

Comparative Analysis of Leading Sectors in Bulgaria, Hungary and Romania

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Abstract: The Coronavirus pandemic marked the end of an era in the catching-up process of East-Central Europe. A thorough evaluation of the growth model of the last decade is therefore needed in order to draw lessons for future industrial policy. The aim of this article is to provide a comparative analysis of the Bulgarian, Hungarian and Romanian growth models based on the examination of leading sectors. The paper compares the five leading sectors of the three countries in the period 2011-2018. The five leading industries are defined in terms of their contribution to gross value-added growth. The paper also examines foreign dependence and labour productivity growth in the leading sectors, the latter also being key to analysing the possibility of a middle-income trap. The results show a different sectoral specialisation in the three countries. The foreign dominance is higher in Hungary and Romania. Moreover, Romania is the best performer in terms of labour productivity.

Key-words: growth models, leading sectors, catching-up, middle-income trap, dependency, industrial policy

JEL Classification: O14, O52, P52

1 Introduction

In recent years, the COVID-19 pandemic, the climate crisis and the Russian-Ukrainian war have led to a structural transformation in the European and global division of labour. This transformation has valued the use of new state instruments (Ricz, 2023) which have contributed to the global revival of industrial policy. This process has also affected East-Central Europe which has experienced a relatively successful growth period in the 2010s (Rapacki, & Prochniak, 2019). Regional governments have been forced to implement industrial policies to maintain the growth trajectory and to manage the structural transformation in the economy (Szabó, 2023). However, in order to build a successful industrial strategy that can form the basis for convergence in the current decade, it is important to have a deep understanding of our growth model in the last decade. Moreover, it is also important to have a look at the existing sectoral structure of our economies to identify the main trends and opportunities. Therefore, in order to distil some lessons for our future industrial policy, this paper aims to analyse and compare the growth models of three East-Central European countries, Bulgaria, Hungary and Romania, by analysing the five leading sectors between 2011 and 2018.

Due to the comparative nature of the study, the theoretical framework is provided by comparative capitalism (see for instance: Schedelik, Nölke, Mertens & May, 2021). Within this, the paper builds on the latest growth model literature, which has launched a new research agenda in the last decade (Baccaro & Pontusson, 2016; Stockhammer, 2016). The growth model literature has focused on the demand side of the economy on a post-Keynesian basis. This paper argues that it is also worthwhile to analyse the sectors that drive growth, adding a supply-side element to the growth model approach. Thus, this paper not only provides interesting insights for a future industrial policy, but also complements the growth model literature. The research uses Eurostat data to identify the five sectors that account for the largest share of gross value-added growth between 2011 and 2018. The paper refers to these as leading sectors.

The paper also explores two important theoretical concepts in relation to the leading sectors. The first is dependency, which is often associated with regional growth models. Authors contributing to the literature on comparative capitalism interpret the region as a kind of dependent market economy in which the role of foreign capital is prominent (Nölke & Vliegenthart, 2009; Bohle, 2018). Second, we draw on the concept of the middle-income trap, as a number of studies analyse East-Central Europe from this perspective (Myant, 2018; Csath, 2022; Györffy, 2022). The middle-income trap is one of the main challenges threatening the success of growth models in the region. Studies confirm that one of the key issues in avoiding the middle-income trap is productivity

growth (Kharas & Kohli, 2011; Györffy, 2021). The sectoral analysis, therefore, looks at foreign dominance and labour productivity growth in the leading sectors.

Overall, the study seeks to answer three questions. 1. What were the leading sectors in Bulgaria, Hungary and Romania in the period 2011–2018? What were the similarities and differences? 2. Which leading sectors were dominated by foreign value added? 3. What was the trend in labour productivity in the leading sectors? The study consists of four parts. The first part presents the theoretical background. The second part describes the methodology. This is followed by a description of the results. The paper ends with the conclusions.

2 Theoretical background

2.1 The growth model approach in comparative capitalism

Traditionally, the flagship approach to comparative capitalism has been the varieties of capitalism (VoC) approach developed by Hall and Soskice (2001). In their edited volume, the authors distinguished between two varieties of capitalism in developed countries: coordinated and liberal market economies. This influential analysis has been followed by a number of exciting studies that have further extended the territorial and theoretical scope of VoC (Hall, & Thelen, 2009; Nölke, 2018; Feldmann, 2019).

In the 2010s, however, a new approach to comparative capitalism emerged: the growth model literature. Growth model scholars criticised the VoC for its lack of dynamism and neglect of the demand side of the economy (Schedelik et al., 2021). They, therefore, developed a new theoretical approach to comparing capitalist economies based on post-Keynesian macroeconomics. The growth model scholars focus on the demand drivers of growth, and on this basis, they distinguish different growth models. For instance, Baccaro and Pontusson (2016) identify a credit-driven consumption-led model in the UK, an export-led German model and a balanced model in Sweden which is based on both exports and consumption. In contrast, Stockhammer (2016) defines only two types: an export-led model in Germany, Northern Europe, China and Japan, and a debt-driven model in the Anglo-Saxon and Southern European countries.

The literature on growth models focuses on the drivers of growth. Nevertheless, this post-Keynesian approach deals only with the demand side of growth. The paper argues that it may be worthwhile to complement the current line of research with a sectoral analysis, i.e. it is also necessary to examine which sectors contribute most to growth in a given period. The study will focus on this sectoral approach in order to analyse growth models from a new angle.

2.2 The East-Central European growth model

East-Central Europe has often been analysed in the literature on comparative capitalism. There are many slightly different interpretations of the regional growth model. Nölke and Vliegthart (2009) identify the region, especially the V4 countries, as a new model of capitalism, the dependent market economy, and they draw the attention to the importance of FDI in determining the institutional structure. Drahoš (2009) uses the term competition state to describe the regional model as countries competing for foreign capital. Bohle (2018) identifies an export-driven dependent model, which is most relevant for the Visegrad Four. A slightly different approach is taken by Ban and Adascalitei (2022). They find the existence of an export-led dependent growth model. However, they also confirm that debt-driven consumption has been an important element, especially in the Baltic countries and in countries with a larger domestic market (Romania and Poland). Furthermore, Ban (2019) highlights the resilience of Romania's dependent model after the 2008 crisis.

Aside from conceptual differences, these analyses point in the same direction. Based on them, we can describe the regional growth model as an export-led dependent model. Dependence refers to the importance of foreign sources (Bohle, 2018), especially the crucial role of foreign direct investments. It means not only that the growth in the region is fuelled by foreign sources, but also that the institutional structure is subordinated to the interests of foreign capital (Nölke and Vliegthart, 2009). The regional governments try to attract more and more FDI and they shape the labour market institutions, the tax system and the wage growth to achieve this goal. As a result, the regional countries are engaged in a competition to provide the most favourable environment for FDI (Drahoš, 2009). The key problem with this competition is that the main competitive advantages of the region are low wages and low-costs (Györffy, 2022). The result is that FDI inflows to the region are mainly low value-added (Éltető & Medve-Bálint, 2023; Fülöp, 2023).

The dependent catch-up model with this harmful competition creates an unfavourable structural position in the global value chains (GVC). Based on the smile curve, which captures the organisation of the GVCs (Mudambi, 2008), the regional economies specialise in the middle of the value chain, i.e. in manufacturing activities (Stöllinger, 2021). However, these manufacturing activities have a lower value added than the activities

at the two ends of the value chain which creates a trap situation for the regional economies (Stöllinger, 2021). Therefore, the region is a “factory economy” in Europe, while the headquarters are located in the western countries, especially Germany (Kordalska & Olczyk, 2023). From a sectoral point of view, it means an overdominance of manufacturing industries. In particular, the automotive sector plays an important role, but the region still has a semi-peripheral position in this value chain (Gáspár, Sass, Vlčková, & Koppány, 2023).

Based on this interpretation, it is not surprising that many scholars draw attention to a possible middle-income trap in the context of the regional growth model. As Kharas and Kohli (2011) point out, the essence of middle-income trap is to get stuck in resource-based growth without switching to productivity growth. In the region, the middle-income trap implies the fading away of the potential for growth based low value-added foreign resources. Myant (2018), for example, argues that the region's dependent market economy model is clearly exposed to the middle-income trap because it is built on low-wages. In addition, Barbu (2016) highlights that the Romanian growth model does not have the necessary ingredients to avoid the middle-income trap. Finally, Csath (2022) concludes that Hungary is lagging behind in development indicators and is therefore at a risk of falling into the middle-development trap. Overall, it is important to examine the extent to which the region's model is exposed to the risk of the middle-income trap and according to Kharas and Kohli (2011) one of the most important indicators for this is productivity growth.

In line with the literature on growth models, we can formulate some expectations for analysis of leading sectors. First, it is reasonable to assume that manufacturing will dominate the leading sectors and that the automotive industry will be present. Second, we can expect the dependence to be strongest in the case of Hungary compared to Romania and Bulgaria as the literature on growth models mostly puts the V4 countries in this dependent category (Nölke & Vliegthart, 2009).

3 Methodology

The research identified sectors according to Eurostat's NACE classification of economic activities, starting from 21 economic activities, but breaking down the manufacturing sector into 13 industries. A combined analysis of manufacturing sector would have been highly misleading and would not have captured the significant differences between the manufacture of transport equipment or the food industry. In addition, we have also split up the wholesale and retail trade and the repair of motor vehicles, as it is appropriate to consider separately the wholesale and retail trade, which are large and important sectors. Thus, a total of 35 activities were examined (see Table 1).

For the comparative analysis, we collected the gross value added of the 35 sectors in Bulgaria, Hungary and Romania for the years 2011 and 2018. The necessary data were provided by Eurostat's detailed database of national accounts (Eurostat, 2021). The five leading sectors were those that contributed most to the growth of gross value added over the period considered, i.e. their contribution to the value-added growth (CVAG) was the highest. To determine this, we calculated the growth of the gross value added for the economy as a whole and for each sector over the period (we used gross value-added data in millions of euros, indexed to 2010 prices – Eurostat, 2021). Expressed as a percentage, the indicator, called CVAG in the study, captures the share of a sector's value-added growth in the value-added growth of the whole economy. For example, if it is 50 per cent, this means that the value-added growth of that sector accounted for half of the value-added growth of the whole economy. The five sectors with the highest CVAG index became the leading sectors in each country.

$$\text{Contribution to value-added growth (CVAG)} = \frac{\text{Industry VA}_{2018} - \text{Industry VA}_{2011}}{\text{Total Economy VA}_{2018} - \text{Total economy VA}_{2011}} * 100$$

To answer further research questions, several indicators were calculated for the leading sectors. For dependency, the share of foreign value added in 2018 was calculated, and for the analysis of the middle-income trap, the level and growth of labour productivity were examined. Other indicators are presented in detail in Table 2.

Table 1: Examined sectors

Agriculture, forestry and fishing	Manufacture of machinery and equipment n.e.c.	Financial and insurance activities
Mining and quarrying	Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment	Real estate activities

Manufacture of food products; beverages and tobacco products	Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment	Professional, scientific and technical activities
Manufacture of textiles, wearing apparel, leather and related products	Electricity, gas, steam and air conditioning supply	Administrative and support service activities
Manufacture of wood, paper, printing and reproduction	Water supply; sewerage, waste management and remediation activities	Public administration and defence; compulsory social security
Manufacture of coke and refined petroleum products	Construction	Education
Manufacture of chemicals and chemical products	Wholesale and retail trade and repair of motor vehicles and motorcycles	Human health and social work activities
Manufacture of basic pharmaceutical products and pharmaceutical preparations	Wholesale trade, except of motor vehicles and motorcycles	Arts, entertainment and recreation
Manufacture of rubber and plastic products and other non-metallic mineral products	Retail trade, except of motor vehicles and motorcycles	Other service activities
Manufacture of basic metals and fabricated metal products, except machinery and equipment	Transportation and storage	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
Manufacture of computer, electronic and optical products	Accommodation and food service activities	Activities of extraterritorial organisations and bodies
Manufacture of electrical equipment	Information and communication	

Source: Author's elaboration.

Table 2: Examined variables

Variables	Description	Source
Labour productivity	gross value added per person employed in the sector	Eurostat (2021)
Labour productivity compared to the regional average (2018)	the labour productivity of the sector as a percentage of the average regional labour productivity of the sector The regional average is the average of 11 East-Central European countries (Csontos, 2023).	Eurostat (2021)
Labour productivity growth	the growth of gross value added per person employed in the sector	Eurostat (2021)
Foreign dominance (2018)	share of foreign firms in value added at factor cost in 2018 (current prices)	Eurostat (2022)
Labour productivity gap (2018)	Labour productivity of foreign firms as a share of labour productivity of domestic firms	Eurostat (2022)

Source: Author's elaboration

4 Results

The Table 3 shows the leading sectors in the three countries. The results point to the fact that, contrary to expectations, it was not the manufacturing sectors but the service-related sectors that dominated the leading industries. For example, the retail trade and the information and communication sector appeared in all the three countries. The presence of the former reinforces the importance of domestic consumption in the growth model proposed by Ban and Adascalitei (2022). Nevertheless, it is important to note that the role of retail trade was the most important in Romania where it explained the 21% of the value-added growth between 2011 and 2018, while in Bulgaria and Hungary the contribution was around 8%. The information and communication sector had a similar contribution of around 10-12% in the three countries. Real estate activities were both present in Romania and Bulgaria, with a contribution of 21% in Bulgaria and 9% in Romania. In Romania and Hungary, the manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment was present with a contribution of 12% which supports the argument of the crucial role of the automotive sector (Gáspár et al., 2023). Nevertheless, this analysis has shown that this phenomenon is not limited to the V4 countries but also applies for Romania.

Apart from the similarities, there are significant differences between the three countries. In Bulgaria we can see the emergence of the accommodation and food service activities and wholesale and retail trade and repair of motor vehicles and motorcycles. The role of tourism therefore is much more important than in the other countries. In Hungary, the professional, scientific and technical activities and administrative and support services contributed 20% to the value-added growth over the period considered which shows the importance of soft services in the country. Soft services is a term used by Boda, Révész, Losonci and Fülöp (2019). They argue that the performance of hard service industries requires significant material networks (such as retail trade, information and communication), whereas for soft service industries the basic service is not material (such as scientific and technical activities). One reason for this result may be the growing importance of the administrative shared service centres (SSC-s) in the Hungarian model (Bucsky, 2021). In Romania, in addition to retail trade, transportation and storage made a high contribution (19%). Together these two sectors were accounted for the 40% of the value-added growth of the whole economy over the period, showing a less diversified economy than in Hungary or Bulgaria.

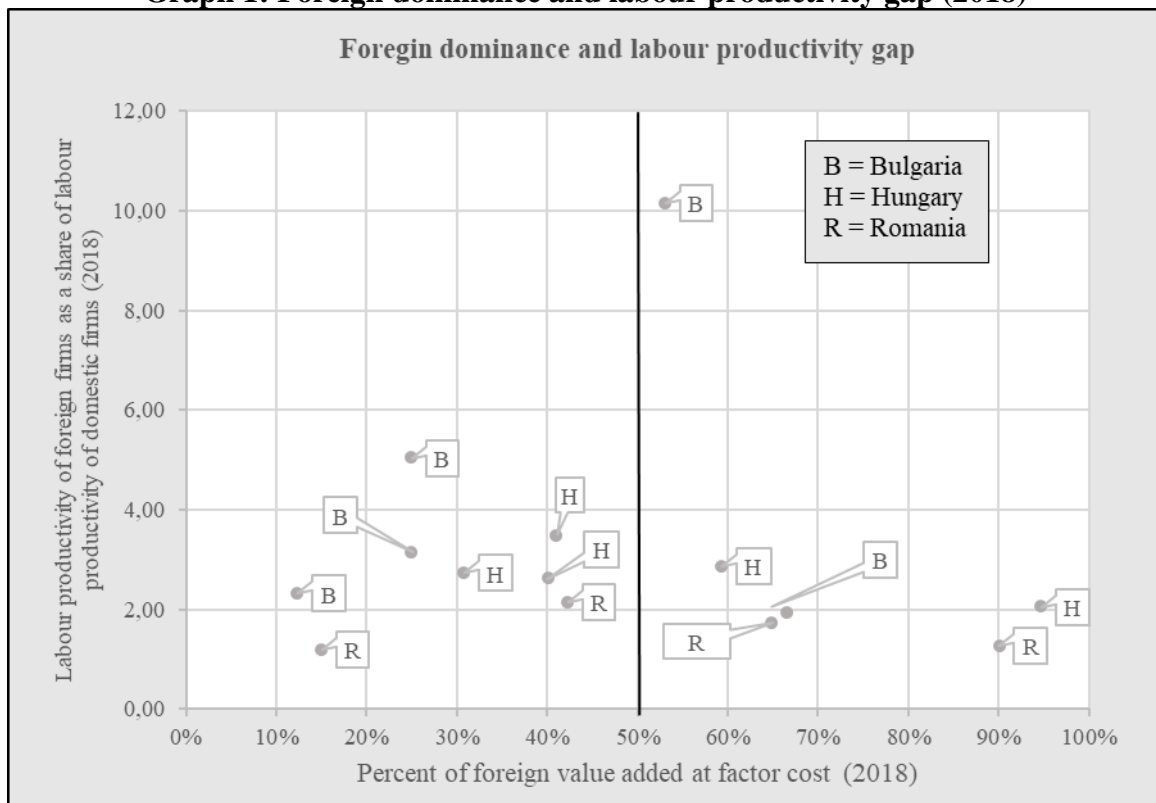
Table 2: Leading sectors in Bulgaria, Hungary and Romania between 2011-2018

Bulgaria	Contribution to value added growth	Hungary	Contribution to value added growth	Romania	Contribution to value added growth
Real estate activities	21%	Professional, scientific and technical activities	12%	Retail trade, except of motor vehicles and motorcycles	21%
Information and communication	12%	Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment	12%	Transportation and storage	19%
Accommodation and food service activities	11%	Information and communication	10%	Information and communication	12%
Wholesale and retail trade and repair of motor vehicles and motorcycles	9%	Administrative and support service activities	8%	Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment	12%
Retail trade, except of motor vehicles and motorcycles	8%	Retail trade, except of motor vehicles and motorcycles	8%	Real estate activities	9%

Source: Author's computations based on (Eurostat, 2021).

In the Graph 1, we can see the foreign dominance and the labour productivity gap between foreign and domestic firms in the leading sectors in 2018. Bulgaria is less foreign dominated, as 36.4% of the value added at factor cost in the leading industries is produced by foreign enterprises. The most foreign-dominated sector is the information and communication with 67%. Nevertheless, the labour productivity gap is large, with foreign enterprise being on average 4,5 times more productive than domestic firms. However, this is mainly due to the real estate activities, which is an outlier. If real estate activities are excluded, the number is lower, but it is still the highest among the three countries. Hungary and Romania have a higher foreign share, more than 53% on average. The most foreign-dominated sectors are information and communication with 59% (Hungary) and 65% (Romania) and manufacture of motor vehicles with 95% and 90%, respectively. This result reinforces the dependency argument put forward by Nölke and Vliegthart (2009). The labour productivity gap is significantly lower in Romania (1,59), while in Hungary foreign firms are 2,74 times more productive than domestic firms in the averages of the leading sectors.

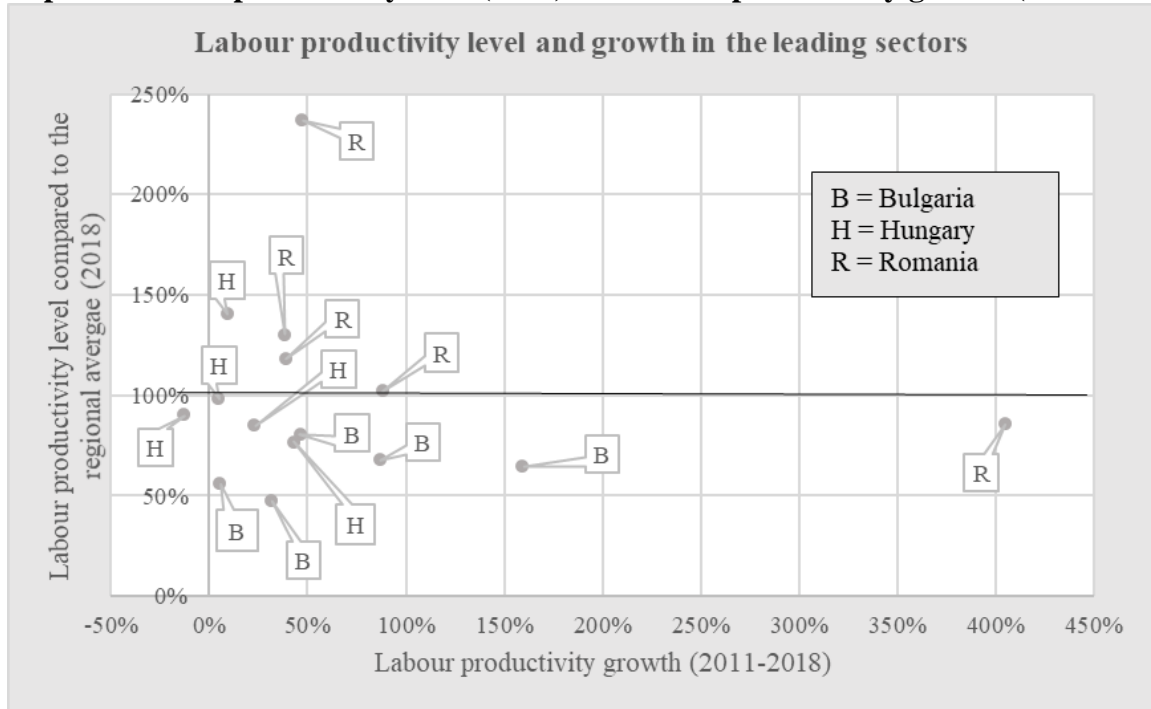
Graph 1: Foreign dominance and labour productivity gap (2018)



Note: Real estate activities was excluded in Romania due to the lack of data.
Source: Author based on Eurostat (2022)

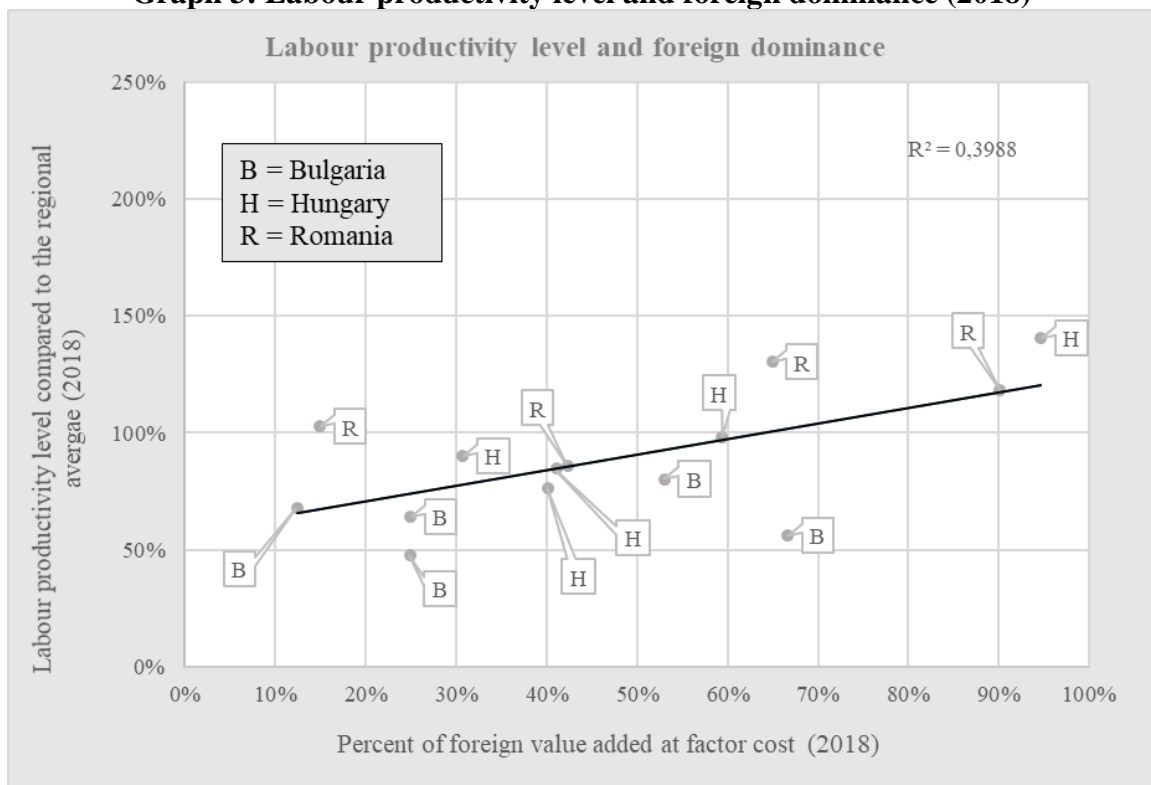
The Graph 2 depicts the results of the labour productivity analysis. In Bulgaria, the labour productivity growth in the leading sectors was impressive in the analysed period (66% on average). For instance, productivity in the wholesale and retail trade and repair of motor vehicles and motorcycles sector increased by 159%. However, the level of labour productivity in the leading sectors was well below compared to the regional average (63% on average). The regional average is the average level of labour productivity in the 11 countries of East-Central Europe (Csontos, 2023). Similarly, Hungary's leading sectors have a lower labour productivity level than the regional average (98%). Only the manufacture of motor vehicles, the most foreign-dominated sector, is above the average. Productivity growth was lower than the other two countries, reaching 14%. This result supports the argument of Györfy (2022) that the focus of the Hungarian growth model during this period was on employment growth and not on productivity growth. However, this does not bode well for avoiding the middle-income trap. In contrast, the Romanian leading sectors had productivity levels above the regional average (135%) and productivity growth was the highest of the three countries (123% on average). The best performers in terms of labour productivity were retail trade with a growth rate of 404%, and transportation and storage with a growth rate of 88%. Overall, Romania had the best labour productivity performance of the three countries.

Graph 2: Labour productivity level (2018) and labour productivity growth (2011-2018)



Source: Author based on Eurostat (2021)

Graph 3: Labour productivity level and foreign dominance (2018)



Note: Linear trend line was fitted to the data points

Source: Author based on Eurostat (2021, 2022)

The Graph 3 shows the relationship between the foreign dominance and the level of labour productivity. It implies that foreign dominated sectors tend to have higher productivity levels compared to domestic dominated sectors. This is obvious as the foreign firms are much more productive than the domestic firms, but it still shows the dualistic structure of the economy of the three countries. Moreover, this result draws attention to a crucial

problem, as it is inevitable to increase the productivity of domestic firms in order to avoid the middle-income trap.

5 Conclusion

The results of the research confirm that it is worth analysing growth models on a sectoral basis, as this can lead to a number of new conclusions. Regarding the research question on leading sectors, our results show that the two of the five leading sectors were the same in the three countries: information and communication and retail trade. Nevertheless, we can identify diverse sectoral specialisation in the three countries. In Bulgaria tourism and real estate activities, in Romania transportation and storage and retail trade, and in Hungary administrative soft services and automotive industry played an important role. Our analysis confirms the crucial role of foreign dependence in the information and communication and manufacture of motor vehicle sectors. These sectors were among the leading sectors in Hungary and Romania. Therefore, our analysis suggests that the dependent growth model is more appropriate for Romania and Hungary, and to a lesser extent for Bulgaria. This supports the argument that the Romanian growth model is catching-up with the V4 dependent model. Regarding the middle-income trap, we looked at labour productivity growth and levels. Our research points out that Romania is the best performer among the three countries in this respect. In contrast, in Bulgaria's productivity levels are low, and Hungary's productivity growth has been sluggish over the analysed period. The latter can be attributed to the employment focus of the Hungarian economic policy (Györffy, 2022).

The results of the research provide a more nuanced picture of the dependent market economy model. Contrary to expectations, the region is not just a "manufacturing assembly plant". The results highlight the importance of soft (Hungary) and hard service sectors (Romania and Bulgaria) in the leading industries. Although the appearance of automotive sector in Hungary and Romania reinforces the assembly plant narrative, the results also show that automotive sector it is far from the only driver of growth.

The paper argues that thinking in terms of leading sectors can be valuable for future industrial policy planning. It is important to stress that modern industrial policy does not only focus on industry but also on services sectors. Moreover, in the context of a knowledge-based society, industrial policy does not imply the dominance of the state by eliminating the market, but encompasses the totality of state and market instruments subordinated to economic policy objectives (Trautmann & Vida, 2021; Baranyi, Balogh, & Bósz, 2022). The paper shows that one of the key economic policy objectives for the region should be to increase the productivity levels of domestic firms, in which increasing human capital and knowledge play an important role. Consequently, it is useful to look at the country's leading sectors to see which of them have potential in terms of productivity growth and domestic knowledge accumulation and which do not. Furthermore, examining leading sectors can also be used to evaluate which sectors need to reduce their dependency. Overall, leading sector analysis can provide important input to the creation of successful plans to bring the existing structure closer to the desired goals.

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