The nexus between FDI and external balance in selected Emerging European Economies – a panel data approach

Панел анализа везе СДИ и трговинског биланса одабраних европских економија у развоју и успону

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Abstract: This research focuses on the nexus between foreign direct investments (FDI) and external balance in selected Emerging European Economies (EEEs). Emerging countries in convergence process tend to have problem of structural external imbalance that is covered with foreign capital inflows. FDI are long-term and sustainable source of financing the current account deficit. The aim of this paper is to test if FDI together with chosen macroeconomic indicators are relevant factors of trading balance in EEEs in order to give useful implications towards economic policy creators in emerging economies. The research hypothesis is tested with robust micro panel models for total sample and two subperiods: before and after the structural break caused with Global financial crisis (GFC). The results indicate that substantial FDI inflows are significantly related with negative sum of trading balance on the total sample level i.e. average external position deficit is financed with the FDI inflows. Also, dummy variable for the Western Balkans indicates that FDI are significant variable that finances external imbalance in this subsample. The government policy recommendations are directed towards incentive measures for attracting greater FDI inflows, especially greenfield investments motivated with greater efficiency and export stimulation in order to stabilize trading balance and foster economic growth.
Keywords: FDI, trade balance, Emerging European Economies (EEEs), panel models.
JEL classification: C23, F14, F21, E22

Сажетак: Истраживање фокусира везу страних директних инвестиција (СДИ) и екстерне равнотеже у одабраним европским економијама у развоју и успону (ЕЕРУ). Земље у развоју и успону у процесу конвергенције имају проблем структурне екстерне неравнотеже која се покрива приливима страног капитала. СДИ су дугорочан и одржив извор финансирања дефицита биланса текућих трансакција. Циљ рада је тестирање да ли су СДИ заједно са одабраним макроекономским индикаторима значајни фактори трговинског биланса у ЕЕРУ ради пружања корисних импликација креаторима економске политике у економијама у развоју и успону. Истраживачка хипотеза се тестира применом робусних микро панел модела на укупном узорку и у два подпериода: пре и после структурног лома изазваног глобалном финансијском кризом (ГФК). Резултати указују да су већи приливи СДИ значајно повезани са негативним салдом трговинског биланса на нивоу укупног узорка тј. да се просечна дефицитна екстерна позиција финансира приливима СДИ. Такође, вештачка варијабла за групу Западног Балкана упућује да су СДИ значајна варијабла која финансира ектерну неравнотежу у овом подузорку. Препоруке државној политици су усмерене ка подстицајним мерама за привлачење већег прилива СДИ, посебно гринфилд инвестиција мотивисаних већом ефикасношћу и стимулацијом извоза ради стабилизације трговинског биланса и убрзања економског раста.

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Introduction

The main economic policy goals to establish simultaneous external and internal balance are difficult to execute simultaneously, especially in emerging economies and less developed countries. Emerging economies have continuous problem of insufficient domestic capital accumulation, low level of investments in GDP and external imbalance in convergence process towards developed countries. Foreign capital inflows, especially FDI as the long-term and stable financing source, play the crucial role for financing the economic development, as well as the current account.

External shocks like GFC and now pandemic of corona virus further complicate the possibility to achieve goals of sustainable economic growth, low inflation and unemployment rate, limited public debt and balanced current account. In line with this, Beljić & Glavaški (2021) analyzed effectiveness of government measures in cases of GFC compared to pandemic of corona virus with conclusion that fiscal and monetary support measures were stronger and more prompt in the current pandemic crisis. Also, emerging markets performed considerably worse than developed markets during this pandemic compared to the GFC with unfavorable higher costs of equity for investments in emerging markets (Kostin, Runge & Adams, 2021). According to UNCTAD, WIR (2021), FDI inflows have dropped by 35% on the global level and more by 58% in transition economies in 2020, with destabilization of economic prospects and trading position.

External shocks disrupt capital flows and provoke capital escape of portfolio investors from risky markets. Developing economies that have strong dependency from foreign capital and have substantial share of international companies on the domestic market with problems of structural current account deficits are especially vulnerable to external shocks, abrupt capital escape and consequential restrictive adjustments of real economy (Beker Pucar & Srdić, 2018). Also, significant FDI outflows and profit repatriation bring further unfavorable implications on the current account deficit of the host country. This implicates a strong interdependency between macroeconomic conditions, economic prospects, trading position and FDI flows.

The progress of real convergence of Central, Eastern and South-Eastern Europe is heterogeneous with faster improvement in the new EU countries and challenging development process in the Western Balkans (Żuk etal., 2018). Also, a better external trading position is present in the new EU members, while the Western Balkan countries face the problem of continuous deficit position. Factors that contributed to a greater success in the EU are improvements in institutions quality, innovations, competitiveness, trading openness, human capital, high FDI inflows and investment rates, production growth and lower unemployment.

Visegrad States, especially Poland and Romania, received the most FDI inflows in the sample of EEEs, which were positively correlated with substantial economic growth

(Ercegovac & Beker Pucar, 2021). Greater greenfield FDI inflows could be related with a favorable trade balance in the sample of EEEs, especially in Visegrad group of countries, while Western Balkans have substantially lower greenfield FDI inflows and troubled trading balance (Ercegovac & Beker Pucar, 2021a).

In the Western Balkans, the most FDI inflows in the past period were directed into services and non-tradable products through privatization and acquisitions in order to expand to the local market. These kinds of investment impact the increase of consumption and imports without beneficial effects on the exports rise. Ercegovac & Živkov (2018) stress the role of greater FDI inflows in tradable sectors and improvement of competitiveness position in order to increase the exports and balance the trading position. The Western Balkan countries need to improve government institutions and investment environment further and attract higher FDI inflows in adequate sectors with innovative technology that will speed up the catching up process and stabilize the external position.

Cvetanović, Despotović & Milovanović (2018) also investigated FDI inflows in Western Balkan countries in the period 2000-2016 and they concluded that received capital inflow was insufficient and that it is necessary to continue improvements in public institutions and business conditions. Cvetanović, Nedić & Despotović (2019) find that, in the period 2006-2017, Western Balkan countries significantly improved business conditions measured with *World Bank Ease of Doing Business Indicators*, with the great progress in the North Macedonia that aspires the rest of the region to furtherly improve environment for starting a business and attract foreign investors.

This study focuses on the nexus between the FDI net inflows and external balance in selected Emerging European Economies (EEEs). This research problem has not been researched enough, especially with panel data methodology in the sample of EEEs and with longer time dimension (1997-2017). The aim of this paper is to test if FDI together with chosen macroeconomic indicators are relevant factors of trading balance in EEEs, in order to give useful implications towards economic policy creators in emerging economies, especially for less developed countries of Western Balkans. Research hypothesis is tested with robust micro panel models for the total sample and in two subperiods: before and after the structural break caused with the Global financial crisis (GFC). The structure of the paper is organized as follows. After the Introduction section, Section 1 presents the literature review. Methodological framework, i.e. empirical model and data, are analyzed within Section 2, while Section 3 discusses panel data results. Concluding remarks are summarized within the last section.

1. Literature review

The existing literature provides inconsistent findings about FDI transmission effects on the host country economy. A summary outlook at potential positive and negative FDI transmission effects is presented In Table 1. As positive effects on the host country, we could stress the growth of financial resources, opening new work places, competitiveness growth, increase of exports, modern technology transfer, human capital rise and higher

economic growth (see e.g. De Mello, 1999; Noorbakhsh, Paloni & Youssef, 2001; Durham, 2004; Crespo & Fontura, 2007; Denisia, 2010). Lipsey (2004) adds the following potential effects on the host country: higher wages compared to domestic companies, introduction of capital intensive and technology advanced production methods and economy of scale, rise in productivity, greater consumer satisfaction, crowding out the small and inefficient local firms, greater foreign trade with participation in intermediary production chains.

Table 1: FDI transmission effects on the host country

The effects of FDI inflows on the host country	
Positive effects	***Negative effects***
greater inflow of necessary capital;	greater dependency of sudden capital escape;
economic growth stimulation;	greater disparity in regional development;
employment growth and higher wages;	growth of unemployment because of greater efficiency and production automatization;
higher productivity of manufacturing industry;	negative impact on the living environment;
competitiveness growth;	crowding out of local companies;
contemporary technology and knowledge transfer;	low absorption capacity of domestic firms and absence of modern technology transfer;
greater exports and favorable external position;	greater imports and worse external position;
improvements in organizational culture and management system;	growth of wages inequalities;
better supply of commodities by lower prices	use of scarce resources

Source: Ercegovac (2021) based on the literature review in PhD dissertation.

FDI brings external effects that have positive influence on the host country productivity while growth of shadow economy limits the volume of capital investments (Bilan etal., 2019). Simultaneously, FDI contributes to creation of new jobs and training programs for employed labor with following increased productivity (Bobenič Hintošova etal., 2018). Colak & Alakbarov (2017) concluded that FDI effects variate due to FDI type and industry sector with recommendations to attract more greenfield investments with positive impact on the increase of productivity and employment. In line with this, Bayar (2017) finds that greenfield investments achieve more significant impact compared to brownfield FDI on the host country's economic growth.

FDI inflows in transition countries bring new capital, contemporary technology and know-how with development of their international competitiveness (Zugic, 2011). Basu & Guariglia (2007) found evidence of a positive correlation between FDI and GDP growth in the vast sample of 119 countries. Moreover, Ameer & Hu (2017) stress a positive and significant impact of FDI inflows and outflows on economic growth in developing economies in the long run. On the other hand, research of Vasa & Angeloska (2020) suggests that there is a very weak correlation between increased FDI inflows and GDP growth with also a very weak correlation between FDI and decreasing unemployment in Serbia in the period 2007-2018. Also, there is a strong correlation between FDI and

increased imports, probably because of increased need for energy, equipment and intermediary products. Foreign trade balance had a strong correlation with share of value-added products in export and a middle strong correlation with GDP growth. These results imply that increased FDI inflows had no strong impact on the improved economic position in Serbia and that other factors contributed to economic growth, decreased unemployment and foriegn trade balance. These findings also could be related with unfavorable structure of received FDI inflows in Serbia that are mainly focused on domestic market, service sector and cheap labor.

In the literature reviewed, authors also stress the negative spillover effects of foreign investments like unemployment rise owing to manufacturing automatization (Almfraji & Almsafir, 2014; Iamsiraroj & Ulubasoglu, 2015), a growth of competition and crowding out the local competitors from the market (Aitken & Harrison, 1999; Agosin & Mayer, 2000), an absence of long term technology and knowledge transfer (Aitken & Harrison, 1999; Oetzel & Doh, 2009), negative effects on the living environment and considerable use of the local scarce resources (Oetzel & Doh, 2009) and an increase of workers income inequalities (Hanousek, Kočenda & Maurel, 2011).

Blomstrom & Kokko (1997) argue that FDI inflows have a potential to improve the economic development through a growth in productivity and exports, nevertheless, net benefits differ across host countries due to industry characteristics, financial sector development and business environmnent. Aitken, Hanson & Harrison (1997) also find that FDI have positive impact on the host country with rise of exports on the foreign markets. Hanousek, Kočenda & Vozarova (2020) conclude that FDI inflows affect the local firms through the competition and productivity channels and export spillovers. Kurtishi-Kastrati (2013) stress that FDI's positive impact on the external balance of host economy is dependent from the foreign investor's motivation. FDI motivated with higher efficiency can stimulate economic growth through the rise of exports and import substitution with local supply. Import substitution is fundamental to achieve double positive impact on the trade balance, because if MNEs import the intermediary products and inputs from their subsidies, FDI have influence on the greater external imbalance.

Denisia (2010) points out that benefits of FDI inflows in less developed countries are alternative source of financing substituting the country indebtedness, greater inflow of foreign currency, access to international markets and exports rise. Bucevska (2017) showed that FDI have positive impact on the current account in the candidate countries and potential candidate countries for EU submission, but significant only in the two panel estimation models (Albania, Croatia, North Macedonia, Serbia and Turkey) in the time period (Q12005-Q42015). The author concludes that FDI contribute to the growth of available capital stock and rise in exports industries along with the low contribution in domestic manufacturing and service industry. Also, Boljanović (2013) finds that if FDI level change by 1%, export level increases by 1.83% in countries of Central and Eastern Europe. Akbas, Senturk & Sancar (2013) showed presence of unidirectional link from FDI to current account deficit in the sample of G7 countries (1990-2011) using panel data models with cross section dependency.

2. Methodology and data

Panel data models have broad implementation in the empirical studies because of the great advantage to simultaneously combine cross-section data with time series. Baltagi (2005) stresses that panel data models provide more possibilities to identify and measure the effects of research problem. Eberhardt (2011) gives useful comparison of difference and appropriate application of two groups of panel data models: micro and macro heterogeneous panel data models. The main difference lies in time dimension that is longer in macro panels and model specification assumptions that are more restrictive in micro panel models like homogeneity of regression parameters, independent errors and stationarity of variables. This empirical study implements micro panel models with robust standard errors.

2.1. Empirical model

This study intends to give an adequate contribution to the existing literature concerning the nexus between FDI and external position in selected EEEs. The main objective is to test with a panel data approach whether FDI net inflows are relevant financing factor of the external balance, and to accordingly stress the relevant recommendations to policymakers in order to attract foreign investors and boost the real convergence process. In this paper, the authors implement micro panel models with robust standard errors: Fixed Effects (FE) and Random Effects (RE) with White corrected standard errors, Beck & Kats (1995) Panel corrected standard errors (PCSE) and Driscoll & Kraay (1998) robust standard errors in FE estimation.

On the total sample (1997-2017), the authors use the Driscoll & Kraay method which is well calibrated in larger time dimension panels with potential autocorrelation and residuals heteroscedasticity (Hoechle, 2007). This study also implements robust FE/RE estimation with PCSE method on the two subsamples: pre crisis (1997-2007) and post crisis (2008-2017) in order to shorten the time dimension to be adequate for model application and to estimate differences in regression coefficients in regard to the structural break of GFC and for the group of Western Balkan countries. With robust micro panel data models authors test the following hypotheses:

H₁: The FDI net inflows are a relevant source of financing the external position in selected Emerging European Economies.

H₂: The chosen macroeconomic indicators - GDP per capita, inflation rate, government budget, government debt, REER, total factor productivity, labor productivity and tertiary education affect the external position in selected Emerging European Economies.

Micro panel estimation models conducted in this study are widely used in the literature: Fixed and Random individual effects models, robust FE with White corrected standard errors (CSE), Panel-Corrected Standard Error (PCSE) estimation model (Beck & Katz, 1995) and Driscoll & Kraay estimation model of robust standard errors for coefficients estimated with FE (Driscoll & Kraay, 1998).

Regression equation for fixed individual effects model (FE) is as follows:

$$y_{it} = \beta_{1i} + \sum^{K}_{k=2} \beta_k x_{kit} + u_{it}, \qquad (1)$$

where y_{it} is the dependent variable for individual i at time point t, β_k represents constant regression coefficients of independent variables x_{kit} and u_{it} is standard error. The model includes the individual effects μ - heterogeneity of free member across individual units. The authors implement FE model with the dummy variable for Western Balkans in order to estimate individual effects on a dependent variable across cross-section data. Heterogeneity of the analyzed sample of countries implicates the estimation of the specified model with fixed individual effects.

Hoechle (2007) showed that Driscoll & Kraay standard errors for coefficients estimated by pooled OLS/WLS or FE are well calibrated in panels with large time dimension when autocorrelation and residuals heteroscedasticity are present. If residuals are heteroscedastic, alternative covariance matrix estimators like White version with robust standard errors are widely applied. Beck & Katz (1995) introduce a method of Panel Corrected Standard Errors (PCSE) that relies on POLS coefficient estimates. The PCSE provides precise estimation because this method includes large T asymptotic based standard errors, which correct the contemporaneous correlation between the subjects, with good performance in small panels.

The dependent variable is the external balance on goods and services (trading balance) in GDP. Research variables are chosen in order to test the hypotheses if FDI, economic development, inflation, government budget, public debt, productivity indicators and tertiary education, affect trading balance in selected EEEs. Given that this research focuses on EEEs that went through the macroeconomic stabilization and transition process in the analyzed time period (1997-2017), the research includes estimation of the relationship with macroeconomic indicators like GDP per capita, inflation, government budget, government debt and real effective exchange rate (REER). The estimated regression equation can be presented as follows:

$$EB_{it} = \beta_{1i} + \beta_1 FDI_{it} + \beta_2 GDPpc_{it} + \beta_3 INF_{it} + \beta_4 GB_{it} + \beta_5 GD_{it} + \beta_6 REER_{it}$$

$$+ \beta_7 TFP_{it} + \beta_8 LP_{it} + \beta_9 SET_{it} + u_{it} \qquad (2)$$

The independent variables in the analyzed model are: the share of FDI net inflows (inflows minus outflows) in GDP, annual GDP per capita, annual inflation rate, government budget balance in GDP, general government debt in GDP, REER (index drop represents real depreciation of national currency in regard to currency basket of 67 trading partners), total factor productivity growth rate (GDP growth decreased with total contribution of labor and capital services), labor productivity growth rate (output growth by employed worker) and tertiary education enrolment (share of college enrolment in total population of age 18-26).

2.2. Data

The research sample comprises EEEs that have gone through the transition process and become the EU members (Hungary, Poland, Czech Republic, Slovakia, Slovenia, Estonia, Lithuania, Latvia, Bulgaria, Romania and Croatia), as well as Western Balkan group of countries that are in the process of convergence towards the EU. The analyzed sample of selected sixteen EEEs (*N*=16) in the period 1997-2017 (*T*=21) covers different levels of development and convergence pace. The diversity of this sample entails the use of dummy variable in micro panel data specification for the group of less developed countries of Western Balkans (Serbia, Bosnia and Herzegovina, Montenegro, North Macedonia and Albania) in the mentioned two sub-periods (1997-2007; 2008-2017). The data for the dependent variable – trading balance in GDP was obtained from The World Bank – The World Development Indicators database. The data for the independent variables in the model were collected from the next internet databases:

(1) The World Bank, The World Development Indicators database - the share of FDI net inflows in GDP, annual GDP per capita, annual inflation rate and tertiary school enrolment;
(2) The International Monetary Fund database - general government debt in GDP;
(3) The Conference Board Total Economy Database - total factor productivity growth rate and labor productivity growth rate;
(4) The Country Economy Database - government budget balance in GDP;
(5) The Bruegel datasets - real effective exchange rate.

The presentation of the average trading balance in GDP for Western Balkans compared to the more developed countries of EU for the period 1997-2017 is shown in Figure 1. Analyzing the figure it is evident that EU group, before the entrance and until the GFC, had a low average deficit in the external position about 5%.

Figure 1: The comparative look at external balance of new EU members and Western Balkans (1997-2017)
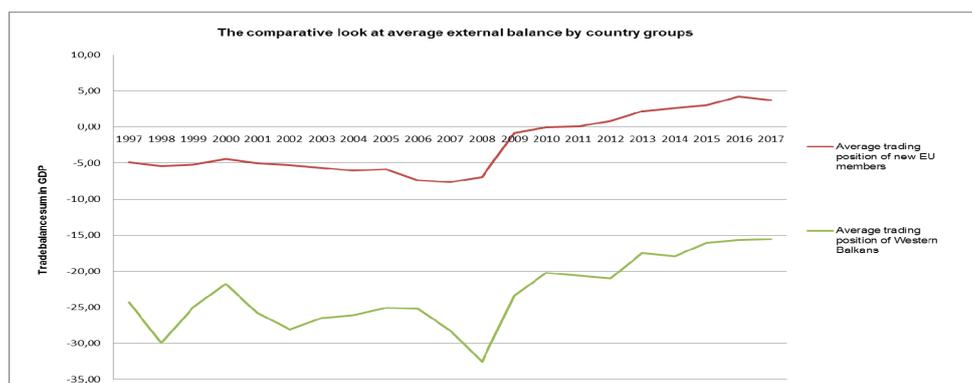
Source: the authors' review based on data from the World Bank database https://data.worldbank.org/country/.

After the GFC, external position of the new EU member states improved further, with the average surplus position after the 2010. On the other side, less developed countries

of Western Balkans have more drastic external position deficit that is before the GFC about 20-30%, with slow gradual decrease after the crisis (about 15% in 2017).

In order to analyze the sample, Table 2 presents summary descriptive statistics for the selected variables in the period 1997-2017. All descriptive statistics, specification tests and model estimations were conducted with the Stata/SE 12.0 software program.

Table 2: Summary Statistics

Variable	Mean	Std. Dev.	Max	Min	Skewness	Kurtosis	Shapiro-Wilk W test	
							stat.	p-value
EB	-8.77	12.42	12.83	-71.06	-1.48	6.54	0.90	0.00
FDI	5.69	6.65	54.92	-15.99	3.61	23.59	0.67	0.00
GDP pc	8,764.82	5,998.29	27,501.81	717.38	0.77	2.69	0.92	0.00
INF	9.10	60.26	1.058.37	-1.54	16.69	290.11	0.09	0.00
GB	-2.91	3.01	8.43	-14.70	-0.36	4.93	0.97	0.00
GD	40.95	25.00	224.75	3.66	2.56	19.09	0.84	0.00
REER	94.23	13.98	145.69	47.50	-0.40	4.61	0.96	0.00
TFP	1.54	3.81	19.00	-16.93	-0.75	7.64	0.91	0.00
LP	3.17	4.32	24.00	-14.00	-0.08	5.98	0.96	0.00
SET	51.82	18.74	89.25	12.73	-0.16	2.16	0.98	0.00

Variables:
EB – percent share of external balance on goods and services in GDP;
FDI - percent share of FDI net inflows (inflows-outflows) in GDP;
GDP pc - annual GDP per capita;
INF - annual inflation rate (consumer prices);
GB – percent share of government budget balance (deficit/surplus) in GDP;
GD – percent share of general government debt in GDP;
REER - real effective exchange rate (an increase in the index indicates appreciation of the home currency against the basket of currencies of trading partners; CPI based on 67 trading partners; 2007 is the base year);
TFP - total factor productivity growth rate (GDP growth decreased for labor quantity contribution, labor quality contribution and total capital services contribution);
LP – labor productivity growth rate per employee (output per employed person, growth);
SET – gross percent of school enrolment tertiary - share of students on faculty level in total population of age group for tertiary education (18-26 years).

Source: the authors' calculations with Stata/SE 12.0 program.

Based on the descriptive statistics, it is evident that in the selected sample of EEEs is present a significant average external position deficit (almost 9%) with high standard deviation, which implies that countries in the sample have in average substantial external imbalance with high volatility in regard to mean (mostly because of Western Balkan countries). An average net FDI inflow in GDP of the sample is 5.69% with higher standard deviation 6.65%, that suggest a substantial variation in the sample data. Maximum value of FDI net inflows in GDP is recorded in Hungary in 2016 (55%), where is also present a minimum level of this indicator in the 2010 (-16%), which point out to high volatility of this indicator with great FDI outflows in this country.

Results for *skewness* imply that a strong negative asymmetry is present in variables external balance and total factor productivity growth, medium negative asymmetry is present in government budget and REER, while weak negative asymmetry is present in tertiary educated population. On the other hand a strong positive asymmetry is present in FDI, GDP per capita, inflation and government debt. No asymmetry i.e. normal distribution is present only for labor productivity growth. *Kurtosis* for all variables exceeds the reference value of the normal distribution, so we can conclude that data distribution is heavy-tailed. The results and probability level of the *Shapiro-Wilk W* test imply that the null hypothesis is rejected for all analyzed variables, thus they don't have a normal distribution. Based on the results of the mentioned statistical tests we can point out a presence of extreme values and deviation from normal distribution in the panel data.

3. Panel data results and discussion

According to the results of *Hausman* (1978) specification test (Table 3) *FE* estimation is optimal with consistent estimation in the both subperiods. The results of the *F* test (Table 3) indicate that the null hypothesis can be rejected in the both subperiods and that there are significant individual effects in the fixed effects model. On the basis of *modified Wald* statistics (Baum, 2001) results for the group heteroscedasticity (Appendix, Table A1) that have *p* values less than 0.05, it can be stressed that null hypothesis is rejected in the both subperiods with the presence of heteroscedasticity of standard errors in the model. The autocorrelation tests presented in Appendix, Table A2 - *Jochmans Portmanteau* test and *Born-Breitung Bias corrected HR* test (Jochmans & Verardi, 2019; Born & Breitung, 2016) suggest we can accept the null hypothesis with the absence of standard error autocorrelation in the pre and post crisis period. The results of the heteroscedasticity and autocorrelation tests suggest the application of the robust micro panel models like *FE* with *White* corrected standard errors.

The comparative outlook of robust panel model estimations is presented in the Table 3. Presented evidence supports the assumption of a negative nexus between FDI net inflows and external position in the EEEs before and after the crisis, in the total sample and in the Western Balkans in both subperiods.

Table 3: The panel data model of nexus between FDI and external balance

Nexus FDI - external balance in EEE

Model	Pre-crisis (1997-2007)				Post-crisis (2008-2017)				Total sample	
	Robust FE - White CSE		PCSE		Robust FE - White CSE		PCSE		Driscoll & Kraay FE	
Independent variables	coef.	p - value	coef.	p - value	coef.	p - value	coef.	p - value	coef.	p - value
FDI	-0.0521	0.608	-0.0398	0.574	-0.0427	0.269	-0.0687	0.355	**-0.1724***	0.006
WB FDI	-0.1241	0.342	-0.0069	0.979	**-0.1668****	0.019	-0.2566	0.245	-	-
GDP pc	0.0000	0.998	**0.0008***	0.000	0.0004	0.263	**0.0010***	0.000	**0.0007***	0.000
INF	**0.0093***	0.053	0.0050	0.388	**-0.7014***	0.000	**-1.0055***	0.000	0.0004	0.923
GB	0.3347	0.229	**-0.4273****	0.028	0.0705	0.433	0.3024	0.208	0.1801	0.539
GD	**0.0411****	0.017	**0.0336***	0.007	**0.1504***	0.001	0.0443	0.198	**0.0439***	0.003
REER	**-0.1710****	0.028	**-0.2773***	0.000	**-0.2289****	0.018	-0.0411	0.600	**-0.1634***	0.005
TFP	0.2728	0.332	-0.0506	0.821	-0.0711	0.803	-0.2855	0.261	**0.4196****	0.025
LP	-0.4591	0.209	-0.1051	0.645	0.0695	0.779	0.2730	0.189	**-0.7146***	0.003
SET	**0.0927****	0.029	**0.2274***	0.001	**0.0841***	0.065	**0.1849***	0.000	0.0352	0.324
R^2 within	0.344		0.311		0.680		0.610		0.348	
F test FE /	86.670	0.000	59.680	0.000	30.280	0.000	412.600	0.000	142.460	0.000
Wald chi test RE	p<0.05 FE present		p<0.05 RE present		p<0.05 FE present		p<0.05 RE present		-	-
Hausman test	39.680	0.000	p<0.05 Choice of FE		33.340	0.000	p<0.05 Choice of FE		-	-

Dependent variable: EB - external balance on goods and services in GDP;
Independent variables:
FDI - FDI net inflows in GDP;
WB FDI – dummy variable for FDI net inflows in GDP for Western Balkan group of countries;
GDP pc - annual GDP per capita;
INF - annual inflation rate;
GB - government budget balance in GDP;
GD - general government debt in GDP;
REER - real effective exchange rate;
TFP - total factor productivity growth;
LP - labor productivity growth per employee;
SET - school enrolment tertiary.
P-values: * significant at 10%, ** significant at 5%, *** significant at 1%.

Source: the authors' calculations with Stata/SE 12.0 program.

Akbas, Senturk & Sancar (2013) find the empirical support for unidirectional link from FDI to current account deficit in the sample of G7 countries using panel data models. The Driscoll & Kraay method of robust standard errors for FE estimation gives relevant results significant at probability value of 1% and support a negative nexus FDI – trade balance on the total sample level. Also, the results of Beck & Katz PCSE method confirm that a negative significant link between FDI and trade balance after the GFC, significant at 5% is present in the Western Balkan countries. The consistent problem of trade deficit in Western Balkans after the GFC is related with increased need for external financing with FDI. Western Balkans as members of CEFTA arrangement have consistent problem of external imbalance with trend of slow improvement after the GFC.

The model estimation for pre-crisis period indicates that external balance is in positive significant relation with the level of economic development i.e. GDP per capita, inflation, public debt and tertiary educated population. Before the GFC, the negative

significant connection is present between trading balance and government budget sum and real effective exchange rate. After the GFC, improvement in the external position (deficit decrease and surplus in more developed countries) is related with greater level of economic development, depreciation of REER i.e. better competitiveness of economy, growth of highly educated population, inflation decrease and public indebtedness. On the total sample of EEEs in the period 1997-2017, panel data estimation indicates that external position is positively connected with GDP per capita, public debt and growth of total factor productivity. Also, there is an evident negative significant link between trading balance and FDI net inflows, REER and labor productivity growth in the total sample of EEEs.

The variable of government debt has a positive significant link to trading balance in the both sub periods and total sample, which implies that public indebtedness is significant factor of financing the external position in the EEEs. Real effective exchange rate has a negative significant nexus with trading balance in the both sub samples and total sample, so it could be concluded that better external position is related to real depreciation and better national competitiveness in selected EEEs. Indicator of tertiary education is positively and significantly related to trading balance in pre-crisis and post-crisis period that implies a better external position is present in emerging economies with more highly educated work force.

On the basis of the robust panel model estimation, it can be highlighted that a positive significant link between GDP per capita and trade balance sum, significant at 1%, is present in the total research period and in the both subperiods. This evidence suggests that greater level of economic development is one of the key factors of better external position in EEEs. Other relevant factors of external balance are better national competitiveness and highly educated work force. Also, FDI net inflows are relevant variable that finances external position in the total research period and in subsample of Western Balkans after the crisis. This indicates that more developed and competitive countries in the sample have more balanced trade position, so greater FDI inflows and government policy measures should be directed in stimulation of sustainable economic development, greater competitiveness and export-oriented production that will furtherly boost GDP and trading balance. Also, according to Dorakh (2021) the main determinants of larger FDI inflows are infrastructure, connectivity and trade costs, therefore policy implications must include measures in directions of better connectivity with EU and China via Belt and Road Initiative (BRI). Moreover, based on Rajaković (2021), in order to achieve sustainable economic development, government incentive measures must be directed towards FDI and domestic investments in green technologies, clean energy and sustainable production for export.

Conclusion

Research findings of panel data model implicate a negative nexus between FDI net inflows and external position in EEE in the both sub periods, total sample and in Western Balkans before and after the crisis. The Driscoll & Kraay method of robust standard errors gives relevant results and supports the research hypothesis of negative nexus FDI – trade balance

on the total sample level. The convergence process of sustainable development in emerging economies is followed by external imbalances that should be financed with substantial long-term FDI inflows. Also, research results of Beck & Katz panel corrected standard errors method confirm that in the Western Balkan countries is present a negative significant link between FDI and trade balance in the post-crisis period. The consistent problem of trade deficit in Western Balkans after the GFC is related with increased need for external financing with FDI.

The results indicate that substantial FDI inflows are significantly related with negative sum of trading balance i.e. average external position deficit of the total sample is financed with FDI inflows. Also, dummy variable for the Western Balkans shows that FDI are a significant variable that finances external imbalance in this subsample in post crisis period. Moreover, results imply that more developed and competitive countries with highly educated labor have more balanced external position, so economic policy measures should be oriented towards stronger sustainable economic development. Presented research contributes to the existing literature with the evidence of significant nexus between FDI and key macroeconomic factors with external position as an adequate background for policy recommendations of economic authorities of EEEs and less developed Western Balkans. The recommendations are directed towards incentive measures for attracting greater FDI inflows, especially greenfield investments, motivated with greater efficiency and exports in order to stabilize the trading balance and further stimulate the economic growth. Improvements in convergence process, tertiary education, infrastructure, connectivity, government institutions, investment environment and country rating will attract foreign investors in the Western Balkan region. Western Balkans governments should implement the selective measures in order to promote beneficial greenfield efficiency-seeking investments in sustainable production for exports, as well as investors in clean energy and green innovative technology.

In line with this, direction for further research can be testing with panel data approach if greenfield FDI investments are positively related with trading balance and economic growth in the post crisis period. With the comparative estimations by micro panel models, authors could apply a dummy variable for the Western Balkans and EU members, differing thus emerging European country groups. Likewise, another research direction in investigation of connection between FDI, trade balance and economic growth comprise different methodological framework of macro panel techniques i.e. heterogeneous, non-stationary and dynamic panel models.

Appendix[1]

Table A1: Heteroscedasticity test with Wald statistics

Modified Wald test for the group heteroscedasticity in FE model	
Pre-crisis (1997-2007)	chi^2(16) = 2048.700 Prob>chi^2 = 0.000
Post-crisis (2008-2017)	chi^2(15) = 201.420 Prob>chi^2 = 0.000

Table A2: Autocorrelation tests

H$_0$: Absence of autocorrelation	Jochmans Portmanteau test		Born & Breitung HR test	
	Chi-sq	Prob > Chi-sq	HR-statistics	p-value
Pre-crisis (1997-2007)	16.000	1.000	1.130	0.258
Post-crisis (2008-2017)	15.000	1.000	1.830	0.067

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