

IMPACT OF TRADE OPENNESS, HUMAN CAPITAL THROUGH INNOVATIONS ON ECONOMIC GROWTH: CASE OF THE BALKAN COUNTRIES

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ABSTRACT

The importance of trade openness and human capital for the economic growth of countries is the subject of many studies today. The role of innovations and the innovativeness of economies in modern economic development is extremely important. With greater accumulation of human capital, knowledge, skills and innovation are accumulated. All these variables are crucial for achieving higher economic growth. Special attention in the studies of relevant authors is directed towards researching this relationship on the example of small open economies, as well as developing countries. The purpose of this paper is to examine the relationship between trade openness and human capital as explanatory variables and GDP as a dependent variable in a sample of eight Balkan countries. The goal of the research is to quantify the relationship between two independent variables and GDP as a dependent variable. The period in which we observe this relationship covers the period from 2000 to 2019. Achieving the research objective is done on the basis of a panel model with fixed and random effects. The results of the panel research testify to the existence of a positive relationship between trade openness and human capital as independent variables and GDP as a dependent variable. Calculated coefficients with independent variables were obtained with a high level of statistical significance. The conclusion of the research implies that there is a positive impact of trade openness and human capital on GDP.

Keywords: trade openness, human capital, innovations, economic growth, GDP

1. INTRODUCTION

The example of the development of East Asian economies from the 80s of the last century is taken in the literature today as an example of economic development based on export orientation, increased openness of the economy and investment in human capital. Stiglitz (1996) states that the success of the development of East Asian economies is partly attributed to their openness. In addition to the openness of these economies, the process of accumulation of human capital and industrialization took place in parallel. The experiences of East Asian countries undoubtedly highlight that industrialization can be achieved without relying on the domestic market (Krueger, 1997). More recent, endogenous theories of economic growth include free trade and human capital as significant determinants of economic growth. At the beginning of the nineties of the last century, a large number of important works and studies appeared that

included trade openness as a significant determinant of economic growth (Grossman & Helpman, 1991; Romer, 1990; Young, 1991; Mankiw et al., 1992; Aghion & Howitt, 1992). Trade openness promotes economic growth by achieving efficiency in resource allocation, improving productivity through technology diffusion and knowledge spillovers, and providing access to a variety of goods and services (Barro & Sala-i-Martin, 1997). Trade openness and trade liberalization, which is reflected in the increase in trade, as well as the abolition of trade barriers, characterize today's globalization processes. This not only enabled the free movement of goods and services, but also of people, information, ideas and new concepts. Trade openness can have multiple benefits through knowledge spillovers from developed countries to less developed and developing countries (Krugman, 1985; Romer, 1990; Edwards, 1997; Winters, 2004).

In addition to openness and a free market, human capital plays a very important role in creating economic development. The accumulation of human capital, which implies a more trained workforce, the development of workers' skills, investments in research and development, implies the creation of a stock of human capital, which today is one of the key factors of economic development. The economy can improve human capital through specialization and division of labor, improving basic education, vocational training, encouraging self-employment and creating business opportunities (Santos de Oliveira et al., 2000). Human capital is positively correlated with economic growth, because investments in human capital tend to increase productivity. The process of educating the workforce is a type of investment, but instead of a capital investment such as equipment, it is an investment in human capital. There are a large number of significant studies that look at human capital through workforce education (Azariadis & Drazen, 1992; Mankiw et al., 1992; Papageorgiu, 2003) but also the health of individuals (Knowles & Owen, 1997; Barro, 1991; Bhargava et al., 2001).

Starting from the subject of the research, i.e. the study of the impact of trade openness and human capital on the economic growth of the Balkan countries, in this paper we will apply the panel model for eight countries, namely Albania, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Romania, Serbia and Slovenia. The aim of the research is to quantify the impact of human capital and trade openness on the economic growth of the countries in the sample. The selected countries used to be socialist economies with a command economic system. Going through the transition process, these countries achieved more or less success in adapting to the market way of doing business.

2. LITERATURE REVIEW

By reviewing empirical research, one can find a large number of studies that target the relationship between foreign trade openness and economic growth, as well as between the relationship between human capital and economic growth. With the increase in the openness of the economy through trade openness, economies gain significantly more through specialization in the production of certain products (Alesina et al., 2000). Among many studies, many panel studies are popular, so Gries & Riedlin (2012) conducted panel research on a sample of 158 countries of the world in the period from 1970 to 2009, and they investigated the long-term and short-term dynamics between trade openness and economic growth. This study showed that the coefficients with the variables testifying to the existence of a long-term relationship between foreign trade openness and growth are positive. In his research, Iyke (2017) observes the relationship between foreign trade openness and economic growth of the countries of Central and Eastern Europe (CEE). Using panel data for 17 countries in the period from 1994 to 2014, he concluded that foreign trade openness is important for growth in the observed countries. Kim et al. (2011) investigated the impact of foreign trade openness on economic growth based on panel data for 200

61 countries in the period from 1960 to 2000. Their research confirms that trade openness has a positive effect on economic prosperity in more technically advanced countries, while this effect is unfavorable in low-income countries. [Abendin & Duan \(2021\)](#) investigated the impact of foreign trade on economic growth in African countries using panel analysis. The research was conducted on a sample of 53 countries in the period from 2000 to 2018. Research has shown that trade has positive effects on economic growth only if there is an interaction with the digital economy.

[Fatima et al. \(2020\)](#) observed the relationship between trade openness, human capital accumulation and economic growth on the example of Asian countries. Their research concluded that the impact of trade openness on economic growth is positive. However, research has shown that if countries have a low level of human capital accumulation, then there is a negative impact of openness to foreign trade on economic growth. [Luqman & Soytaş \(2023\)](#) investigated the impact of trade liberalization and human capital on the economic growth of Pakistan. Their results show that there are positive and negative asymmetric effects of trade liberalization and human capital on growth, and that they vary significantly in the short and long term. In the long run, increased trade liberalization harms economic growth, while increased human capital has a minimal positive impact on economic growth in the short and long term. [Winters et al. \(2004\)](#) state that trade liberalization, together with productivity growth, is the best policy in the fight against poverty.

[Huchet-Bourdon et al. \(2018\)](#) point out that trade can have a negative impact on economic growth if countries specialize in the production of low-quality products, while trade has a positive impact on economic growth if countries specialize in the production of high-quality products. [Dauti & Elezi \(2022\)](#) show that trade openness, inflation, investments and the output gap are important factors in shaping the economic performance of the countries of Central and Eastern Europe, as well as the countries of the Western Balkans. [Bojat et al. \(2021\)](#) analyzed the interdependence of the movement of the real growth rate as a dependent variable, and the movement of the share of exports and imports in GDP as explanatory variables on the example of Serbia. The research was conducted for the period from 2000 to 2019 with the help of VAR methodology. The results showed that economic openness, primarily through export-oriented policies, contributes to real GDP growth in the long term, while the impact of the share of imports in the domestic product is negatively correlated with GDP. [Krajišnik et al. \(2020\)](#) investigated the impact of export structure on the economic growth of Bosnia and Herzegovina. This research showed that there is a bad structure of foreign trade production, and that it is necessary to improve the export performance of the economy of Bosnia and Herzegovina in order to reduce the foreign trade deficit. Also, the research confirmed the importance of exports for the economic growth of Bosnia and Herzegovina. [Popović et al. \(2020\)](#) observed a set of explanatory variables as determinants of economic growth based on a panel model of the Balkan countries. Their research came to the conclusion that only the impact of trade openness is statistically significant, and that it has a positive direction. [Popović et al. \(2019\)](#) showed positive connection between total trade and GDP growth in the Republic of Srpska. They also showed negative correlation between trade deficit and GDP.

3. MATERIALS AND METHODS

The research we aim to carry out in this paper should show the relationship between trade openness, human capital and GDP for the countries we have sampled. We took 8 Balkan countries as a sample, namely: Albania, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Romania, Serbia and Slovenia. The research we are conducting in our work is defined for the time period

from 2000 to 2019, and for this purpose we have collected panel data from relevant databases. The specification of the variables we use in the model is given in the following table:

Table 1. Specification of variables

Variable	Label	Source	Note
Gross domestic product	<i>GDP</i>	International Monetary Fund	Gross domestic product in levels
Trade openness	<i>OPEN</i>	World Development Indicators	$OPEN = (\text{Export} + \text{Import}) / GDP$
Human capital	<i>HC</i>	Penn World Table version 10.01	Human capital index is based on average years of schooling and returns to education
Gross fixed capital formation	<i>GFCF</i>	International Monetary Fund	$GFCF = \text{Gross investments} / GDP$
Public debt	<i>GOV</i>	International Monetary Fund	$GOV = \text{Gross public debt} / GDP$
Unemployment	<i>UNEM</i>	World Development Indicators	Unemployment in percentage of total labor force
Population	<i>POP</i>	World Development Indicators	Number of inhabitants

Source: Calculations by authors

Based on the previously described variables that we use in the research, we form a basic research model that is given by the relation:

$$GDP = f(OPEN, HC, GFCF, GOV, UNEM, POP) \quad (1)$$

We estimate this basic model based on a panel model with fixed and a model with random effects. The explanatory variables from the previous relationship are OPEN and HC, while the other variables are control.

A fixed effects (FE) model considers the individual effects of unobserved, independent variables. This model determines the effects as constants over time. These constants are fixed for all objects in the panel model throughout the observation period. We can write the panel model with fixed effects as:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it}; i = 1, \dots, N, t = 1, \dots, T \quad (2)$$

where N is the total number of individuals, T is the time period of observation and individuals, is a vector of independent variables, β is a vector of parameters with independent variables, is a constant that is different for each observed individual, is a random error. FE takes to be a constant specific to the individual in the model.

The random effects (RE) model considers the individual effects of unobserved, independent variables as random variables over time. These effects switch between OLS and FE and can focus on both, depending on within-individual differences as well as between-individual differences in the model. We can formulate the random effects model in the following form:

$$y_{it} = \mu + \beta x_{it} + \alpha_i + \varepsilon_{it}; i = 1, \dots, N, t = 1, \dots, T \quad (3)$$

where is a common constant and is a random effect for each individual. RE assumes that in this model are independently and identically distributed random variables per observed observation units with mean 0 and covariance. The choice between these two models on the basis of which

we will make further inferences is made using the test proposed by Hausman (1978), which is most often used when choosing between different panel models.

4. RESULTS AND DISCUSSION

In the continuation of the work, we will present the results on the basis of which we will draw conclusions about the influence of foreign trade openness and the role of human capital on the economic growth of selected Balkan countries. Before that, we will look at the descriptive statistics of the variables included in the model. Descriptive indicators of the variables are given in the following table:

Table 2. Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
lnGDP	3.207271	3.510924	5.520981	-0.034591	1.178692	160
lnOPEN	4.322637	4.284221	5.167934	3.610918	0.333518	160
lnGFCF	3.171672	3.154017	3.71788	2.355936	0.214139	160
lnHC	1.128337	1.114604	1.286171	1.015679	0.068929	160
lnGOV	3.7388	3.715015	5.414993	2.520193	0.502052	160
lnUNEM	2.544729	2.616665	3.437529	1.363537	0.541178	160
lnPOP	15.20464	15.24507	16.92649	13.3129	0.970534	160

Source: Calculations by authors

Based on the observed correlation coefficients between the variables, we detect the potential existence of multicollinearity between the explanatory variables of the model. We discover this by calculating the correlation matrix between all the variables included in the model. The following table shows the calculated correlation coefficients for the variables from the model:

Table 3. Correlation matrix

	lnGDP	lnOPEN	lnGFCF	lnHC	lnGOV	lnUNEM	lnPOP
lnGDP	1						
lnOPEN	0.2741	1					
lnGFCF	-0.0778	-0.2155	1				
lnHC	0.4839	0.3666	-0.1686	1			
lnGOV	-0.3602	-0.3043	-0.2830	0.1374	1		
lnUNEM	-0.7084	-0.3386	-0.1957	-0.4849	0.3293	1	
lnPOP	0.7688	-0.0885	-0.0551	-0.0660	-0.3640	-0.4077	1

Source: Calculation by authors

Based on the previous table, we can see that there is no multicollinearity on the basis of which the results obtained using the panel model could be biased. We see that only two calculated coefficients between the explanatory variables are close to the limit. From the table we see that the value of the correlation coefficient between foreign trade openness and GDP is positive and is 0.2741, as well as the value of the correlation coefficient between GDP and the human capital variable. From the obtained results in the correlation matrix, we can conclude that we can form a model based on the selected variables, and make conclusions based on it.

In this paper, we will estimate panel models with fixed and random effects, and we will test these models based on the Hausman test. The following table presents the results obtained using the fixed-effects model:

Table 4. Results of the panel model with fixed effects

Variable	Coefficient	Std. Error	t-statistics	p-value
lnOPEN	0.5148	0.1417	3.63	0.0000
lnHC	5.5827	0.5378	10.38	0.0000
lnGFCF	-0.0089	0.1375	-0.06	0.9480
lnGOV	-0.3564	0.0663	-5.38	0.0000
lnUNEM	-0.0894	0.1030	-0.87	0.3870
lnPOP	-3.5632	0.6382	-5.58	0.0000
C	50.4485	9.7638	5.17	0.0000
R-squared	0.4526			
F-statistic	66.77			
Prob. (F-statistic)	0.0000			

Source: Calculation by authors

From the previous table, we can see that the value of the coefficient with the OPEN variable is positive, which indicates the positive impact that the participation of foreign trade has on economic growth. The calculated value of the coefficient tells us that a 1% increase in the share of foreign trade in GDP affects an increase in GDP by 0.52% with other variables held constant. The value of the calculated coefficient was obtained at the level of statistical significance of 1%. The value of the coefficient with the human capital variable is also positive and was obtained with a statistical significance level of 1%. The coefficient with the variable GFCF is negative, however, this coefficient was not calculated with statistical significance. The coefficient with the variables GOV, UNEM and POP are negative, which indicates a negative impact on the movement of GDP. The coefficient of determination in the fixed effects model states that 45.26% of all variation in the independent variable is explained based on the set of independent variables included in the model.

The estimation of the panel model with fixed effects is followed by the estimation of the panel model with random effects. Therefore, in the following table we present the results calculated using a panel model with random effects:

Table 5. Results of the panel model with random effects

Variable	Coefficient	Std. Error	t-statistics	p-value
lnOPEN	0.1569	0.1207	1.3	0.0940
lnHC	7.7722	0.6222	12.49	0.0000
lnGFCF	-0.0534	0.1679	-0.32	0.7500
lnGOV	-0.2604	0.0789	-3.3	0.0010
lnUNEM	-0.2862	0.0851	-3.36	0.0010
lnPOP	-0.8601	0.0398	21.61	0.0000
C	-17.4467	1.7412	-10.02	0.0000
R-squared	0.9103			
F-statistic	99.29			
Prob. (F-statistic)	0.0000			

Source: Calculation by authors

The results we obtained using the random effects model deviate to a certain extent from the results obtained in the fixed effects model. If we look at the sign between the obtained coefficients, we see that there is no deviation. However, if we look at the significance of the coefficients as well as the differences between the calculated coefficients, we see that there is a certain deviation. From the table we see that the value of the coefficient with the OPEN variable was calculated without statistical significance, which is the biggest difference compared to the previous model.

Therefore, we test which model is suitable for use based on the methodology proposed by Hausman (1978) and which has the widest application when choosing between two panel models. The Hausman test tries to confirm the null hypothesis, which reads: the differences in the coefficients are not systematic. With this null hypothesis of the Hausman test, we are trying to confirm that the random effects model is suitable because this model is more efficient than the fixed effects model. The following table shows the results of the Hausman test:

Table 6. Results of the Hausman test

Test Summary	Chi Sq. Statistic	Chi Sq. d.f.	Prob.
Cross-section random	82.22	6	0.000

Source: Calculation by authors

The Hausman test uses a chi-square distribution with degrees of freedom equal to the number of time-varying regressors. If the probability of this test is insignificant, then the model with random effects is used, and then we cannot reject the null hypothesis. If the probability is significant, then at the level of statistical significance we reject the null hypothesis and use a model with fixed effects. As shown in the previous table, based on the p-value, we reject the null hypothesis, and conclude that it is necessary to use a model with fixed effects.

5. CONCLUSION

The development of knowledge-based economies and the openness of the economy is yet to be seen in transition economies. Only for some of the transition countries we are able to conclude that there is a correlation between trade openness and economic growth. From the perspective of the impact of human capital on economic growth in transition economies, it can be seen that its importance in relative relation to other determinants of economic growth is significantly lower. The mismatch of workers' skills in these economies remains a consequence of the weak adaptation of the labor market to structural changes and the education system, although we cannot make an absolutely identical conclusion for all transition economies. On the other hand, the exposure of these economies to imported goods is also an obstacle to the long-term development of these countries.

In this paper, we tested the relationship between trade openness and human capital as independent variables and economic growth as a dependent variable. The research was conducted on a sample of 8 Balkan countries, namely Albania, Bosnia and Herzegovina, Bulgaria, Montenegro, Croatia, Romania, Serbia and Slovenia. In the paper, we collected panel data where a panel model with fixed and a panel model with random effects were tested. The results of both models show that, at the level of statistical significance of 1%, openness to foreign trade and an increase in human capital increase economic growth in the example of the observed countries. As models with random and fixed effects were tested in the paper, the results of the Hausman test confirmed that models with fixed effects give better results. These results and analysis are

based on the pre-crisis period. The economy changed a lot after that Covid-19 period. Based on the coefficient of determination, we can conclude that over 45% of the variations in the dependent variable are explained by the variations in the independent variables.

The conclusion that can be drawn from this is that it is extremely important for developing countries, especially small transition economies, to get involved in the process of free trade, and to reorient themselves to the concept of export orientation and human capital accumulation.

REFERENCES

- Abendin, S., & Duan, P. (2021). International trade and economic growth in Africa: The role of the digital economy. *Cogent Economics & Finance*, 9(1).
<https://doi.org/10.1080/23322039.2021.1911767>
- Alesina, A., Spolaore, E., & Wacziarg, R. (2000). Economic Integration and Political Disintegration. *American Economic Review*, 90(5), 1276-1296. <https://doi.org/10.1257/aer.90.5.1276>
- Barro, R. J., & Sala-i-Martin, X. (1997). Technological Diffusion, Convergence, and Growth. *Journal of Economic Growth*, 2(1), 1-26. <https://www.jstor.org/stable/40215930>
- Bojat, M., Kovačević, S., & Kurušić, D. (2021). Interdependence of foreign trade and economic growth of Serbia. *Proceedings of the Faculty of Economics in East Sarajevo*, 23, 21-42.
<https://doi.org/10.7251/ZREFIS2123021B>
- Dauti, B., & Elezi, S. (2022). Economic growth in the Central East European Union and the Western Balkan countries in the course of Stability and Growth Pact and COVID-19. *Zbornik radova Ekonomskog fakulteta u Rijeci/Proceedings of Rijeka Faculty of Economics*, 40(1), 29-61.
<https://doi.org/10.18045/zbefri.2022.1.29>
- Edwards, S. (1997). Openness, Productivity and Growth: What Do We Really Know? *NBER Working Paper Series, Working Paper No.* 5978.
https://www.nber.org/system/files/working_papers/w5978/w5978.pdf
- Fatima, S., Chen, B., Ramzan, M., & Abbas, Q. (n.d.). The Nexus Between Trade Openness and GDP Growth: Analyzing the Role of Human Capital Accumulation. *SAGE Open*, 10(4).
<https://doi.org/10.1177/2158244020967377>
- Gries, T., & Redlin, M. (2012). Trade Openness and Economic Growth: A Panel Causality Analysis. *Working Paper CIE 52*. <http://groups.uni-paderborn.de/wp-wiwi/RePEc/pdf/ciepap/WP52.pdf>
- Groningen Growth and Development Centre. (2023). *Penn World Table version 10.01*. DataverseNL.
<https://doi.org/10.34894/QT5BCC>
- Grossman, G. M., & Helpman, E. (1991). Trade, knowledge spillovers, and growth. *European Economic Review*, 35(2-3), 517-526. [https://doi.org/10.1016/0014-2921\(91\)90153-A](https://doi.org/10.1016/0014-2921(91)90153-A)
- Hausman, J. (1978). Specification Tests in Econometrics. *Econometrica*, 64(6), 1251-1271.
<https://doi.org/10.2307/1913827>
- Huchet-Bourdon, M., Le Mouél, C., & Vijil, M. (2018). The relationship between trade openness and economic growth: Some new insights on the openness measurement issue. *The World Economy*, 41(1), 59-76. <https://doi.org/10.1111/twec.12586>
- International Monetary Fund. (2022). *World Economic Outlook, October 2022*. Washington: International Monetary Fund. www.imf.org/en/Publications/WEO/weo-database/2022/October
- Iyke, B. N. (2017). Does Trade Openness Matter for Economic Growth in the CEE Countries? *Review of Economic Perspectives*, 17(1), 3-24. <https://doi.org/10.1515/revecp-2017-0001>
- Krajišnik, M., Gojković, B., Josipović, S., & Popović, S. (2020). Impact of Exports on Economic Growth in Bosnia and Herzegovina. *Acta Economica*, 18(32), 59-84.
<https://doi.org/10.7251/ACE2032059K>
- Krueger, A. O. (1997). Trade Policy and Economic Development: How We Learn. *NBER Working Paper Series, WP 5896*. https://www.nber.org/system/files/working_papers/w5896/w5896.pdf
- Krugman, P. (1985). A 'Technology Gap' Model of International Trade. In K. Jungenfelt, & S. D. Hague, *Structural Adjustment in Developed Open Countries* (35-50). New York: St. Martin's Press.
- Luqman, M., & Soytaş, U. (2023). Asymmetric role of human capital and trade liberalization in the economic growth of Pakistan: Fresh evidence from the nonlinear analysis. *The Journal of International Trade & Economic Development*, 32(3), 473-495.
<https://doi.org/10.1080/09638199.2022.2105386>
- Mankiw, G. N., Romer, D., & Weil, D. N. (1992). A Contribution to the Empirics of Economic Growth.

- The Quarterly Journal of Economics*, 107(2), 407-437. <https://doi.org/10.2307/2118477>
- Mendes de Oliveira, M., Santos, M. C., & Kiker, B. F. (2000). The role of human capital and technological change in overeducation. *Economics of Education Review*, 19(2), 199-206. [https://doi.org/10.1016/S0272-7757\(99\)00020-5](https://doi.org/10.1016/S0272-7757(99)00020-5)
- Philippe, A., & Howitt, P. (1992). A Model of Growth Through Creative Destruction. *Econometrica*, 60(2), 323-351. <https://doi.org/10.2307/2951599>
- Popović, G., Erić, O., & Popović, S. (2019). Foreign trade liberalization and economic growth: The case of the Republic of Srpska. *ECONOMICS - Innovative and Economics Research Journal*, 7(2), 99-108. <https://doi.org/10.2478/eoik-2019-0020>
- Popović, G., Erić, O., & Stanić, S. (2020). Trade Openness, Institutions and Economic Growth of the Western Balkans Countries. *Montenegrin Journal of Economics*, 16(3), 173-184. <https://doi.org/10.14254/1800-5845/2020.16-3.14>
- Romer, P. M. (1990). Endogenous Technological Change. *Journal of Political Economy*, 98(5), 71-102. <https://doi.org/10.1086/261725>
- Winters, A. L. (2004). Trade Liberalisation and Economic Performance: An Overview. *The Economic Journal*, 114(493), F4-F21. <https://doi.org/10.1111/j.0013-0133.2004.00185.x>
- Winters, A. L., McCulloch, N., & McKay, A. (2004). Trade Liberalization and Poverty: The Evidence So Far. *Journal of Economic Literature*, XLII, 72-115. <https://doi.org/10.1257/002205104773558056>
- World Bank. (2022). *World development indicators*. www.datacatalog.worldbank.org/dataset/world-development-indicators
- Young, A. (1991). Learning by doing and the dynamic effects of international trade. *The Quarterly Journal of Economics*, 106(2), 369-405. <https://doi.org/10.2307/2937942>