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**FOREIGN DIRECT INVESTMENTS AND CREATING  
THE CONDITIONS FOR ECONOMIC GROWTH  
– THE EXPERIENCE OF SERBIA**

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***Abstract:** Attracting foreign direct investments (FDI) for most countries represents necessary condition for increasing production and exports to the level that would enable the country to have stable economic growth and successful debt servicing. Accordingly, one of the main goals is creating the investment climate that is suitable for attracting foreign direct investments. The aim of the research is to determine and analyze the impact of FDI on gross domestic product, imports, exports, net exports and unemployment in Serbia for the period 2008-2017. For determining the impact of foreign direct investments on the economic growth of the Republic of Serbia, statistical and econometric analysis has been used by means of application of correlation and regression analysis. The conclusion of this paper shows that there is a statistically significant linear correlation between FDI and GDP, whereas linear correlation between FDI and exports of goods and services, imports of goods and services, net exports and unemployment rate has not been established in the observed period. Development effects of FDI are expected only when the absorption and adaptive opportunities of domestic companies are improved. Active state policy towards FDI is necessary for its full effects.*

***Keywords:** FDI, economic growth, GDP, unemployment, import, export, Serbia*

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## **1. Introduction**

Foreign direct investments (FDI) represent the form of capital ensuring that a foreign investor acquires property rights, control and management based on invested capital (Trajković & Đurović, 1982, p. 82). Organization for Economic Cooperation and Development – OECD defines foreign direct investments as a type of international movement of capital, where an investor, a resident of one country, invests in a company that is a resident of the other country in order to achieve lasting interest and control over that company and that is in the form of acquiring property, reinvestment of earnings and within company loan. With globalization and liberalization of international trade, FDI represent one of the drivers of economic growth in developing countries.

Foreign investors participate with capital indirectly or directly. Indirect participations in capital are called portfolio investments, and direct participations are called foreign direct investments (FDI). Developing countries get new technologies, management techniques and market material of high-quality through FDI by exploitation of natural resources (IFC, 1997). FDI represent long-term, international movement of capital, which, observed from the aspect of time, is the most risky form of investment and investment that provides the highest yield with the aim of creating transnational organizations and generating high profits (Krugman, Obstfeld, 2009).

Foreign direct investments have extremely favorable impact on increasing gross domestic product (Kastratović, 2016, p. 84). In addition, FDI represent real investments in the factors of production: in capital goods, in land or in supplies, where an investor is involved in both investing and management, maintaining control over the use of invested capital (Dominik, 2009). This type of investments can accelerate economic growth, increase GDP, improve standard of living and ensure the access to new technology, whereas appropriate policy of opening domestic market to foreign competition can create a long-term basis for great benefits from investments (Krugman, Obstfeld, 2009).

For most host countries, the most interesting is development potential that the investments have, which makes the combination of positive effects, starting from intensification of economic activity in the country, the growth of employment of labour force, knowledge spillover and technologies.

In accordance with the aim that has been set, this paper is structured in the following way. After the initial considerations, the first part of the paper represents the overview of relevant literature that deals with viewing the relationship between FDI and economic growth of a host country. In the second part of the paper, methodology of research has been presented and the initial hypotheses have been set. After pointing to the results of the research and discussion in the final part of the paper, the synthesis of key considerations has been done.

## **2. Literature review**

Literature that studies the determinants of FDI in developing countries clearly indicates the significance of infrastructure, skills, macroeconomic stability and "healthy" institution for FDI inflow (Chowdhury and Mavrotas, 2006). In literature, the impact of FDI on economic growth is diverse. The studies of Raheem and Ogebe (2014), Massa (2011), Moura and Forte (2010), Wang (2009), Hansen and Rand (2006), Mullen and Williams

## **Foreign Direct Investments and Creating the Conditions for Economic Growth – the Experience of Serbia**

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(2005), Choe (2003) testify to the positive effects, whereas Mencinger (2003), Vissak and Roolah (2005), Globerman and Shapiro (2003), find a negative relationship between FDI and economic growth. Some studies testify to good and bad sides of FDI depending on the conditions of recipient country and the type of foreign investments. The reason for different effects of FDI on economic growth lies in the use of different variables, as well as possible lack of analyses in countries recipients of FDI (Mohnen, 2001 and Asheghian, 2004), there is the possibility that different effects are caused by potential mistakes in the methods that are used for assessment (Nair-Reichert and Weinhold, 2001), possible reason is the use of total FDI, and not FDI by sectors (Wang, 2009, and Moura and Forte, 2010).

Empirical results of Chowdhury and Mavrotas (2006) show that high GDP attracts FDI. Zhang (2001) indicates that causality between the variables of FDI and the growth of GDP is specific for each country and that is necessary to carry out more individual studies, so as to examine interdependence of variables in a proper way.

Some authors like: Alfaro et al. (2008), Agosin and Machado (2005), Alfaro et al. (2004), Borensztein et al. (1998), Blomström et al. (1994), think that FDI will lead to economic growth only when certain economic conditions in countries recipients are fulfilled. The effects of FDI are also influenced by, besides economic, political, social and cultural factors. Moura i Forte (2010) emphasize that the authorities have a key role in creating the conditions for positive effects or for reducing negative effects of FDI on economic growth of countries recipients. Vissak and Roolah (2005) think that FDI can destabilize economic growth of the country and have a negative effect on the implementation of economic policies.

In developing markets, the effects of FDI are influenced by: frequent changes in regulation, instability of currency, high levels of corruption, poor state institutions, unreformed financial system, differences in legal and regulatory regimes, as well as a restrictive nature of the job market (Minović and Erić, 2016). Jun and Singh (1996) find a negative relation with political risk. According to Kastratović (2016), FDI have a significant impact on employment, the balance of payments, foreign trade, the increase of productivity and the transfer of new technology for the Republic of Serbia.

### **3. Methodology and Data**

In methodological terms, this paper represents quantitative synthesis and analysis of the data from representative bases of international institutions, with the aim of detailed review and making conclusions about the subject of research. The subject of research is the examination of linear correlation between FDI and the following indicators: 1) GDP, 2) exports of goods and services, 3) imports of goods and services, 4) net exports of goods and services and 5) the unemployment rate in Serbia. Accordingly, the basic hypotheses from which the research begins are:

H1: there is a positive correlation between FDI and GDP.

H2: exports and imports are in positive linear correlation with FDI.

H3: imports and the unemployment rate have an inverse linear correlation with FDI.

The analysis has been carried out by correlation and regression analysis with the application of t – test . The graphical method is included for the interpretation of numerical data. The results of the research of this paper contribute to knowledge of the subject of analysis and to viewing the existence of linear correlation between FDI and macroeconomic indicators in the period of 2008-2017 in Serbia.

In the paper, the empirical analysis has been carried out from the impact of FDI as independently unchangeable on the value of: gross domestic product, imports of goods and services, exports of goods and services and net exports, whereas the impact of FDI on the population has been perceived by impact analysis of FDI on the unemployment rate. The analysis includes the period of 10 years after the global economic crisis, and/or from 2008 to 2017. The standard formula for calculating Pearson's coefficient of linear correlation has been used in the analysis and it reads as follows:

$$r = \frac{n * \sum xy - \sum x * \sum y}{\sqrt{n * \sum x^2 - (\sum x)^2} * \sqrt{n * \sum y^2 - (\sum y)^2}} \quad (1)$$

The coefficient of determination R2 (square of the correlation coefficient) of individual macroeconomic indicator has also been determined at the same time, so as to determine the share of variability in total variability that is explicable by FDI variability.

By the application of linear regression analysis, the coefficients of linear regression have been determined, which expresses dependence of each individual macroeconomic indicator: 1) GDP, 2) the value of exports of goods and services, 3) the value of imports of goods and services, 4) net exports of goods and services (difference in value of imports and exports) and 5) the percentage of the unemployment of FDI. Testing of existence of statistically significant linear correlation has been carried out by the application of t – test with the threshold of significance alpha=0.05 for the sample of n =10 elements, which is commonly applied on a smaller sample.

The data on macroeconomic indicators have been downloaded from the database of the World Bank.

**Table 1. Movement of GDP in the period of 2008-2017**

	GDP in millions USD	GDP, real growth, in %	Population in millions	GDP, per capita, in \$
2008	49,259	5.4	7.35	6,701
2009	42,617	-3.1	7.32	5,821
2010	39,460	0.6	7.29	5,411
2011	46,467	1.36	7.23	6,423
2012	40,742	-1	7.20	5,659
2013	45,520	2.6	7.17	6,353
2014	44,210	-1.8	7.13	6,200
2015	37,160	0.8	7.10	5,237
2016	38,299	2.8	7.06	5,426
2017	41,431	1.9	7.02	5,900

*Source:* The World Bank (databank.worldbank.org) Accessed 11.07.2017.

**Foreign Direct Investments and Creating the Conditions for Economic Growth  
– the Experience of Serbia**

One of the indicators of economic activity is gross domestic product. A decline in gross domestic product leads to multiplying of negative effects in the form of deepening of the crisis, especially in the real sector. The reduction of activity of the real sector with the reduction of foreign capital inflows results in difficult repayment of foreign debt and national currency depreciation.

Economic activities from 2008 to 2017, measured by gross domestic product and expressed in dollars, have variable growth. The greatest growth was recorded in 2008, and the greatest decline of -3.1% in 2009. Between 2010 and 2014, GDP was moving from 0.6%, 1.36%, -1, 2.6%, so as to have growth of 0.8% since 2015, then 2.8% and 1.9%.

The Serbian economy is characterized by physically and, above all, morally outdated capital. Investments in Serbia are necessary for renewal and expansion of domestic capital. So as to achieve a long-term growth, it is necessary to ensure the application of relatively new technological achievements in the world.

**Table 2. Movement of unemployment, imports, exports and FDI inflow  
in the period 2007-2017**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Unemployment in %	14.4	16.9	20.00	23.6	24.6	23	19.89	17.23	15.96	14.61
GDP in \$	49,259	42,617	39,460	46,467	40,742	45,520	44,210	37,160	38,299	41,431
Imports in mil \$	26,649	17,197	17,901	22,955	21,838	23,625	23,962	20,958	22,022	25,397
Imports % GDP	54.10	42.70	47.90	49.40	53.60	51.90	54.20	56.40	57.50	61.30
Exports in mil \$	14,334	11,421	12,982	15,799	15,034	17,754	19,177	17,354	19,150	21,710
Exports % GDP	29.10	26.80	32.90	34.00	36.90	41.20	43.40	46.70	50.00	52.40
NET EXPORTS in \$	-12,315	-6,776	-5,919	-7,156	-6,804	-4,871	-4,775	-3,605	-2,872	-3,687
FDI inflow in mil \$	4,056	2,929	1,693	4,930	1,276	2,060	2,000	2,345	2,355	2,879
FDI, inflow, % of GDP	8.23	6.87	4.29	10.61	3.13	4.53	4.52	6.31	6.15	6.95

*Source:* The World Bank (databank.worldbank.org) Accessed 11.07.2017.

Economy can grow only if the productivity or number of employees is increased. Since productivity usually grows slowly, it remains to increase the employment by economic measures. In order to increase the employment, the growth of investment is necessary. In case of unemployment, a large part of labour force remains unused, and/or unemployed labour force is the loss of GDP.

Data in table 2. show that the improvement has been registered in the labour market in terms of reducing the unemployment rate from 2012, 24.6% in 2012 to 14.6% in 2017. In the period from 2008 to 2013, the unemployment rate has grown from 14.4% to 23.6% in 2011. In the observed period, imports were higher than exports all the time, where net exports were becoming smaller. Procentually expressed FDI has moved from 10.61% at the most in 2011 to at least 3.13% in 2012.

#### 4. Results and Discussion

Empirical research has been conducted based on the data from Table 1. and Table 2. by the application of statistical module within Microsoft Excel. The obtained results of correlation coefficient, coefficient of determination  $R^2$ , coefficients of linear regression and the value of p-value of linear member have been presented in Table 3.

**Table 3: Correlation coefficients ,  $R^2$ , coefficients of linear regression and p- value of linear dependence of Macroeconomic indicators on FDI**

	GDP	Exports	Imports	Net exports	Unemployment rate
<b>correlation coef .</b>	0.6159	-0.1127	0.3649	-0.4921	-0.2161
<b><math>R^2</math></b>	0.3794	0.0127	0.1332	0.2422	0.0467
<b>const. member</b>	36849	17437	20128	-2690	21.05
<b>linear member</b>	2.14	-0.33	0.88	-1.2	0
<b>p-value lin. member</b>	0.0579	0.7566	0.3	0.1485	0.5487
<b>significant lin. member</b>	YES	NO	NO	NO	NO

*Source:* Author's calculation

Positive correlation coefficient of FDI and GDP of 0.62% has been determined and it indicates that there is a positive moderate correlation of changes of FDI and GDP. Coefficient of determination  $R^2$  of 38% represents the share of variability of GDP that is explicable by the variability of FDI, whereas 78% of total variability of GDP is explicable by the influence of other factors. Dependence of GDP on FDI has been obtained by regression analysis, which is expressed by the linear equation:

$$GDP = 36849 + 2.14 FDI + \varepsilon,$$

whereby

GDP and FDI are expressed in millions of \$ and

$\varepsilon$ . is a random error that includes the influence of all other factors on GDP.

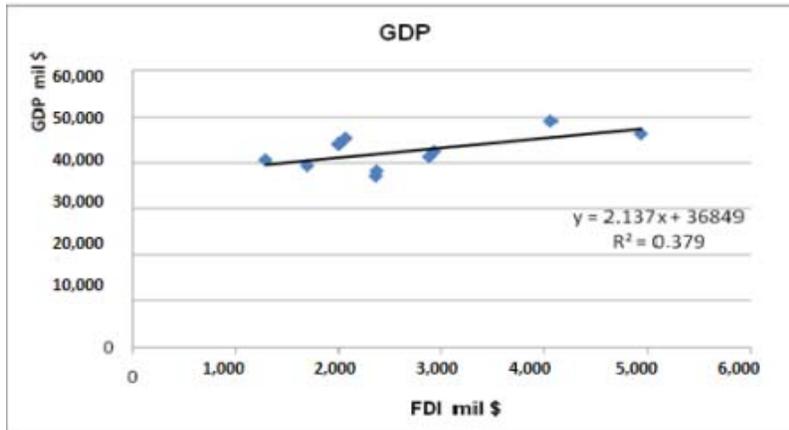
The equation quantifies that FDI inflow for 1 million results in the growth of GDP for 2.14 millions.

By the application of  $T$  test, it has been determined that linear coefficient of equation of dependence of FDI on GDP has a statistical value  $p$ - value = 0.0579, which is practically equal to the threshold of significance  $\alpha=0.05$ . If "less strict" threshold of significance  $\alpha=0.1$  has been adopted, then the condition of existence of statistically linear correlation between FDI and GDP is fulfilled, because  $0.0579 < 0.1$ . This confirms that there is a linear dependence of FDI and GDP in the observed period. Determined linear dependence of GDP on FDI has been shown in Figure 1.

**Foreign Direct Investments and Creating the Conditions for Economic Growth  
– the Experience of Serbia**

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**Figure1. Correlation between FDI and GDP in the period of 2008-2017 in Serbia**



*Source: Author's calculation*

The values of correlation coefficient between FDI and exports, imports and net exports amount: -0.11 and/or 0.36, and/or -0.49. At the same time the values of coefficient of determination  $R^2$  for the mentioned macroeconomic indicators amount 1%, and/or 13%, and/or 24%, which is interpreted as a weak correlation with FDI. Regression analysis and the application of t-test have determined the values  $p$  value for linear coefficient of linear equation of dependence of exports, imports and net exports on FDI of 0.76, and/or 0.30, and/or 0.15, retrospectively, which is significantly higher than the threshold of significance  $\alpha=0.05$ . This has not confirmed that there is a statistically significant linear correlation between FDI and the exports, imports and net exports. Sign – of correlation coefficient indicates a negative correlation between FDI and exports and net exports, however, as statistically significant linear correlation between FDI and exports and net exports has not been determined, it means that an inverse dependence of exports and net exports on the inflow of FDI investments cannot be accepted. For the same reason, neither a positive correlation that has been obtained between the values of imports and FDI can be accepted. Consequently, the obtained direction of movement of exports, imports and net exports of FDI cannot be accepted, because linear correlation has not been established by a statistical test.

By the application of  $T$  test, it has also been established for the unemployment that there is no statistically significant linear correlation of unemployment of FDI in the observed period, because the value  $p$ -value 0.55 is higher than the threshold of significance  $\alpha=0.05$ . So, the obtained value of correlation coefficient of -0.21 which indicates an inverse dependence of unemployment on FDI has no relevance and cannot be accepted.

### 3. Conclusion

The paper deals with analysis and significance of foreign direct investments for economic growth in Serbia. For the empirical analysis, macroeconomic data from WDI (World Development Indicators) have been used for the period of 10 years after the global

economic crisis from 2008 to 2017. The paper analyzes the impact of FDI on macroeconomic indicators.

Based on the research by the application of correlation and regression analysis using t-test, the basic hypothesis (H1) has been confirmed that there is a statistically significant positive linear correlation between GDP and FDI. It has been confirmed that FDI inflow for 1 million leads to the growth of GDP for 2.14 millions.

Additional hypotheses (H2 and H3) that have been set about the existence of a significant statistical linear correlation between FDI and imports, exports, net exports and unemployment rate have not been confirmed. By the application of t – test, the hypotheses (H2 and H3) that have been set up have been rejected, so that determined direction and values of correlation coefficient with FDI has no relevance and cannot be accepted for the observed period.

By the application of t-test, a significant statistical correlation between FDI and imports, exports, net exports and unemployment have not been established. For that reason, direction and determined correlations between FDI and them have no relevance and cannot be accepted for the observed period.

Even though the Republic of Serbia has a relatively favorable geographical position, it is obvious that there are problems in the surroundings, and/or the barriers that prevent inflows greenfield and export-oriented investments that would bring new jobs, new technologies and know-how; would include Serbia in global production networks; would improve foreign trade balance, so that it would ensure the development and healthy economic growth in the long run. For that reason, it is necessary to identify the main barriers for the investment, to create the measurements for their removal in order to formulate the strategies for attracting the investments that Serbia wants and can attract, taking into consideration available resources, long-term aims, in order to achieve the degree of development of the country.

Based on the conclusions that have been made, it can be confirmed that FDI have influence on the development of the host country, but it cannot be considered that they are a decisive factor for its development.

## **References**

- Agosin, M.R. and Machado, R. (2005). Foreign investment in developing countries: does it crowd in domestic investment?: *Oxford Development Studies*, Vol. 33, No. 2, pp. 149-162.
- Alfaro, L. Kalemli-Ozcan, S. and Volosovych, V. (2008). Why doesn't capital flow from rich to poor countries? An empirical investigation: *The Review of Economics and Statistics*, Vol. 90, No. 2, pp. 347-368.
- Alfaro, L., Chanda, A., Kalemli-Ozcan, S. and Sayek, S. (2004). FDI and economic growth: the role of local financial markets: *Journal of International Economics*, Vol. 64, pp. 89 – 112.
- Asheghian, P. (2004). Determinants of economic growth in the United States: the role of foreign direct investment: *International Trade Journal*, Vol. 18, No. 1, pp. 63 – 83.
- Borensztein, E. De Gregorio J. and Lee J.-W. (1998). How Does Foreign Investment Affect Growth?: *Journal of International Economics*, Vol. 45, pp. 115–135.
- Choe, J. I. (2003). Do foreign direct investment and gross domestic investment promote economic growth?: *Review of Development Economics*, Vol. 7, No. 1,

## Foreign Direct Investments and Creating the Conditions for Economic Growth – the Experience of Serbia

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- Dominik, S. (2009). *Međunarodna ekonomija*: Ekonomski fakultet, Beograd
- Globerman, S. and Shapiro, D. (2003). The Impact of Government Policies on Foreign Direct Investment: The Canadian Experience: *Journal of International Business Studies*, Vol.30, No. 3, pp. 513-532.
- Hansen, H. and Rand, J. (2006). On the Causal Links between FDI and Growth in Developing Countries: *The World Economy*, Vol. 29, No. 1, pp. 21-41.
- Herzer, D., Klasen, S. and Nowak-Lehmann D, F. (2008). In search of FDI-led growth in developing countries: The way forward: *Economic Modelling*, Vol. 25, No. 5, pp. 793-810.
- IFC (1997), Foreign Direct Investment, Lessons of Experience, International Finance Corporation and Foreign Investment Advisory Service, No. 5, Washington, D.C., str. 119.
- Jun, K. and Singh, H. (1996). The determinants of foreign direct investment in developing countries: *Transnational Corporations*, Vol. 5, pp. 67–105.
- Kastratović, R. (2016). Uticaj stranih direktnih investicija na privredni i društveni razvoj Srbije: *Bankarstvo* 45(4), 84.
- Krugman, P. and Obstfeld, M. (2009). *Međunarodna ekonomija*: Beograd:Data Status.
- Massa, I. (2011). Impact of Multilateral Development Financial Institutions on Economic Growth: *Overseas Development Institute*, pp.1-23.
- Mencinger, J. (2003). Does foreign direct investment always enhance economic growth?: *Kyklos*, Vol. 56, No. 4, pp. 491-508.
- Minović, J. and Erić, D. (2016). Impact of Political Risk on Frontier Capital Market: *Engineering Economics*, Vol. 27, No. 2, pp. 151-162.
- Moura, R. and Forte, R. (2010). The effects of foreign direct investment on the host country economic growth-theory and empirical evidence, No. 390, Universidade do Porto, *Faculdade de Economia do Porto*.
- Mullen, J. K. and Williams, M. (2005). Foreign direct investment and regional economic performance: *Kyklos*, Vol. 58, No. 2, pp. 265-282.
- Niar-Reichert, U. and Weinhold, D. (2001). Causality Test for Cross-country Panels: A New Look at FDI and Economic Growth in Developing Countries: *Oxford Bulletin of Economics and Statistics*, Vol. 63, No. 2, pp. 153–71.
- OECD. Benchmark Definition of Foreign Direct Investment: Fourth Edition. (2008).
- Raheem, I. D. and Ogebe, J. O. (2014). External financial flows, policies and growth in Sub-Saharan Africa: *Issues*, Vol. 2, No. 4.
- Trajković, M. & Đurović, R. (1982). *Leksikon prava međunarodnih privrednih odnosa*. Beograd: Savremena administracija.
- Vissak, T. and Roolah, T. (2005). The negative impact of foreign direct investment on the Estonian economy: *Problems of Economic Transition*, Vol. 48, No. 2, pp. 43 –66.
- Wang, M. (2009). Manufacturing FDI and economic growth: evidence from Asian economies: *Applied Economics*, Vol. 41, pp. 991 - 1002.
- Zhang, K. (2001). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America: *Contemporary Economic Policy*, Vol. 19, No. 2, pp. 175 – 185.
- Narodna banka Srbije-National Bank of Serbia <https://www.nbs.rs/internet/cirilica/80/index.html> (accessed 08.07.2018)
- <http://data.worldbank.org/data-catalog/world-development-indicators> (The World Bank, electronic database *World Development Indicators*, 22.07.2017)
- Republički zavod za statistiku Srbije (RZS)-Statistical Office of the Republic of Serbia, <http://arhiva.stat.gov.rs/WebSite/Default.aspx> (accessed 17.07.2018)

## STRANE DIREKTNE INVESTICIJE I IZGRADNJA USLOVA ZA EKONOMSKI RAST - ISKUSTVO SRBIJE

**Rezime:** Privlačenje stranih direktnih investicija (SDI) u većini zemalja predstavlja neophodan uslov za povećanje proizvodnje i izvoza na nivo koji bi državi omogućio stabilan ekonomski rast i uspešno servisiranje duga. Shodno tome, jedan od glavnih ciljeva je stvaranje investicione klime koja je pogodna za privlačenje stranih direktnih investicija. Cilj istraživanja je da utvrdi i analizira uticaj SDI na bruto domaći proizvod, uvoz, izvoz, neto izvoz i nezaposlenost u Srbiji za period 2008-2017. Za utvrđivanje uticaja stranih direktnih investicija na ekonomski rast Republike Srbije, korišćene su statistička i ekonometrijska analiza primenom korelacije i regresione analize. Zaključak ovog rada pokazuje da postoji statistički značajna linearna korelacija između SDI i BDP-a, dok u posmatranom periodu nije utvrđena linearna korelacija između SDI i izvoza roba i usluga, uvoza roba i usluga, neto izvoza i stope nezaposlenosti. Efekti razvoja SDI se očekuju samo kada su poboljšane mogućnosti apsorpcije i prilagođavanja domaćih kompanija. Aktivna državna politika prema SDI je neophodna za ostvarivanje punog efekta.

**Ključne reči:** SDI, ekonomski rast, BDP, nezaposlenost, uvoz, izvoz, Srbija