9	1,5	-4,0	4,6
Hungary	0,3	1,2	0,0	3,7	2,6	-0,9	-2,2	2,1	-2,5	4,6	-3,6	2,3	-1,3	2,5
Poland	-2,3	-1,7	-1,2	-2,4	0,3	-2,7	-2,6	1,0	-1,5	0,3	-4,7	-2,1	-2,4	-2,2
Romania	1,5	1,9	2,9	7,7	2,4	-0,7	-0,8	3,6	0,5	9,5	-5,4	1,8	-5,4	7,3
Slovenia	-7,6	-5,1	-5,3	-3,7	-4,3	-5,2	-3,6	-1,3	-1,2	0,2	-1,8	1,0	0,1	2,6
Slovakia	-2,7	1,4	-1,5	-1,9	-0,5	-0,5	-2,1	4,0	-0,9	0,7	-3,9	0,0	-2,5	-3,2
CEE average	-2,6	-0,5	-1,2	0,9	-0,5	-2,9	-2,1	2,5	-0,7	3,9	-4,2	-0,2	-2,7	0,3

Source: Author's calculations based on Eurostat data

With regard to performance dynamics, domestic firms in the IC services sector in CEE, on average, enjoyed positive annual growth rates in terms of turnover per person employed (2,5%) and apparent labour productivity (3,9%), while foreign affiliates experienced decline in both indicators (-2,1% and -0,7% respectively). At a country level, domestic firms' turnover and gross value added per person employed increased at the highest rate in Estonia (5,7%) and Romania (9,5%) respectively, whereas the fastest decline for both indicators was registered in Croatia. As for the dynamics of turnover per enterprise and apparent labour productivity in foreign affiliates, the highest annual growth rate was

experienced in Estonia, while the most significant decline was in Latvia and Croatia for the two indicators respectively. In terms of wage-adjusted labour productivity, both foreign-owned and domestic businesses, on average, have experienced a decline at a CEE level, but it was at a much higher rate for foreign affiliates (-4,2%) than for their local counterparts (-0,2%). The dynamics of this indicator is partially explained by the changes in apparent labour productivity, as well as the changes in average personnel costs, which increased by approximately 3,7% in foreign affiliates and 4,2 % in domestic firms during the examined period. With regard to profitability, it can be observed that on average at a CEE level, gross operating rate experienced a decline of -2,7% in foreign affiliates and growth of 0,3% in domestic businesses. Foreign-owned firms' profitability declined in all countries except for Slovenia, which recorded compound annual growth rate of 0,1%. As for domestic firms, gross operating rate increased at the highest pace in Romania (7,3%), while the most pronounced negative annual growth rate was in Estonia (-10,9%). This pattern can be explained by the fact that in Romania average personnel costs in domestic firms in the IC services sector tend to be the lowest, while in Estonia they are not only the highest, but also experienced one of the highest growth rates during the examined period.

5. Conclusion

The paper explores the performance differences between foreign-owned and domestic firms by focusing on the IC services sector in CEE, which has received less attention in past research. Using Eurostat data for eleven countries in the region between 2010 and 2020, the paper conducts descriptive and comparative analysis which leads to the following conclusions. First, foreign affiliates in the IC services sector in CEE, on average, generate more than half of the sectoral turnover and value added, as well as 40% of the sectoral employment. This shows the significant role of foreign affiliates for the development of the sector. Second, addressing firms' size, in terms of turnover, value added and persons employed per enterprise, foreign-owned firms in the IC services sector outpace their domestic counterparts in all of the CEE countries. Third, turnover per person employed and apparent labour productivity of foreign-owned firms in the IC services sector in CEE, on average, are twice higher compared to domestic firms. However, in terms of wage-adjusted labour productivity, foreign affiliates' performance is close to domestic firms, which is explained by the twice larger average personnel costs in foreign affiliates. In terms of profitability, foreign affiliates, on average, perform only slightly better than domestic firms. Fourth, focusing on the dynamics of firms' performance, while on a CEE level domestic firms enjoyed positive

compound annual growth rates in terms of turnover per person employed, apparent labour productivity and gross operating rate, foreign-owned firms experienced decline in all indicators. This is a positive trend for domestic firms which might also contribute to a decrease in the existing performance gaps between them and the foreign affiliates in the sector.

The presented findings should be seen as a preliminary study on the performance gaps between foreign affiliates and domestic firms in the IC services in CEE, as such type of descriptive and comparative analysis has its limitations. First, it doesn't control for those firm characteristics (different from foreign ownership) which are important determinants of performance. Hence, to explore this topic with greater precision, an econometric approach should be used, whereby the inclusion of relevant control variables will allow to isolate the foreign ownership effect. Given the scarcity of such econometric studies for the foreign-owned and domestic firms in the IC services sector in CEE, this would be a fruitful avenue for future research. Second, due to data limitations, the conducted analysis doesn't distinguish between domestic MNEs and domestic non-MNEs. Future studies using firm-level data might make such distinction and explore in more details the heterogeneity in performance across different types of firms. Third, as this paper is focused on the IC services sector as a whole, when studying the performance gaps between foreign affiliates and domestic firms, future work might distinguish between the various subsectors. As noted by Cieřlik (2022), some subsectors such as telecommunications and computer services are particularly important inputs to other sectors and very crucial for productivity, which is why it would be worth extending the analysis on a subsectoral level.

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