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## Foreign Direct Investment and Export Growth: empirical evidence from Macedonian economy

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**Foreign Direct Investment and Export Growth: empirical evidence  
from Macedonian economy**

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## **Foreign Direct Investment and Export Growth: empirical evidence from Macedonian economy**

**JEL Classification:** *F14;F21;F23*

**Keywords:** *FDI; automotive industry; export; competitiveness*

### **Abstract**

**Research background:** Foreign direct investment is perceived as a valuable tool for economic growth. The growth could be realized less and more as a set of benefits depending on the FDIs features. In the period from 2009 to 2014 it is noticed a remarkable increase in the share of FDIs inflow in automotive sector in Macedonian economy, from 2.8% to 11.2%. Thus, the issue of FDIs inflow in automotive sector is a strong reason and an incentive to be examined from different aspects of influence on the economic growth.

**Purpose of the article:** The aim of the paper is to analyze the influence of the increased FDIs inflow in automotive industry as a reason behind the remarkable export growth. The research interest of the study is to recognize the importance of the FDIs inflow structure as a determinant of the export structure.

**Methodology/methods:** Within the paper it is developed a model that identifies the FDIs as a factor of growth of the export performances. A regression analysis is used to examine the correlation between the FDIs inflow and export. Since the correlation doesn't explain the causality, within the paper the Granger causality test is applied to examine causality between the FDIs inflow and increased export.

**Findings:** The results suggest that FDIs create a good base for qualitative shift in the export structure of Macedonian economy. The paper associates growth of sectoral export with the growth of FDIs in that sector. Due to the increased FDI inflow in automotive industry this sector significantly has increased its share in total Macedonian export. The paper indicates that FDIs can be considered as a way of engagement in the global supplying chains which additionally influences positively to the competitiveness and export potentials of the host suppliers.

## Introduction

FDIs are potentially seen as a source of important productivity externalities for the host economies. FDIs can create or enhance opportunities for value creation by their decisions to invest in particular location (Pavlinek & Zizalova, 2014, pp. 1-33). The directions and benefits of the FDI to the host economy depend largely on the structure, local policies as well the level of development.

The paper is directed to make visible the process of relationship between the qualitative shift of FDI inflow and its influence to the quality of the export structure in Macedonian economy. Most of the FDI inflow, since 2010, has been green field investments and they have been concentrated in the export-oriented manufacturing sector against to the period before, when the market and resource oriented FDIs in financial, transport, mining and textile sectors had dominant share. The challenge for this analysis is twofold.

First, Macedonian economy as a small former transition economy experienced insufficiently amount and poor quality of FDIs inflow during the whole transition period. Although the FDI based development strategy was declared and determined as a main strategy for economy growth and restructuring, the data for FDI inflow reveals unsatisfactory results. It was expected FDI to be a tool for economic restructuring, as was the experience of the most of the former transition economies. According to Bandelj (2010, pp.481) the FDIs for the transition economies from CEE has become one of the basic criteria of successful economic transformation. Economic development requires the transformation of a country's economic structure that involves diversifying into new sectors (Henn et al., 2015, pp.6).

Due to the limitations connected to the national and regional business and political environment as well the constraint caused by the nature of FDIs inflow, Macedonian economy had not experienced FDI based development. The increasing trend in FDIs inflow, since 2010, in automotive sector as a more capital intensive investment, should be seen as a good challenge to examine the influence to the local economy.

Second, the importance of the analysis is determined by the tendencies in the export structure and its sensitivity on FDIs inflow structure. Exactly, through compiling the export growth model the paper tries to identify whether the improvement in the quantity and quality of FDI inflow has boosted the export performances and in which direction.

The academic significance contribution to the topic lies in the revealing the effect how a structure of FDI inflow can determine and cause significant shift in the export structure in the case of an open small economy and how the engagement in the global supplying chain can be used as an export platform.

## Literature review

Many empirical studies have tried to assess and examine the relationship between the FDIs and export growth. They investigate the role of FDIs to the export performance in developed as well developing economies. The results can vary according to the nature, motivation and geographical aspects of FDI. Radulescu & Serbanescu (2012, pp. 26) have examined the effects of FDIs on the host economy and emphasize the export dependency on the type of investment.

Majority of the studies report that FDIs can be considered to be as a significant “engine of export”. FDI inflows may be export-promoting in two ways: directly, through export of the multinational’s subsidiaries, or indirectly, by engaging the host firms in the supplying linkages and improved access to world markets. Analyzing the effects of FDI inflows to the export performance of 14 transition economies in Central and Eastern Europe (CEE), Kutun & Vuksic (2007, pp.430-445) show that FDI has improved the export performance of the host economies by increasing their supply capacities. Greenaway et al. (2001) stress the export advantages of FDIs and their influence to export performance of local companies. Many researches examine the causal relationship between inward FDIs and the manufacturing export performance. Some of them indicate a two way causality (Liu et al., 2001, pp.190-202; Zhang & Felmingham, 2001, pp.82-99; Ekanayake et al., 2003, pp.59-72; Balamoune-Lutz, 2004, pp.49-56), and the others (Dritsaki et al., 2004, pp. 230-235; Zhang, 2006, pp.50-55; Khan & Leng, 1997, pp.40-60), reveal unidirectional causal relationship between FDI and export with a direction from foreign direct investment to export and reversely causal relationship.

Remarkable upgrading of export performance, extremely high growth of export and considerable changes in the export structure to goods with higher value added are result of FDI inflow in CEE countries. Due to the increased FDI inflow in automotive industry this sector becomes a dominant across CEE, significantly increasing its share in total export and production (Pavlinsek, 2015, pp.209-255). The direction of the FDI flows is of key importance for the export restructuring and growth of an economy (Damijan et al., 2013, pp. 8).

Particular emphasis on FDI is placed on the contribution of FDIs to increasing productivity and competitiveness of the host industry. The FDIs inflows may raise the productivity of the host companies forcing them to exit or by increasing their share in the market of intermediaries. Damijan et al., (2011, pp. 486-509) point the dynamic aspects of FDI in CEE countries by fostering the processes of manufacture restructuring and potentials for future export growth directly through the export performance of FDI’s subsidiaries and indirectly through the knowledge spillover to local suppliers engaged in

backward linkages restructuring. Jindra et al. (2009, pp.167-179) consider FDIs as a major force in the economic development of CEE countries. Damijan et al.(2013, pp.1-36) examining the determinants of the transition economies' export performance stress the importance of the "global supplying chains" and the "supply capacity". Using industry-level analysis they reveal that FDI has significantly contributed to export restructuring in the CEE countries. As one result of FDI in CEE countries according to Lipsey (2006, pp.9) is a shift in the export comparative advantages of these countries toward the machinery and transport equipment sector. Global supplying chains and the trade between "headquarter" and "factory" economies are suggested by Baldwin (2012, pp. 15) as a way of increasing competitive advantages of emerging economies.

The quality and structure of FDI influence the quality and structure of the host economy export. Some analysis claiming the size and composition of FDI as a crucial factor in shaping productivity and strengthening the competitiveness of an economy (Christodoulakis & Sarantides, 2011, pp.1-42). The UNCTAD's (2005, pp. 61) analysis reveal a positive and significant relationship between export performance and FDI, stressing the strong contribution of FDI to the technological upgrading and structural evolution of the export sector

Since the structure of automotive industry is consisted of several tiers that represent the value added chain, FDIs in automotive industry actually open a possibility of engagement of the host economy in the value creation process. According to Baldwin (2011b, pp.1-32) joining international supply chains is faster and surer route to global markets as a new strategy for 'emerging market economies'. UNCTAD (2012, pp.88) analyzing the influence of FDI to the transitional economies emphasizes that FDI as a bundle of assets including access to advanced technology and management techniques, allow developing countries to leapfrog into more sophisticated areas of production.

## **Methodology of Research**

The analysis of the influence of FDI inflow to Macedonian export are conducted in two steps. The first step is concerning to creation of a regression model for correlation and it is followed by a causality test analysis. The proposed regression model is based on the predecessor models that examine the influence of FDI to export in two empirical cases. The first is the research of Damijan, Kostevc and Rojec (2013, pp.1-34) and the model through which they test the impact of FDI inflow on export within the Global supplying chains (GSC) in CEE. The second reference model is result of the empirical examination by Zhang (2006, pp.7) in China case, where the FDI is treated as a factor of export performance.

To examine the existence and rate of correlation between the increased FDI inflow in automotive sector and export performances of Macedonian economy the following model is quoted:

$$Exp_t = \beta_0 + \beta_1 FDI_{auto,t-1} + u \quad (1)$$

where  $Exp_t$  as a dependent variable is denoting the total export of the economy and  $FDI_{auto,t-1}$  stands for the cumulative stock of FDI inflow in automotive sector. The model has narrowest shape only to present the relationship between the FDI inflow and export. If the model is exempted from the other factors and omitted variables and measurement or  $u = 0$ , the regression model has obtained the following form:

$$Exp_t = \beta_0 + \beta_1 FDI_{auto,t-1} \quad (2)$$

Regression model can provide only a partial explanation for the existence of a correlation between the examined variables. The theory also suggest on examining the existence of causal relationship between the FDI inflow and export growth. The application of Granger causality test actually means more sophisticated form of regression model and its purpose is to explain whether changes in FDI inflow in the automotive industry lead to improved export performances. The Granger causality test in the paper is presented through two regression equations that confirm or reject null hypotheses and determine the direction of causality.

$$Exp_t = C_1 + \sum_{i=1}^p \alpha_i Exp_{t-1} + \sum_{i=1}^p \beta_i FDI_{t-1} + u_i \quad (3)$$

$$FDI_{auto,t} = C_2 + \sum_{i=1}^p \gamma_i FDI_{auto,t-1} + \sum_{i=1}^p \delta_i Exp_{t-1} + u_i \quad (4)$$

The goal of the Granger causality test is to explain whether the shift in Macedonian export performance is caused by the change in the structure of FDI inflow. The Granger causality test within the analysis is used as a complementary method to correlation test.

The estimation and analysis in the paper is performed on the base of database available in the National Bank of the Republic of Macedonia and the State Statistical Office. Two sets of data are employed in the analysis. The first set relates to data for FDI inflow in automotive sector sourced by the National Bank of the Republic of Macedonia for the period 2005-2015. Since 2010, it is visible huge shift in the amount of FDI inflow in automotive sector (Table 1). FDI has gradually branched out of traditional sectors such as food, textile industry and metal processing into more technology-intensive industries like automotive.

**Table 1.** Stock of FDI inflow in automotive industry (in mill/euro)

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
12.6	12.8	12.9	88.4	88.4	165.1	249.8	264.5	360.7	449.9	557.6

Source: National Bank of the Republic of Macedonia

Since the investment takes time to materialize (Moran, 2005, pp.281-313), within the model is considered a time lag for FDI effect to start. For that purpose and due to the necessity to stress the continuity in the FDI inflow, cumulative stock of FDI in automotive sector is taken in the analysis.

The second set of data reflects the size of the export as a dependent variable. The data in table 2 reveal increasing tendencies in the export of products referring to automotive industry. According to SITC classification the share of automotive export in total export increases enormously, from 4.86% in 2005 to 27.11% in 2016.

**Table 2:** Comparison between total export and automotive export (in mill/euro)

Year	Total Export	Automotive export
2005	1,644.36	80.00
2006	1,917.51	85.45
2007	2,477.14	95.06
2008	2,697.56	104.73
2009	1,937.04	90.33
2010	2,534.89	132.93
2011	3,214.91	231.90
2012	3,123.95	288.48
2013	3,235.21	409.02
2014	3,746.61	765.40
2015	4,051.23	966.80
2016	4,329.27	1,174.0

Source: National Bank of the Republic of Macedonia and State Statistical Office

The dominant share of automotive industry in FDI structure is a significant room for improvement in the overall quality of Macedonian export structure. The FDIs promote founding of new Revealed comparative advantage (RCA). RCA has diversified away from the traditional export products such as textiles, food, tobacco, flat-rolled products of iron or non-alloy steel to the more capital intensive goods such as supported catalyst with precious metal, ignition wiring sets and other wiring sets

## Results



In order to investigate the correlation between the increased inflow of FDI in automotive industry and its influence to structural shift in export composition it is used OLS estimation of equation 2. The results in table 3 reveal substantial positive correlation between the export growth due to the higher inflow of FDI in automotive sector. The R Square coefficient detects strong and substantial effect of FDI inflow. It implies that 86% of the export growth is explained with the increased inflow of FDI in automotive sector. The value of FDI stock significantly affects the value of exports which is verified with the probability coefficient equal to 0.000039.

**Table 3:** Regression analysis of the export dependency on FDI inflow in Macedonian economy

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2211.020	144.7756	15.27205	0.0000
FDI_AUT	3.952754	0.530518	7.450749	0.0000
R-squared	0.860495			
Adjusted R-squared	0.844994			
S.E. of regression	315.5267			
Sum squared resid	896013.9			
F-statistic	55.51365			
Prob(F-statistic)	0.000039			

Source: Own calculation

The second part of the analysis reveals the results obtained by the Granger causality test between the FDI inflows in automotive sector and the export growth, presented in table 4. For that purpose it is set up two hypothesis:

*H0: FDI\_AUT does not Granger Cause EXP*

*H0: EXP does not Granger Cause FDI\_AUT*

Applying the equations (3) and (4), and a time lag = 2, as a minimum time discrepancy between the inflow of FDI and start of the manufacturing process, it is reached the following result (Table 4)

**Table 4:** Granger causality test between FDI inflow in automotive sector and export

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI_AUT does not Granger Cause EXP	9	67.5798	0.0008
EXP does not Granger Cause FDI_AUT		0.76247	0.5242

Source: Own calculation

The value of  $p$  suggests existence of causality only in the first hypothesis, as  $p$  is less than 0.05 meaning rejection of the first null hypothesis. It implies that in the equation (3) FDI inflow in automotive industry are Granger reason for export growth. For the equation (4) the associated  $p$ -value is higher than the accepted significance level that suggest on the approval of the second hypothesis that export does not cause FDI inflow in automotive sector. The results from the Granger causality test reveal a unidirectional causal relationship between FDI inflow and the export with direction from FDI to export.

## **Conclusion**

The correlation issue between the move of capital in the form of FDI and the host country has been in the focus of extensive theoretical and empirical research interest specially in the case of developing and former transition economies. The main challenge of the paper is to examine the impact of FDI inflow in automotive industry to the export performances of the Macedonian economy. Within the paper it is developed a model that takes into account only the narrow relationship between the FDI inflow in automotive industry and the export performances.

During the whole period of transition the export structure of Macedonian economy was displaying significant monotony where low capital intensive goods had dominated. The qualitative shift in the structure of FDI inflow has resulted in the change of the export content toward more capital intensive products. Using the regression analysis, the paper examines the contribution of FDI inflow in automotive sector to the performance and structural change of Macedonian export. The results of the analysis reveal an influential and crucial impact of the FDI inflow to the quantitative and qualitative shift in the export structure. The dramatically improvement of the export performances is additionally supported by the results of the Granger causality test, that proves existence of an intensive one way causality between the FDI inflow and export performances.

Production stemming from the FDI inflow initiates and push up the process of creation new revealed comparative advantages with an active involvement of the host supporting and supplying related entities. Engagement in the supplying chains of automotive industry as a kind of a global platform allows for significant market access gains because the activities of FDI subsidiaries are closely related to the MNE network (Jindra et al., 2009, pp. 171) and diversifies toward a more capital intensive export structure. The higher technology intensity of the FDI inflow should be seen as a prerequisite for the shift to the more technology intensive export structure. As Damijan et al.

(2013) have noticed the higher technology intensity of the implanted industries and products the higher will be the benefits for the host economy. From the papers' analysis it could be concluded that increased FDI inflow in automotive industry as export oriented FDI should be seen as a useful platform for upgrading local advantages toward more capital and technology intensive production.

Since the paper verified the dependency of export performances on the increased FDI inflow in automotive sector, as a possible path of further research could be development of a simulation model for examining and analyzing a situation of exemption of the FDI inflow in automotive sector and its influence on the different aspects of the economic growth.

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