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THE NEXUS BETWEEN TRADE INFRASTRUCTURE DEVELOPMENT AND EXPORT: THE CASE OF CENTRAL AND EASTERN EUROPEAN COUNTRIES

Filip Ž. Bugarčić[1*], Vladimir Mićić[1], Gorica Bošković[2]

[1]University of Kragujevac, Faculty of Economics, Kragujevac, Serbia
[2]University of Niš, Faculty of Economics, Niš, Serbia

Abstract

The focus of economic policymakers in Central and Eastern European countries (CEEC) is on developing and improving national infrastructure, including roads, railways and other forms of physical infrastructure needed for the realisation of economic activities, with the primary goal being to create a favourable business environment for foreign investments and export intensification. The article aims to examine whether the development of infrastructure in these countries has contributed to the increase in exports and to what extent, which would likewise examine the justification of infrastructure investments as a part of the economic strategy and foreign trade policy. The method of panel regression analysis with fixed effects was applied, which confirms the positive and statistically significant impact of infrastructure on export, justifying the initiative for the development of national infrastructure in the observed countries. Based on the obtained results, valid conclusions have been drawn regarding the theoretical and practical implications of the research, which point to the importance of physical infrastructure development as one of the leading determinants for export incentives.

Key words: infrastructure, export, Central and Eastern European countries (CEEC), economic development.

ВЕЗА ИЗМЕЂУ РАЗВОЈА ТРГОВИНСКЕ ИНФРАСТРУКТУРЕ И ИЗВОЗА: ПРИМЕР ЗЕМАЉА ЦЕНТРАЛНЕ И ИСТОЧНЕ ЕВРОПЕ

Апстракт

Фокус креатора економске политике у земљама Централне и Источне Европе је на развоју и унапређењу националне инфраструктуре, укључујући путеве,

[*] Corresponding author: Filip Bugarčić, University of Kragujevac, Faculty of Economics, Licej Kneževine Srbije 3, 34000 Kragujevac, Serbia, f.bugarcic@kg.ac.rs

железницу и друге облике физичке инфраструктуре потребне за реализацију привредних активности, са примарним циљем стварања повољног пословног окружења за стране инвестиције и повећање обима и интензитета извоза. Рад има за циљ да испита да ли је развој инфраструктуре у овим земљама допринео повећању извоза и у којој мери, чиме би се утврдила оправданост инфраструктурних улагања као дела економске стратегије и спољнотрговинске политике. Примењена је метода панел регресионе анализе са фиксним ефектима, која потврђује позитиван и статистички значајан утицај инфраструктуре на извоз, што оправдава иницијативу за њеним развојем у посматраним земљама. На основу добијених резултата изведени су релевантни закључци о теоријским и практичним импликацијама истраживања, који указују на значај развоја физичке инфраструктуре као једне од водећих детерминанти за подстицај извоза.

Кључне речи: инфраструктура, извоз, земље Централне и Источне Европе, економски развој.

INTRODUCTION

One of the key roles of infrastructure is to enable, facilitate and accelerate the movement of goods, people, and information. Since the availability of resources shapes the efficiency of economic activities, the construction and continuous improvement of infrastructure is a prerequisite for the development of a certain industrial area, country, or region. The role of physical, and information and communication (ICT) infrastructure shapes the systems of the global economy, while the spatio-temporal convergence of international trade is based on constant demands to reduce transport costs and time between certain points. The importance of investment in infrastructure is also confirmed by the high amounts of financial resources and support from international financial institutions directed toward these projects, especially in developing countries (World Bank, 2015). The contribution of good infrastructure is found in direct benefits for the population, and it is a basis for performing business activities that contribute to the achievement of the economic growth and development of national economies.

Economic and industrial development requires an adequate level of infrastructure in order to effectively implement internal and international trade. Infrastructure includes institutional, personal, and material components (Buhr, 2003), whereby the key element of the material component is transport infrastructure and related service activities, as well as facilities such as transport terminals, distribution, and logistics centres. This concept can be treated as a trade or logistics infrastructure that, in addition to the physical 'hard' dimension, also includes a 'soft' component (Arvis, Ojala, Wiederer, Shepherd, Raj, Dairabayeva & Kiiski, 2018). Special attention when considering different dimensions of infrastructure in the context of the international position of countries is focused on

physical infrastructure assuming that its improvement can contribute to better economic conditions and the intensification of international trade.

Infrastructure development is one of the prerequisites for achieving growth, reducing poverty, and achieving broader development goals, such as more intensive participation in global supply chains (GSC). Achieving comparative advantages, especially in developing countries, depends significantly on the adequacy of infrastructure and its continuous improvement (Luo & Xu, 2018). The concrete contribution of infrastructure development is reflected in the reduction of production and transaction costs (Lakshmanan, 2011; Hallaert, Cavazos-Cepeda & Kang, 2011), and the increase in the total productivity of production factors (Wan & Zhang, 2017). In addition, investment in infrastructure has a multiplier effect, where every dollar invested in infrastructure projects leads to an increase in private investment of approximately 2 US dollars, and an output of 1.5 US dollars. Thus, stimulating infrastructure development has a strong multiplier effects on the initial development of low-income countries (Eden & Kraay, 2014). The development of infrastructure is closely related to the level of participation in GSC and greater success in attracting investments, as infrastructure provides access to international markets, which is especially important for open economies and developing countries (Luo & Xu, 2018).

The improvement of the entire infrastructure directly contributes to the growth of total productivity and efficiency in the economy, while the development potential in the modern conditions of the global market, due to the aspirations of countries for more active participation in international economic flows, primarily refers to the physical component, trade, and transport infrastructure, as part of the overall logistics infrastructure. What has been noticeable in recent years is the high level of investment by countries in infrastructure projects, with a tendency to continue this trend. This is especially present in the CEEC, where capital investments in infrastructure have a dominant share in the structure of total investment projects, even reaching 18% of the GDP in certain economies within this group of countries (European Commission, 2019; CEECAS, 2021). These countries are open economies that heavily rely on import and export flows which have in previous years, as will be the case in future development strategies, imposed intensive development, especially of road and railway infrastructure. In this sense, it is necessary to examine whether these initiatives and the high relative levels of investments aimed at these projects contribute to the goals within the economic strategy on the specific example of CEEC. The main motive and goal of these strategies are, above all, to attract investments and encourage exports.

As there is some evidence in the existing literature about the positive impact of physical infrastructure improvement on various dimensions of economic development, it can serve as a starting point for the initial

assumption about its positive impact on international trade. The identified gap in the previous literature refers to the absence of research that examines the impact of physical infrastructure on the volume of international trade in CEEC, which may be particularly important considering the levels of capital investment on that basis in these countries.

In order to realise the research goal, a panel regression analysis with fixed effects was applied. A total of 16 individual countries within the CEE region were observed, which have in recent years achieved a high level of investment in the development and improvement of physical infrastructure. The period of analysis coincides with this trend, and includes the period between 2007 and 2018, within which the infrastructure component of the Logistics Performance Index (LPI) (World Bank, 2022) was used as a key independent variable, and the most relevant existing indicator in the assessment of exclusively the trade infrastructure of these countries. Empirical research is supported by the use of control variables closely related to the volume of international trade as a dependent variable, namely, the inflow of FDI and the Global competitiveness index (GCI). The theoretical basis for those control variables relies on studies which proved their connection with export (Mukhtarov, Alalawneh, Ibadov & Huseynli, 2019; Ruzekova, Kittova & Steinhauser, 2020; Sabra, 2021).

In addition to the introduction, the rest of the article consists of a literature review in this area, followed by the presentation of data and research methodology. After that, the research results are presented and discussed, followed by a conclusion and recommendations for future research.

LITERATURE REVIEW

Recent research has shown the different impacts of improving physical infrastructure on the dimensions of economic development. Yeo, Deng and Nadiedjoa (2020) found that infrastructure development leads to the sustainable growth and development of middle-income countries in the long run, with its indirect role in stimulating international trade. On the other hand, some earlier studies (Kuştepeli, Gülcan & Akgüngör, 2012; Crescenzi & Rodrıguez-Pose, 2012) examining the importance of infrastructure and the relationship between highway investment, the volume of international trade, and the pace of economic growth, failed to prove the interdependence of these variables. This can be attributed to the complexity of the macroeconomic environment of certain countries, where the efficient functioning of a large number of market mechanisms is necessary to achieve positive effects based on investment in infrastructure. It is important to determine which infrastructure within a certain economy requires special attention, whose improvement gives the best results, as well as in which stage of development the specific economy is. Erkan (2014) presented conclusions on the special importance of railway

and port infrastructure on the example of 113 countries. The improvement of these dimensions, which by the nature of transport imply the lowest unit costs in international trade, would enable the realisation of positive effects, primarily through the growth of the volume of international trade.

Shepherd (2016) points out that when it comes to facilitating trade, improving infrastructure, and initiating the participation of countries in global value chains (GVC), it is not only the development of one country that is important, because the effects of its efforts also depend on neighbouring countries. This is particularly important for developing, as well as for landlocked countries, which are cut off from direct access to the most massive form of international transport and are highly dependent on the development of the land infrastructure in the surrounding countries. Vlahinić Lenz, Pavlić Skender and Mirković (2018), examining the effects of land infrastructure on economic growth in CEEC that are members of the EU, established the existence of a positive relationship between the development of road infrastructure and economic growth. Despite this, the results of the contribution of railway infrastructure show a negative impact, and indicate a long-standing problem of inefficient and outdated railways. The improvement of this type of infrastructure would enable the substitution of road transport by rail, which is more environmentally friendly, and would additionally increase the efficiency of international transport and improve competitiveness in the long term. Ismail and Mahyideen (2015) also proved that the development of transport infrastructure is of crucial importance for the intensification of international trade in goods and the achievement of economic growth. Investing in infrastructure contributes to increasing competitiveness and brings multiple economic benefits (Purwanto, Heyndrickx, Kiel, Betancor, Socorro, Hernandez & Fiedler, 2017).

In addition to maritime, road and railway infrastructure, airports and air traffic form one of the basic elements in the transport network. Air traffic contributes to increased business connectivity and cooperation, especially between distant areas (D'Aleo, 2016). Airports are an important factor in the process of globalisation, whereby the size of the airport, the presence of low-cost companies and the volume of cargo transport have a significant impact on the quality of service and the efficiency of the airport (Carlucci, Cirà & Coccorese, 2018), as well as on the development of tourism in a certain region or country (Bugarčić & Bugarčić, 2021). For this reason, it is necessary to continuously improve the efficiency of airports, and to increase public and private investments in this infrastructure (Sergi, D'Aleo, Arbolino, Carlucci, Barilla & Ioppolo, 2020), whose progress contributes to the development of air traffic and leads to the diversification of international transport. In addition, another possibility of direct use of the geographical position of countries is the improvement of inland navigation and river ports, which can be an additional way of achieving

internal and international trade through international shipping routes (Nikoličić, Maslarić, Strohmandl & Mirčetić, 2017). The development of river infrastructure through the construction of navigable canals can enable better connectivity, equivalent to the contribution of sea navigable canals, which have significantly facilitated international trade by sea, and led to a reduction in the time and cost of international transport.

It can be stated that infrastructure investments are in most cases the key driver of strengthening the national economy and increasing productivity, while respecting the specificities of a certain region. The level of economic development also depends on the quality of infrastructure for specific products, such as oil and gas, which represent an important geostrategic resource for the domestic industry. This requires large investments by different countries, and the key question in such decisions is whether the economic impact caused by the new project could fundamentally boost the economy by creating new jobs and new incomes, and which sectors are expected to benefit from such projects (Dimitriou, Mourmouris & Sartzetaki, 2015). Infrastructural pipelines enable the availability of natural resources and energy for transit countries, while the country of origin of a particular resource thus enables its continuous and more efficient export through a specific infrastructure. A similar effect, achieved by different technology and method of transmission, can be expected based on the development and modernisation of ICT infrastructure, which primarily refers to the Internet, whose availability, speed, and active use in the digital world is an imperative, especially in the context of the development of Industry 4.0.

Achieving the goals of economic and trade growth through the improvement of infrastructure requires respect for the principle of sustainability. Bhattacharya, Oppenheim, and Stern (2015) emphasise that infrastructure development requires clear strategies of national authorities and international organisations, an appropriate level of investment in those projects, and respect for the economic, social, and environmental principles of sustainable development. Infrastructure development trends, as the backbone of every society and economy, need special attention. Investments aimed at improving infrastructure are motivated by a desire to increase economic productivity and employment, whereby Thacker, Adshead, Fay, Hallegatte, Harvey, Meller and Hall (2019) confirmed the importance of infrastructure that directly or indirectly affects the achievement of 72% of sustainable development goals (SDG). To ensure the construction of adequate infrastructure, policymakers must establish long-term visions of sustainable national infrastructure systems in line with the SDG, and develop flexible plans for further development. The concrete contribution of infrastructure, in the form of sustainable economic and trade growth, is realised through the process of international transport. Different types of transport require appropriate infrastructure,

based on location and time, which requires the analysis of individual forms of transport, and the formulation of development policies based on the needs and position of a specific country or region.

Based on existing confirmations that the development of infrastructure is positively correlated with economic growth, proven on the example of the EU-28 countries (Maciulyte-Sniukiene & Butkus, 2022), the question of how this mechanism works, assuming the key role of export activities in this process, arises. Some authors emphasise that the influence of physical infrastructure and ICT on exports is more important as the country becomes richer (Portugal-Perez & Wilson, 2012), while on the other hand, there is evidence that the positive effects and impact of infrastructure development diminish over time, and are primarily significant for large exporters within the economy (Kadochnikov & Fedyunina, 2018). From the aspect of time, Rehman, Ding, Noman and Khan (2020) indicate the existence of short-term and long-term two-way causality between infrastructure and exports in Pakistan, while one of the significant effects of this relationship, in the long run, is the positive impact of infrastructure on the reduction of the foreign trade deficit, proved in selected South Asian economies (Rehman, Noman & Ding, 2020). Regarding the impact on export competitiveness, trade infrastructure does not have positive effects on countries with a lower level of income (Olyanga, Shinyekwa, Ngoma, Nkote, Esemu & Kamya, 2022), but its importance can be distinguished through a direct channel of influence with the improvement of information efficiency and, indirectly, through the structure of the industry itself (Zhou, Wen & Lee, 2022). The lack of evidence on the impact of physical trade infrastructure on export in CEEC, and the economic evaluation and justification of investments in this area compared to the countries' size, provides the basis for the empirical analysis and assessment of this relationship.

The particular importance of trade infrastructure for international trade was identified during the recent pandemic crisis. The growing importance of the entire logistics system for the business environment at the international level, evident due to the challenges caused by the pandemic (Sudan & Taggar, 2021; Bugarčić & Stanišić, 2022), is especially significant when it comes to the efficiency of physical infrastructure, especially international ports and the functioning of intermodal transport (Guerrero, Letrouit & Pais-Montes, 2022). In this regard, infrastructure quality could be an important trade flow driver for different forms of transport (Wessel, 2019) in various economic circumstances, and one of the main contributions of infrastructure development could be found in stimulating international trade (Coşar & Demir, 2016; Karymshakov & Sulaimanova, 2021; Rahman, Shafi, Junrong, Fetuu, Fahad & Sharma, 2021).

According to our research goal, the article aims to examine the degree of influence of physical trade infrastructure on export in CEEC. Al-

so, assumptions regarding the influence of the control variables (GCI and FDI) on export are tested. Therefore, the following hypotheses were formulated: (H1) *infrastructure development has a positive statistically significant impact on the volume of exports in CEEC;* (H2) *the level of countries' global competitiveness affects exports;* and (H3) *FDI inflow is important for export promotion.*

DATA AND METHODS

Secondary data from relevant international institutions was used for empirical analysis and testing the stated assumptions. The indicator of the infrastructure quality level, as a key independent variable, is a subcomponent of LPI. This indicator measures the quality of infrastructure in the observed countries, including roads, railways, and other forms of physical infrastructure needed for the realisation of trade activities. The overall rating is formed based on the quality of transport and storage infrastructure, which is adequately separated and presents the overall assessment of trade infrastructure in the observed years according to the selected countries (World Bank, 2022). Given that the effects of changes in this area require a certain time interval, the infrastructure indicator is measured every two years, with the latest data for 2018, which conditions the analysis period that spans the period between 2007 and 2018. Data for the total export, as a dependent variable, was taken from the UN database (UN COMTRADE, 2022). To increase the accuracy of the obtained results, control variables that are closely related to the export activities of the countries were used, namely, the net inflow of FDI (UNCTAD, 2022) and the level of national competitiveness, expressed through the GCI within the *Global Competitiveness Report* (WEF, 2018). The main goal of the research is to examine the contribution of infrastructure improvement to export growth in CEEC-16, based on which the following econometric model was constructed:

$$EXPORT = \beta_0 + \beta_1 Infrastructure_{it} + \beta_2 GCI_{it} + \beta_3 FDI_{it} + a_i + u_{it}.$$

The procedure of panel regression analysis of the given model was performed using fixed effects, selected in accordance with the Hausman test results (Dritsakis & Stamatiou, 2018). The balanced panel model contains 96 observations (16 countries x 6 years). Before conducting the analysis procedure, an insight into the descriptive statistics and indicators of the correlation analysis was given, which, in addition to the theoretical basis of the given relationship, indicated the adequacy of the regression analysis, where logarithmic data was used for the values of exports and net inflows of FDI due to the high absolute values.

EMPRICAL RESULTS AND DISCUSSION

The results of descriptive statistics indicate the average, minimum and maximum values of the variables in the observed set, as well as the existence of a certain difference between the variables, which is primarily a consequence of the different sizes of the observed economies. Also, there is a significant difference in the level of infrastructure development among the observed countries in the analysed period (Table 1). Such results resulted, among other reasons, from differences in the countries' sizes, where Poland has the maximum value in terms of FDI net inflow as well as export. On the other hand, Montenegro has the minimum value in terms of total export, and Hungary has a negative FDI net inflow.

Table 1. Descriptive statistics

Variables	Mean	Std. deviation	Min	Max
Export (US $ at current prices in millions)	46,200	58,300	355	262,000
Infrastructure	2.79	0.38	1.98	3.57
GCI	4.23	0.29	3.48	4.80
FDI net inflow (US $ at current prices in millions)	3,800	4,300	-5,440	19,800

Source: Own calculations

The existence of a positive correlation between the dependent and independent variables, presented in Table 2, provides the basis for the further econometric analysis of the observed impact.

Table 2. Correlation matrix

Variables	Export	Infrastructure	GCI	FDI net inflow
Export	1.0000			
Infrastructure	0.5376	1.0000		
GCI	0.4481	0.6135	1.0000	
FDI net inflow	0.6483	0.0827	0.1647	1.0000

Source: Own calculations

The visual relationship between the level of development of trade infrastructure and the volume of exports is represented by a scatter diagram (Figure 1). Data for exports is in logarithmic form, given the large absolute differences, which achieved an adequate insight into the relationship between the observed variables.

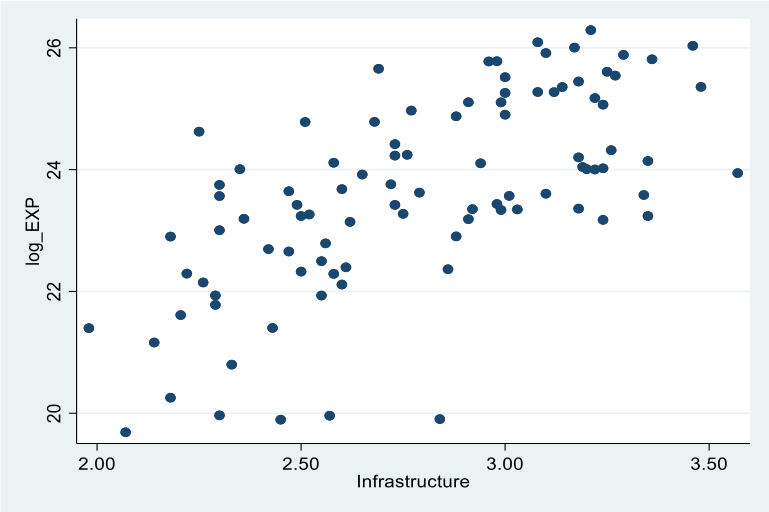

Figure 1. Scatter diagram
Source: Output from STATA

By looking at the original data in the selected sample, certain progress in the level of infrastructure development was noticed, with a simultaneous increase in exports in the observed period, which imposes the need to examine the contribution of infrastructure to this trend. During the empirical statistical analysis, the validity indicators of the applied model were in favour of the justification of the obtained results (F stat. 12.21; F stat. prob: 0.0000; R-squared: within 0.3311; between 0.4264; overall 0.3748), which indicates the validity of their interpretation, and the presentation of empirical conclusions and recommendations. The infrastructure component shows a statistically significant positive impact on the volume of exports in the observed countries, thus confirming the first hypothesis. At the same time, the influence of the control variables on export is also positive, which is in accordance with the initial assumptions of their relationship, but statistical significance is shown only for GCI (Table 3). According to that, we can confirm that export volume depends on the countries' global competitiveness level, which is in line with Mukhtarov, Alalawneh, Ibadov and Huseynli (2019). Despite stable assumptions (Sabra, 2021), the third hypothesis, related to the impact of FDI inflow on exports, was not confirmed. The results also justify the CEEC strategy aimed at major investment projects focusing on the development of infrastructure (European Commission, 2019). The presented results proved these initiatives in terms of promoting exports in the selected countries.

Table 3. Summary of fixed-effects panel regression results

log_EXP	Coef.	Std. Err.	t	P>|t|
Infrastructure	0.2284272***	0.0869544	2.63	0.010
GCI	0.6919966***	0.1492349	4.64	0.000
log_FDI	0.0140242	0.0324433	0.43	0.667

Signif. codes: ***statistically significant at the 1% level.
**statistically significant at the 5% level.
*statistically significant at the 10% level.
Source: Own calculations

The obtained results are in accordance with the previously stated assumptions and evidence in literature about the positive impact of various forms of physical infrastructure on the volume of export (Erkan, 2014; Ismail & Mahyideen, 2015; Shepherd, 2016; Nikoličić et al., 2017; Rehman et al., 2020). The empirical evidence presented in this article confirms this assumption for the first time at the level of CEEC. This justifies the current strategies of the observed countries for the continuous improvement of trade infrastructure. The value of the regression coefficient, however, indicates that the initiative to improve physical infrastructure must be adequately followed by the development of other trade facilitation factors to create an appropriate environment suitable for easier access to international markets.

The further development of trade infrastructure must be harmonised and coordinated to enable the greater participation of these countries in the GVC, as shown in the example of other countries (Shepherd, 2016), considering that the geographical position and economic connection of trade partners must rest on common interests in terms of developing infrastructure to give impetus to the growth of exports, and the continuous improvement of bilateral and multilateral trade. The presented empirical evidence especially emphasises the contribution of infrastructure in stimulating exports, in accordance with the presented earlier research that dominantly confirms its role in stimulating economic growth. These findings also confirm the importance of different forms of trade infrastructure in periods of crisis (Guerrero et al., 2022), which can thus be singled out as one of the key elements of the development policies in the countries of the CEE region. This highlights the growing importance of the entire logistics system, and trade infrastructure as one of its most important elements, which have a direct impact on trade and the entire business development within a country (Aćimović, Mijušković & Bugarčić, 2022).

CONCLUSSION AND FUTURE RESEARCH DIRECTIONS

The presented importance of infrastructure for economic development, and its potential in stimulating the foreign trade of countries is em-

pirically confirmed by the example of CEEC, as a relevant region that includes both developed EU member states and developing countries that are candidates for membership. In this way, the economic policy strategy of these countries is justified in being directed towards the intensive development of physical infrastructure as a support for economic growth and development. This trend is particularly favourable for exporters, who could access foreign markets more efficiently and competitively if the economic authorities provide an adequate level of infrastructural support, which primarily refers to the development of roads, railways, and ports, as well as ICT infrastructure and the improvement of storage and logistics capacities. The level of influence, which is ascertained by the height of the regression coefficient, indicates a statistically significant and positive influence of infrastructure on export, with the fact that the height of the coefficient indicates that it is necessary to provide additional conditions regarding other parameters necessary for a greater export incentive. In this regard, this research also shows a positive contribution of the control variables, and a statistically significant and positive impact of the level of GCI on export. The impact of FDI net inflow does not show statistical significance. This can be explained by the structure of investments, where the FDI inflow in the observed period did not make an adequate contribution to stimulating export, based on the assumptions in the given model.

Based on the confirmation of the stated hypothesis, recommendations can be drawn for economic policymakers in the observed countries, primarily those focused on trade policy and export promotion, which are significantly dependent on the level of infrastructure development and its continuous improvement. This justifies intensive infrastructure investments in this area in the observed economies. Nevertheless, it is necessary to pay attention to and examine other potential determinants of export growth. One limitation of this research is reflected in the short possible period of observation and the impossibility of applying dynamic panel models, which is a consequence of the fact that changes in this area require a longer period of observation. Another limitation is reflected in the analysis of the impact of the entire trade infrastructure on the total volume of exports, from which the direction for future research can be derived. One possible direction is to examine its contribution to the export of certain sectors of the economy, such as the processing sector, which would indicate the concrete contribution of infrastructure in individual areas and branches of industry. In addition, the analysis of individual segments of infrastructure would be useful for academics and professionals in this field. Another direction for future research is the inclusion of ‘soft’ infrastructure components that would indicate the contribution of logistics services in stimulating export operations, but also the inflow of FDI, as another strategy and driver of economic growth and development in CEEC, which potentially depends on the level of infrastructure support.

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ВЕЗА ИЗМЕЂУ РАЗВОЈА ТРГОВИНСКЕ ИНФРАСТРУКТУРЕ И ИЗВОЗА: ПРИМЕР ЗЕМАЉА ЦЕНТРАЛНЕ И ИСТОЧНЕ ЕВРОПЕ

Филип Ж. Бугарчић[1], Владимир Мићић[1], Горица Бошковић[2]
[1]Универзитет у Крагујевцу, Економски факултет, Крагујевац, Србија
[2]Универзитет у Нишу, Економски факултет, Ниш, Србија

Резиме

Рад је фокусиран на испитивање доприноса инфраструктуре у подстицају извоза земаља Централне и Источне Европе. Циљ рада јесте да утврди да ли развој трговинске инфраструктуре утиче на повећање извоза и у којој мери, будући да је ова групација земаља одабрана услед њихове интензивне стратегије усмерене ка унапређењу ове области. У раду се тестирају три хипотезе, које поред утврђивања директног утицаја инфраструктуре на обим извоза (X1), испитују утицај глобалне конкурентности земаља на извоз (X2), као и ефекте прилива СДИ на промоцију извоза. Претходна истраживања указују на постојање позитивног односа између развоја инфраструктуре и извоза, као и других елемената економског развоја, с тим да је непостојање истраживања која испитују овај однос на примеру одабраних земаља дало основ за емпиријску анализу.

Резултати истраживања, спроведеног коришћењем панел регресионог модела са фиксним ефектима, потврђују изнете претпоставке и указују на позитиван и статистички значајан утицај физичке компоненте у оквиру трговинске инфраструктуре на обим извоза земаља. На овај начин, може се констатовати оправданост инвестиционе активности у оквиру стратегије усмерене ка даљем развоју овог облика инфраструктуре, чиме се и на теоријској основи оправдава њена улога једне од водећих детерминанти за подстицај извоза. Главни допринос истраживања постигнут је кроз валоризацију инфраструктуних пројеката и давање смерница креаторима економске политике. Овиме се унапређује укупан тржишни амбијент у оквиру једне националне економије, чиме се омогућава ефикаснија реализација спољнотрговинске активности, кроз олакшан приступ међународним тржиштима, посебно за индустријске производе, који доминантно зависе од нивоа развијености инфраструктуре.

Изнети закључци стварају и простор за будућа истраживања, кроз предлоге за декомпоновање индивидуалних сегмената у оквиру трговинске инфраструктуре и испитивање појединачног утицаја друмске, железничке, ваздушне, складишне или комуникационе ифраструктуре на укупан обим извоза, као и на извоз појединих индустријских грана и сектора. Испитивање доприноса инфраструктуре у привлачењу страних инвестиција може бити још један од предлога за будућа истраживања на нивоу посматране групе земаља. Као недостатак истраживања, издваја се период анализе који, због ограничести података и потребног времена за реализацију инфраструктурних пројеката, не пружа могућност за примену неких од динамичких панел модела. Додатно, ниске вредности регресионих коефицијената, контролисаних у циљу добијања што поузданијих резултата, указују на императив укључивања и других, пре свега „меких“ фактора трговинских олакшица, како би се у потпуности остварио циљ у виду повећања обима извоза и укупне спољнотрговинске размене.