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Innovation Oriented FDI as a Way of Improving the National Competitiveness

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Abstract

The main purpose of the paper is to accent the importance of the quality of FDI as a way of stimulation and encouragement the innovation activities in the host country. One of the benefits that come from the inward FDI is the possibility of transferring new technologies, but the most favorable benefits come from the possibility of using the inward location for development of new technologies. The FDI could have positive contribution to the qualitative improvement in the production structure of inward economy and to the competitiveness if they establish or settle their R&D activities in the host economy. Using the regression analysis the paper is trying to verify the interdependence between the FDI and expenditures for R&D of business sector as a way to influence or not to influence the innovation capacities in some target Western Balkans (WB) economies and Central European and Baltic (CEB) economies.

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Introduction

In the process of creation an innovation based competitiveness of an economy FDI is one of the essential factors that could stimulate and contribute that process. FDI inflow can be considered as one of the most important channel for acquiring a new technology and supporting the process of creation and improvement of domestic innovation capabilities. By transferring R&D activities in the host countries and through the spill - over effect of knowledge and technology, FDI inflow can be driving force of competitiveness in an economy.

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The aim of this paper is an investigation of differences in FDI inflow between WB and CEB countries and its influence on innovation capacities of host business entities. Disparities in quantity and quality of FDI between WB and CEB economies reveal reason of regional disparities in the level of R&D activities. Growing trend of FDI inflow in CEB economies have being followed by mushrooming of studies that have looked into the volume, structure and origins of FDI as well as the determinants of FDI. Foreign direct investment has emerged as a necessary source of funding and development of the R&D sector in CEB countries. Inward FDI had played an important role in the transition process of CEB countries. Foreign investors initially moved into CEB region due to the cost advantages but with time many MNEs upgraded their operations, as evidenced by the growth of high technology industries and high technology export (Narula and Guimon, 2010). On the other hand WB countries have been experiencing low amount of FDI inflow during the whole transition period. Despite the quantity lag WB countries also straggle in quality of FDI inflow compared to CEB economies. Against the growing inflow of FDI in R&D in CEB countries it is obvious the absence of attractiveness and capabilities of WB countries to capture a part of the growing process of internationalization of R&D activities.

1. Literature review

There are growing research studies that explore the FDI and innovation issue, confirming the positive influence of FDI on R&D activities in the host countries. Guimon (2011), classifying the policies to benefit from the globalization of corporate R&D stress that "besides maximizing inward FDI in R&D, another objective should be to ensure that the national innovation system reaps the benefits associated with the presence of foreign MNEs". Hu and Jefferson (2001), Cheung and Lin (2003) find out that "FDI to China has promoted R&D activity by Chinese firms via various spillover channels, making them more capable of innovating". The other studies accent the influence of FDI competition that can foster the host companies to invest in innovation activities. Bertschek (1995) and Jungmittag (2004) stress the positive influence of FDI to innovation in manufacturing and service activities. Other studies reveal that the relationship between FDI and innovation is not universal; it depends on the sectors receiving the FDI. Aghion et al (2009), investigating the influence of FDI, stress the positive effect of FDI on innovation for the firms within the same sector. According to Vahter's research (2011) on the effect of FDI on innovation in Estonia's case, "an increase in FDI share increases the propensity of an incumbent firm in the same sector to engage in process innovation".

For the host countries quantity and quality of FDI is close related to the strategy of improving the innovation capacities. According to (Narula and Guimon, 2010) the motivation behind FDI is not just their manufacturing and sales activities, but also their most strategic activities such as R&D. FDI in host country has direct and indirect effects associated with the R&D activity (Gorg and Strobl, 2001).

According to UNCTAD (2005), Central and Eastern European countries attracted a number of green-field projects having considerable R&D mandates for regional or global markets, so attracting of R&D intensive FDI with high innovation capabilities is the most legitimate reason for a government to promote inward FDI. Due to the benefits, the interest of policymakers and the competition among countries to attract inward FDI in R&D has grown significantly (Bellak et al, 2008). The issue of FDI inflow to R&D sector is getting important from the point of view of creating innovation based competitiveness. The objectives of today's national economies are to tend or to achieve innovation based competitiveness as the higher level of development, because it leads to higher productivity and it is one of the most effective ways to be more resistant to the turbulences and crises in today's economy.

2. Methods

For the research purposes in this study regression analysis is used. It is usable in determining the correlation R between the FDI and expenditures for R&D of business sector (BERD) in analyzed countries. The impact of FDI inflow on the R&D funding by the business sector is examined by using OLS model:

$$y = \alpha + \beta x + \varepsilon \quad (1)$$

Thus applied to our research has the following shape:

$$BERD = \alpha + \beta FDI + \varepsilon \quad (2)$$

- BERD is dependent variable
- FDI is independent variable
- α is an intercept coefficient
- ε is the error term

According to the regression model it is estimated the summarized and individual coefficient of correlation R between FDI inflow and expenditures of business sector in R&D for all analyzed countries in WB region (Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia,) and CEB countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia). Based on the differences in FDI inflow we expressed the variation in BERD.

3. Results

Data from many international reports confirms the increasing trend of internationalization of research and development activities (OECD, 2008; OECD, 2013). The FDI inflow in the WB economies is diverging extensively from this tendency. Compared to the former transition countries of Central Europe and Baltics (CEB), WB countries lag significantly referring the quantity and quality of FDI inflow. The average level of FDI in the WB countries in the period 1995-2004 is 10 times lower than in the CEB countries. Although the difference is reduced in the period 2005-2011, it still remains high reaching 5 times lag. Despite the quantity, the difference in the qualitative structure of FDI between CEB and WB countries is one of the reasons for dramatically lower level of technological readiness and innovation capacities of WB countries. In the whole transition period, within the FDI inflow structure in WB countries a dominant role have the investments in the exploitation of natural resources or those that allow monopoly market position, low added value and unremarkable spillover of technology. Conversely, in the CEB countries the FDIs are important tool not just for technology transfer, but increasingly they use these economies as a location for R&D activities.

Through the process of internationalization of R&D activities FDI's influence is positive in increasing the expenditures on R&D in business sector and employment of researchers, so they have been contributing in strengthening the innovation capacities in the CEB countries. On the other hand low level of FDI inflows and their poor quality result in insignificantly leverage in enhancing the innovation capacities in WB countries.

According to the official statistics and data (OECD, 2008, 2013) the share of affiliates under foreign control in total business R&D has been increasing in most of the CEB countries i.e. in Czech Republic from 36.9 in 2000 to 58% in 2009, in Poland from 12.1 in 2000 to 50.5% in 2009, in Slovakia from 20.4 to 37.2% in 2009 in Slovenia from 28.2% in 2007 to 33.2% in 2009.

Using the OLS regression analysis we can find out the interdependence between the FDI inflow and expenditure of business sector in R&D activities in the host countries. The analysis refers to the data of average inflow of FDI in the analyzed countries in the period 2007-2012 with one year time lag for the BERD data. The result of the analysis show a correlation index of $R^2 = 0.655975$

Table 1. Regression analysis of FDI inflow and BERD in SEE and CEB countries in the period 2007-2012

	Regression analysis
Multiple R	0.809923039
R Square	0.65597533
Adjusted R Square	0.62470036
Standard error	378.3638126
Observations	13

Using the formula for linear regression we can determine how the FDI as an independent variable can influence on the expenditure of business sector in R&D activities (BERD). So if we extract the others factors that have influence on the value of BERD we can predict the value of BERD for any improvement of FDI inflow in analyzed countries.

Table 2. OLS analysis of FDI inflow and BERD in SEE and CEE economies

	Coefficient	Standard error	P-value
Intercept	90.95316203	131.4614979	0.503366
FDI inflow	0.116379774	0.025411612	0.000791

Significance level: P<0.05

Putting the data from table 2 in the formula (1) we obtain the regression line for analyzed economies:

$$BERD = 90.953+0.1163FDI$$

Although both groups of economies indicate positive correlation between FDI and BERD, it is more significant in CEB compared to WB economies. It is result of the changes in the sectorial structure of FDI stock and their increasing orientation to R&D activities. As an evidence of the process of involvement of foreign investors in the sector of R&D is growing number of foreign research centers (Owczarczuk, 2013). This claim is confirmed also through the calculation of correlation indexes separately for all CEB and WB economies. Since the contribution of this paper is to investigate the correlation between the FDI and expenditure of business sector on R&D (BERD) separately in WB and CEB economies, the results indicate significant differences between the economies. The following data (table 3) show low influence of FDI stock on BERD in WB economies where the index is ranged from 0.108 to 0.415. On the other hand CEB economies indicate significantly better correlation reaching more than 0.6 in some economies. In the analysis it is used FDI stock because there is always a lag between actual inflows and the start of production process.

Table 3. Individual correlation indexes between FDI and BERD in WB and CEB countries

Economy	R^2
Albania	0.108384
Macedonia	0.38714
Serbia	0.111661
Montenegro	0.415437
Bosnia and Herzegovina	0.208269
Czech	0.447465
Estonia	0.626273
Hungary	0.635617
Latvia	0.556282
Lithuania	0.515166
Poland	0.617709
Slovakia	0.495113
Slovenia	0.495113

The general tendency in all WB economies is considerably low investment of business sector in R&D. This trend exists in the whole transition and post-transition period indicating BERD rate below 0.1% of GDP. So the FDI inflow in WB countries does not appear to have an impact on R&D investments of the business. Conversely, the

results in analysis indicate that the FDI in CEB countries have positive and significant impact on the investment in R&D which is confirmed with the increasing investment of business sector in R&D and within that framework growing participation of foreign affiliates.

The analysis confirms the weaknesses of WB countries referring the quantity and poor sectorial directions of FDI. According to OECD (2008), in the internationalization of industrial R&D dominant role have manufacturing of information and communications technology, automobile industry, pharmaceuticals, chemicals, services to information industries and business whose primary activity is R&D. Although the motives for R&D internationalization rate from asset exploiting in home country, to asset seeking in the host countries, the factors that make the countries attractive for FDI in R&D are specific and closely related to factors that determine innovation based competitiveness. In our analysis all countries from CEB region are already in the phase of innovation based competitiveness or in the transition stage to innovation, against the WB economies that are in stage of efficiency based growth. So to be more attractive for FDI and exceptionally for R&D oriented FDI the WB countries should enhance a set of factors that involve efficient an qualitative infrastructure, building a stable institutional and business environment, qualitative improvement of higher education system and establishing dynamic national innovation environment.

Conclusions

Achieving higher investment of business sector in R&D activities has to be one of the priorities in the process of creation innovation based competitiveness of WB countries. FDI inflow could be one of the mechanisms in stimulating and supporting the process of BERD enhancement. The previous analysis confirms the interdependence between FDI inflow and R&D investment of business sector. It reveals the differences in the influence of FDI inflow to possibility of improving the innovation capacities of business sector between the WB and CEB countries.

On one hand we have a group of WB economies for which low level of investment in R&D of business sector is proprietary without any tendency of improvement. The study confirms that the actual stock of FDI inflow and their sectorial directions have no positive influence and do not provide encouragement and enhancement in R&D investment.

On the other hand the analysis confirms that the quantitative and qualitative growth of foreign investment in research and development in the CEB countries have being contributed on the increasing trend of R&D activities of business sector.

As the share of FDI into primary sector and manufacturing starts do decline, currently a rapidly increasing importance and share of service production that includes investments in R&D activities abroad is observed (Johansson and Loof, 2006). So from a national economy perspective, it is important to increase the extent of attraction and capturing the R&D oriented FDI as a way of providing positive stimuli to the national innovation system and contributing to creation the innovation based competitiveness.

Although the process of research and investigation of relationship between FDI and innovation enhancement is complex and display variable patterns among the countries and also encountering with the scarcity of reliable micro and macro data on the foreign components of R&D activities, it is ever more evident that the process of innovation has become more globalized.

So the identification and investigation the factors that have a strong influence on the differences of allocation of R&D investments between WB and CEB countries would be a good challenge for future studying.

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