# International Journal of Economic Practice and Policy Volume 18, Issue 1, Year 2021

Original Scientific Article
UDC 339.727.22:338.1(497.11)
339.564:338.1(497.11)
DOI 10.5937/skolbiz2-35215

# INVESTIGATING THE IMPACT OF FOREIGN DIRECT INVESTMENT AND EXPORT ON THE ECONOMIC GROWTH OF THE REPUBLIC OF SERBIA

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Abstract: Given that foreign direct investment and exports are one of the primary drivers of global economic integration, numerous authors have studied them. According to the findings of numerous empirical research, foreign direct investment and exports have a positive impact on economic growth. However, little research sheds light on this relationship in the Republic of Serbia. Therefore, the objective of this paper is precisely to analyze the relationship between foreign direct investments and exports on the economic growth in Serbia. We use multiple linear regression to examine the relationship between economic growth, foreign direct investment, and exports from 2001 to 2020. According to the results, both foreign direct investments and exports positively impact economic growth in Serbia. The study's findings can be used to design and improve numerous strategies and policies for Serbia's future economic growth and development.

**Keywords:** foreign direct investment, exports, economic growth, gross domestic product, regression analysis, Republic of Serbia

JEL classification: O47, F10, F21

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# ISTRAŽIVANJE UTICAJA STRANIH DIREKTNIH INVESTICIJA I IZVOZA NA EKONOMSKI RAST REPUBLIKE SRBIJE

Sažetak: Strane direktne investicije i izvoz su predmet istraživanja velikog broja autora, s obzirom na to da se upravo ovi pokazatelji nalaze među osnovnim faktorima koji pokreću globalne ekonomske integracije. Rezultati velikog broja istraživanja ukazuju da strane direktne investicije i izvoz pozitivno utiču na ekonomski rast. Ipak, u literaturi se ne pronalazi dovoljan broj istraživanja koja rasvetljavaju ove odnose u Republici Srbiji, te je opredeljenje autora da u ovom radu istraže upravo pomenuta kretanja. Uz korišćenje višestruke linearne regresije, analiziran je odnos između ekonomskog rasta, stranih direktnih investicija i izvoza u periodu od 2001. do 2020. godine. Dobijeni rezultati ukazuju na zaključak da i strane direktne investicije i izvoz pozitivno utiču na ekonomski rast u Srbiji. Doprinos istraživanja se ogleda u pružanju podrške pri kreiranju politika i strategija budućeg ekonomskog rasta i razvoja Republike Srbije.

Ključne reči: strane direktne investicije, izvoz, ekonomski rast, bruto domaći proizvod, regresiona analiza, Republika Srbija

#### 1. INTRODUCTION

Foreign trade and foreign direct investments (FDI) are frequently mentioned in scientific and professional literature as two essential variables driving economic growth. Foreign capital, especially in the form of FDI, plays a significant role in the economic development of most countries (Febiyansah, 2017). therefore, numerous countries have designed their own FDI attraction policies, including conditions such as tax incentives to attract FDI (Duarte, Kedong, & Xuemei, 2017). Investment growth can be aided by macroeconomic and financial stability, improved investment and business environment, and infrastructure projects (Marjanović, Beraha, & Simović, 2021).

Furthermore, foreign direct investments play an essential role in the internationalization of business (Mahadika, Kalayci, & Altun, 2017). Foreign direct investments have been a very stable component of international capital flows. They have been less disrupted by externalities and disturbances, both in the case of developed and developing countries. In this context, Dritsaki and Stiakakis (2014, p.18) state that FDI improves the host country's export capacity, increasing foreign exchange profits, especially in developing countries. Radulović (2020) also emphasizes that developing countries are trying to attract as much foreign direct investment (FDI) as possible to accelerate economic growth and achieve macroeconomic stability. One of the

apparent differences in economic growth and income levels between developed and developing countries is their technological infrastructure (Kabaklarli, Duran, & Üçler, 2017). Etale Ebitare and Etale Lyndon (2016, p. 572) conclude that FDI can also encourage job creation, improve technology transfer and foster overall economic growth in the host country. Competitiveness is also an essential factor in attracting FDI. If the country is more competitive than others, especially those in its immediate vicinity, its investment climate becomes more attractive to foreign investors (Stankov, Damnjanović, & Roganović, 2018).

Multinational corporations engage in foreign investment for various reasons, most of which are strategic. These include access to cheap raw materials and other inputs, expanding existing markets, or improving the quality of services to local clients in the host country (Akoto, 2016). According to Zhang & Song (2001), multinational corporations provide practically the only way to increase exports in the short term, mainly when domestic companies use technically underdeveloped or non-technical solutions. Ahmad, Draz & Yang (2018) state that domestic companies can benefit from the knowledge of multinational companies, especially when it comes to responding to demand, international security norms, and distribution standards.

This paper investigates the relationship between economic growth, FDI, and exports from 2001 to 2020 in the Republic of Serbia. After the introductory considerations, the next part is a literature review, and then we present the methodology. The third section presents research results and discussions, first through insight into descriptive indicators for variables, then the correlation, and then the regression model. In the last part, we provide conclusions that can be helpful inputs in defining strategies for future growth and development of the Republic of Serbia.

#### 2. LITERATURE REVIEW

In previous research, the authors have mainly analyzed the relationship between FDI and economic growth, exports and economic growth, or the relationship between FDI and exports. Also, many authors have analyzed the relationship between all three variables. As all three variables are of research interest to us, the literature review for this paper primarily deals with research that observed all three variables. Particular emphasis is on papers analyzing the situation and prospects of the Republic of Serbia. Many different statistical and econometric methods are used to research this problem in different periods.

Petrović-Ranđelović and Miletić (2013) established that the impact of FDI on the economic growth rate of the host country is primarily determined by the nature of the host country's trade policy. The available literature consensus is that FDIs are more conducive to economic growth in countries with an exportoriented strategy. However, some researchers, such as Mutafoglu (2012) and Mohamed, Singh & Liew (2013), argue that FDI inflows cause "costs" for host countries, such as increased competitive pressure on domestic companies and a deteriorating balance of payments due to repatriation profits (Nguien, 2017).

From the home country's perspective, the relationship between FDI and exports might be complimentary, substitutive, or both complementary and substitutive (Akoto, 2016). Companies with foreign capital investments can increase their production capacity, given the influence of fresh capital, and achieve better borrowing capacity in international markets, resulting in economies of scale and increased exports. Local companies in the host countries benefit from trade information provided by various international organizations to foreign investor companies. Furthermore, FDI encourages local companies to improve their production, making them more attractive on the international market and conditions an increase in exports (Mukhtarov, Alalawneh, Ibadov, & Huseynli, 2019).

Foreign trade is another significant driver of economic growth (emphasizing trade openness) in both developed and developing countries. In that context, Stojanović (2018, p.55) points out that, unlike countries characterized by lower trade openness, countries with a more significant share in international trade achieve long-term economic growth faster. In addition, the openness of an economy is, among other things, determined by FDI inflows in the host country. Although economists have different attitudes regarding the importance of the degree of openness of the national economy in determining FDI inflows, many empirical studies have confirmed the relevance of this factor in making investment decisions. Kravis and Lisey (1982), Culem (1988), Edwards (1990), and Pistoresia (2000) indicated a significant positive impact of the country's openness on FDI inflows (Chakrabarti, 2001, p.100).

Utilizing Granger causality analysis, Xiaohui, Burridge and Sinclair (2002) found a two-way causal link between FDI, exports, and economic development in China between 1981 and 1997. Moreover, Eryigit (2012) analyzed the relationship between FDI, exports, and gross domestic product in Turkey from 2000 to 2008. The obtained results showed a long-term link between FDI and exports, FDI and GDP, and exports and GDP. A similar study observing ten European countries by Acaravci and Ozturk (2012) found causality between the variables in the four observed countries. Economic growth generated by foreign direct investment is evident in the Czech Republic and Slovakia. In Latvia, FDI is driven by economic growth, while in Poland, causality goes from FDI to exports. For Latvia and Slovakia, there is a two-way causal link between economic growth and exports. While there is a two-way causal link between

exports and FDI in Latvia, there is no characteristic long-term or equilibrium link between real GDP, real exports, and FDI in Bulgaria, Estonia, Hungary, Lithuania, Romania, and Slovenia.

Hsiao and Hsiao (2006) analyzed the relationship between FDI, exports, and gross domestic product, looking at eight East and Southeast Asia countries between 1986 and 2004. Granger's causality analysis and panel analysis concluded that FDI affects gross domestic product directly and indirectly through exports. In addition, the results indicated a two-way causality between exports and gross domestic product.

In their analysis of six selected developing countries, using a vector error correction model, Miankhel, Thangavelu and Kalirajan (2009) concluded that FDI is a significant driver of gross domestic product growth in India. In contrast, exports take over this role in Pakistan. Also, exports predominantly affect GDP growth in Mexico and Chile. Malaysia's results showed a two-way causality between FDI and GDP. On the other hand, the results of this study did not show the existence of correlations between the studied variables when it comes to Thailand.

In their study, Mahmoodi and Mahmoodi (2016) observed eight European developing countries and eight Asian developing countries. The results showed a two-way causality between economic growth and FDI. There is a one-way causality for European countries from economic growth and FDI to exports in the short term. The results for Asian countries indicate a two-way causality between exports and short-term economic growth. In addition, the results indicate long-term causality from exports and FDI to economic growth and long-term causality from economic growth and exports to FDI for all observed countries.

Within the available literature, the number of researches that deal with the connection between the mentioned variables in the Republic of Serbia is scarce. Nestorović (2015) included the Republic of Serbia (from 2001 to 2011) and several other transition countries in his study. The results indicated a positive but not statistically significant correlation between FDI and economic growth in the observed countries.

Keeping in mind the different results of the research that dealt with the relationship between FDI, exports, and economic growth, we can conclude that the obtained results largely depend on the applied econometric technique and the length of the observation period. Therefore, Stojanović (2018, p. 58) points out that the research results can be one-way causality, two-way causality, or no

causality relationship. However, most studies indicate a positive relationship between exports, economic growth, and FDI.

#### 3. DATA AND METHODOLOGY

This paper uses an empirical model to investigate the relationship between gross domestic product, foreign direct investment inflow, and exports of the Republic of Serbia from 2001 to 2020. Macroeconomic and fiscal data published by the Ministry of Finance of the Republic of Serbia (2021) was a data source.

Descriptive numerical measures provide a more in-depth look at the data for this study: arithmetic mean, standard deviation, maximum, minimum, skewness, and kurtosis. Arithmetic mean is the most frequently used measure of central tendency. It is the ratio of all observations to the total number of observations in a data set. The standard deviation is an absolute measure of the dispersion of data and provides insight into how much the data deviates from the mean. The minimum is the lowest value in a data set, while the maximum is the highest in a particular data set. Skewness is a measure of distribution asymmetry. In other words, skewness is a distortion or asymmetry in a set of data that deviates from the normal distribution. Kurtosis is a measure based on which the homogeneity of distribution is estimated. It is a statistical term that describes the degree to which scores cluster in a frequency distribution's tails or peak. Graphically, the homogeneity of the distribution is estimated based on the roundness of the curve.

For this research, the dependent variable is economic growth measured in the gross domestic product (GDP) in millions of euros, and the independent variables are the foreign direct investment (FDI) inflows and exports of goods (EX), in millions of euros. Although logarithmic series values are often used in the models in the literature, as all three variables in this model are in millions of euros, the original values were kept

At a significance level of 5% and a confidence interval of 95%, a multiple linear regression model was used to test the statistical correlation between the previously mentioned variables.

The regression equation has the following form:

$$GDP = \beta_0 + \beta_1 FDI + \beta_2 EX + \varepsilon. \tag{1}$$

The coefficients  $\beta_1$  and  $\beta_2$  indicate how much the changes in the independent variable values affect the value of the dependent variable, while  $\beta_0$  represents the segment on the Y-axis, and  $\epsilon$  the error.

General and individual research hypotheses were created based on the literature review and the research goal.

#### General research hypotheses

H<sub>10</sub>: There is a statistically significant correlation between foreign direct investments, exports, and economic growth in Serbia from 2001 to 2020.

H1a: There is no statistically significant correlation between foreign direct investments, exports, and economic growth in Serbia from 2001 to 2020.

### **Individual research hypotheses**

H20: Foreign direct investment inflows have positively impacted economic growth in Serbia from 2001 to 2020.

H2<sub>a</sub>: Foreign direct investment inflows have negatively impacted economic growth in Serbia from 2001 to 2020.

H<sub>30</sub>: Exports positively impacted economic growth in Serbia from 2001 to 2020.

H3<sub>a</sub>: Exports negatively impacted economic growth in Serbia from 2001 to 2020.

#### 4. RESULTS AND DISCUSSION

This part presents the study findings, first looking at the descriptive statistics and their correlations. Also, the results of the regression model are presented in this section. Table 1 and Figures 1, 2, and 3 show the descriptive statistics for each variable.

Table 1

Descriptive statistics

	GDP	FDI	EX
No of observations	20	20	20
Arithmetic mean	32.060,28	1.888,90	8.802,49
Standard deviation	9.082,33	1.030,83	5.165,57
Minimum	14.585,80	184,10	1.922,20
Maximum	46.467,50	3.551,09	17.536,40
Skewness	-0,36	0,12	0,31
Kurtosis	-0,60	-1,21	-1,13

Note. Authors' calculation.

As a basic macroeconomic indicator, the Gross Domestic product represents the market value of all final goods and services produced in one country during one

calendar year. Most research studies use GDP per capita as a measure of economic growth. Economic growth, one of the main goals of all countries, is usually measured as the growth of gross domestic product (GDP) over time. Therefore, the most common parameter for measuring a country's economic growth is GDP growth (Mitić, Munitlak Ivanović & Zdravković, 2017, p. 1).

As shown in Table 1, the average value of GDP in the Republic of Serbia from 2001 to 2020 was 32,060 million euros, with a standard deviation of 9,082 million euros. The minimum value of 14,586 million euros was recorded in 2001, while the maximum of 46,468 million euros was recorded in 2020. Figure 1 depicts the trend of GDP growth from the year 2000 when the economic reforms began, GDP grew until the 2008 global financial crisis and continued to grow from 2014until the end of the observation period.

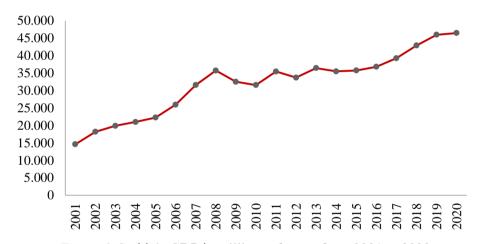


Figure 1. Serbia's GDP in millions of euros from 2001 to 2020

Note. Ministry of Finance of the Republic of Serbia, 2021.

Since 2000, one of Serbia's primary economic development strategies has been to attract and encourage foreign investments. A capital investment owned and operated by a foreign entity is called foreign direct investment (Mankiw, 2011, p. 247). In other words, the term foreign direct investment means the investment of foreign capital by investors resident (enterprise) of one country in a resident (enterprise) of another country to achieve common interests.

Based on Table 1, the average value of investments of foreign investors in Serbia over the past 20 years was 1,889 million euros with a standard deviation of 1,031 million euros. These numbers indicate a significant variation of FDI during the observed period, i.e., the interest of foreign investors changed due to

numerous factors, such as the transition processes, the World Economic Crisis, and the political situation. The lowest level of FDI was 184 million euros in 2001, while the highest level was 3,551 million euros in 2019. Figure 2 shows a rising trend in FDI inflows from 2014 to 2019, attributed to Serbia's growing appeal as a particularly favorable investment location for foreign investors.

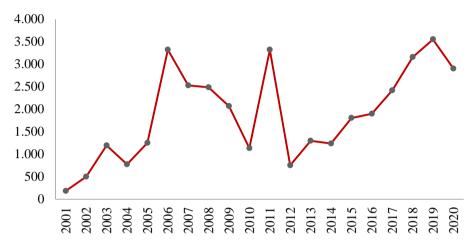
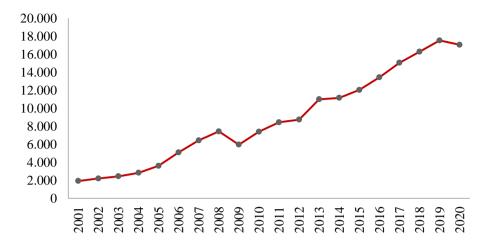


Figure 2. FDI of Serbia in millions of euros from 2001 to 2020

*Note.* Ministry of Finance of the Republic of Serbia, 2021.

"Exports are domestically produced goods and services that are sold abroad." (Mankiw, 2011, p. 376). Exports (an indicator of economic openness) represent the value of all goods and services that one country can produce and sell to other countries.

Table 1 shows that the Republic of Serbia's average export value from 2001 to 2020 was 8,802 million euros, with a standard deviation of 5,166 million euros. The minimum value of exports was realized in 2001 and amounted to 1,922 million euros, while the maximum value of 17,536 million euros was realized in 2019. Figure 3 shows a trend of export growth, with one noticeable disturbance in the period after the World Economic Crisis.



*Figure 3*. Exports of Serbian goods in millions of euros from 2001 to 2020 *Note*. Ministry of Finance of the Republic of Serbia, 2021.

The correlation coefficients between the observed variables were determined below (Table 2), accompanied by the results of multiple linear regression (Tables 3,4,5).

Table 2

Correlation matrix

	GDP	FDI	EX
GDP	1,00		
FDI	0,69**	1,00	
EX	0,94**	0,60**	1,00

Note. Authors' calculation.

The matrix of correlation coefficients (Table 2) presents all the relationships between variables in the study and includes information on the correlation coefficient and its statistical significance. Based on the correlation coefficients in Table 2, we can see a dependence (correlation) between FDI and GDP, which is strong and has a positive direction (correlation coefficient is 0.69). Also, the second observed independent variable in the model - exports (EX) - has a positive direction of impact on GDP. Additionally, the relationship between exports and GDP is extremely strong (correlation coefficient is 0.94). The positive direction of the influence indicates a tendency for the value of the independent variable (both FDI and EX) to increase the value of the dependent variable GDP.

Statistical significance indicates the justification for including these variables in the model and indicates a significant relationship between FDI and GDP and exports and GDP.

Table 3 *Model validity* 

Regression statistics				
Coefficient of	0.957			
determination	0,937			
The adjusted coefficient	0.906			
of determination	0,200			
Standard error	2791,53			

Note. Authors' calculation.

Table 3 shows that the coefficient of determination is 95,7%, indicating a real positive relationship between FDI, exports, and GDP, which is supported by the majority of the empirical literature on the subject. The adjusted coefficient of determination is an indicator of the quality of regression that will not increase unjustifiably with the number of independent variables, which would be the case with the coefficient of determination. This coefficient is 0,906 and implies that FDI and exports explain 90,6% of variations in GDP, while the influence of other factors explains the remaining 9,4% of variations.

Table 4

ANOVA

	Df	SS	MS	F	Sig.
Regression	2	1,43E+09	7,17E+08	92,06	7,57E-10
Residuals	17	1,32E+08	7792626		
Total	19	1,57E+09			

Note. Authors' calculation.

The results obtained in Table 4 indicate that the model is valid for predicting the impact of selected independent variables on economic growth, given that the value of test statistics (Sig. = 0.0000000000757) is significantly less than 0.05.

Regression analysis

	Coefficients	Standard error	t Statistics	P-value
Constant	15989,51	1415,73	11,29	2,53E-09
FDI	1,75	0,77	2,26	0,04
EX	1,45	0,15	9,39	3,86E-08

Note. Authors' calculation.

As shown in Table 5, we can see that the values of Student's t-distribution are 2.26 and 9.39 for FDI and exports, respectively. These results indicate that they positively affect and significantly contribute to GDP growth. These are different results as Nestorović (2015) got that FDI has a positive but not statistically significant impact on economic growth in Serbia.

Multiple regression equation model:

$$GDP = 15.989,51 + 1,75FDI + 1,45EX \tag{2}$$

Based on regression equation (2), we can conclude that every million euros of FDI inflows to Serbia lead to an increase in GDP by 1.75 million euros at the 95% confidence level, assuming that all other factors that may affect GDP are constant. Also, each increase in exports by one million euros leads to an increase in GDP by 1.45 million euros with the assumptions mentioned above.

Based on the obtained results in Tables 1, 2, 3, 4, and 5, we determine that we do not have enough evidence to reject the general  $(H1_0)$  and individual  $(H2_0)$  and  $H3_0$  null hypotheses. In other words, from 2001 to 2020 in the Republic of Serbia, there was a statistically significant correlation between inflows of foreign direct investment, exports, and economic growth and the inflows of foreign direct investment and exports positively impacted economic growth individually.

#### 5. CONCLUSION

A review of relevant literature shows that many theoretical and empirical studies address the relationship between economic growth, FDI, and exports in various countries and regions in the world. Likewise, the most comprehensive set of different macroeconomic variables used in this type of research includes financial development, gross fixed capital formation, inflation, monetary aggregates, domestic lending, and others. However, the number of studies dealing with the relationship between economic growth, FDI, and exports in Serbia is somewhat scarce. In order to contribute to the existing scientific and

professional literature, this paper investigated the relationship between economic growth, FDI, and exports in Serbia from 2001 to 2020, using the model of multiple linear regression.

Based on the correlation matrix, we concluded that FDI and exports impact economic growth, so the growth of these two variables leads to GDP growth, while the decline of these variables leads to GDP decline. Further analysis found a positive relationship between FDI, exports, and GDP. The regression analysis results showed that FDI and exports had a positive impact and significantly contributed to GDP growth in Serbia in the observed period.

Keeping in mind the obtained results, we can conclude that FDI played a significant role in developing the Serbian economy in the observed period, *ceteris paribus*. On the other hand, recommendations to economic policymakers go toward better and more comprehensive promotion of Serbian exports. Therefore, it is necessary to provide quality support programs for economic entities to strengthen their capacities to enter international markets and increase competitiveness. Also, further promotion of macroeconomic stability (especially inflation and the exchange rate) are important factors in supporting export-oriented economic entities.

Future research should use different statistical and econometric methodologies when analyzing the relationship between economic growth, FDI, and exports in Serbia and the region. Possible methodologies would be the following: pooled mean group estimation (PMG), ordinary least squares (OLS), dynamic ordinary least squares (DOLS), fully modified ordinary least squares (FMOLS), panel smooth transition regression (PSTR), vector autoregressive model (VAR), vector error correction model (VECM), generalized method of moments (GMM), and autoregressive distributed lag model (ARDL). Also, models should include additional indicators from energy, ecology, society, politics, and other fields. Representative examples of advanced methodologies and mentioned indicators can be seen in papers such as Salahuddin, Gow, & Ozturk (2015), Saidi & Hammami (2015), Ali et al. (2018), Mitić et al. (2020), Dong et al. (2018), Batuo, Mlambo, & Asongu (2018), Petrović-Ranđelović et al. (2020), Hsueh, Hu, & Tu (2013), Higgins, Zha, & Zhong, (2016), Bekhet & Othman (2018), and many others.

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This research has been funded by the Ministry of Education, Science, and Technological Development of the Republic of Serbia.

Delivered: 12.07.2021.

Accepted: 24.12.2021.