FDI and Economic Growth: A new Look from the Sectoral Perspective

Vladimir Šimić, Lena Malešević-Perović
University of Split, Faculty of Economics, Business and Tourism, Croatia
vsimic@efst.hr, lena@efst.hr

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Abstract

This paper investigates the impact of foreign direct investment (FDI) on economic growth in a sample of 10 ex-socialist European and Asian countries. While the link between FDI and economic growth has been extensively investigated in empirical literature, this paper contributes to this literature by econometrically investigating the effects of FDI inflows in specific sectors using the panel data estimation techniques. In addition to confirming the positive impact of total FDI inflows on economic growth, using the WiiW (the Vienna Institute for International Economic Studies) FDI database, which disentangles the FDI data across different industries, the paper finds significant effects of FDI inflows in manufacturing on growth, whereas FDI inflows in other sectors are only sporadically statistically significant. This finding serves as a basis for further investigation of the specific subsectors (NACE 2-letter classification) within manufacturing, and the empirical investigation finds that not all FDI inflows within manufacturing enhance economic growth.

Introduction

The relationship between FDI and economic growth has been extensively explored in the literature, with the predominant positive effects being reported. While theory is relatively clear with respect to the impact of FDI on economic growth, the empirical evidence is inconclusive, with some studies even finding no impact or negative impact on growth. Nevertheless, majority of countries continue adopting economic policies that encourage FDI inflows. In spite of numerous literature investigating the impact of overall FDI on growth, the literature concerning the impact of sectoral FDI on growth appears to be much more limited. As noted by Ingham et al. (2019), empirical studies on FDI typically overlook the fact that these inflows are distributed heterogeneously across sectors, therefore resulting in aggregation bias via generalizing the effect of FDI on host countries. Vu and Noy (2009) point out that this might be crucial, particularly in light of recent findings that suggest

that FDI spillovers occur in intra-, rather than in inter-industry settings. This renders the issue of growth effects of sectoral FDI timely and important; and yet, this sectoral aspect of FDI has often been neglected in empirical research. This paper, therefore, reexamines the FDI and economic growth relationship focusing particularly on the role FDI inflows across different sectors play in promoting economic growth. In an attempt at closing this gap, this paper investigates econometrically the effects of FDI inflows in specific sectors using the panel data estimation techniques.

As noted by Ingham et al. (2020), the issue of differences in FDI's effect on growth depending on the sector, originates from Singer (1950), who advances that growth stems primarily from FDI in primary and resource-based sectors. Hirschman (1958), furthermore, explains that technology spillovers and increased productivity depend on features of the FDI-receiving sector and its industrial linkages. Since manufacturing is characterized by robust inter-sectoral linkages, it affects economic growth the most. According to Pečarić et al. (2021), FDI in the manufacturing sector is expected to exert a positive impact on GDP growth, via its effect on increasing employment, enhancing competitiveness through lowering production costs, and improving the current account balance. On the other hand, one might expect a negative effect of FDI in services sectors, as these are often market seeking-oriented, which will typically not result in improved current account balance and economic growth. Indeed, Kinoshita (2011) finds that FDI in tradable sector increases exports, while FDI in non-tradable sectors tend to increase imports, thus worsening current account balance. This is further supported by Mitra (2011) and Riedl (2008), who find that FDI in services increases macroeconomic instability. The finding that FDI in manufacturing sector have larger growth effects than FDI in the service sector has been supported by other authors as well (see, for example, Alfaro & Charlton, 2013; Mencinger, 2009; Kinoshita, 2011; Walsh & Yu, 2010).

The issue of determining the impact of sector-specific FDI is especially important from the point of view of foreign investment policy. Identifying those sectors that have the greatest growth-enhancing potential, would enable better tailoring of economic policy, in terms of achieving a more efficient inflow of FDI, and consequently increasing economic growth.

This paper is structured as follows. Section 2 reviews the related literature and provides the paper background. Empirical methodology, the data and econometric estimations are reported in Section 3. Conclusions, policy implications and limitations are discussed in Section 4.

Literature Review

The theory postulates that the effect of FDI on growth is positive, as FDI contributes to capital accumulation and enables transmission of knowledge and technology - key drivers of long-run economic growth. The empirical evidence, however, is rather inconclusive. Namely, some empirical studies have found no impact (see, for example, Rodrik, 1998; Grilli & Milesi-Ferretti, 1995; Kraay, 1998; Mahmoodi & Mahmoodi, 2016; Alvarado et al., 2017; Carbonell & Werner, 2018) or negative impact of FDI on growth (Herzer, 2012; Agbloyor et al., 2016; Baharumshah et al., 2017). These differences in empirical findings can be attributed to variability in the samples of studies, analyzed periods and heterogeneous methodologies.

The above-mentioned literature, however, does not take into account that the effects might be different depending on the sector in which FDI is involved. Namely, gains might differ across primary, manufacturing, and services sectors, or within even more disaggregated sectors. Despite of numerous studies investigating the impact of overall FDI on growth, the literature concerning the impact of sectoral FDI on growth is more limited. Even studies that do account for sectoral differences typically focus on the impact of only three sectors: primary, secondary and tertiary, and rarely analyze higher degree of disaggregation.

Wang (2002) explores 12 Asian economies over the period of 1987-1997 and finds that FDI in manufacturing sector has a significant and positive effect on economic growth, while FDI inflows in non-manufacturing sectors are not significant. Alfaro (2003) investigates the effect of FDI on growth in the primary, manufacturing, and services sectors in 47 countries in the period 1981-1999. She finds the FDI inflows to have a negative impact on economic growth in primary sector and a positive one in the manufacturing sector. The results are ambiguous for the service sector. Khaliq and Noy (2007) investigate only Indonesia, and find that the effects of FDI on economic growth varied greatly from 1998 to 2006 across 12 investigated sectors. FDI in only few sectors exerted a positive impact, while the impact of FDI in the mining sector was negative. Aykut and Sayek (2007) use the sample of 33 countries during 1990-2003, and find the effect of FDI in manufacturing on growth to be significant and positive. The impact of the primary sector and the service sector, on the contrary, exerts a negative effect. Iram and Nishat (2009) focus on the impact of FDI in services and manufacturing on economic growth in Pakistan over 1972-2008, and find that, although positive in both cases, the impact is non-significant in the short-, but significant in the long-run. Vu and Noy (2009) use sectoral FDI data for six OECD members. They find that the effects vary drastically across sectors. Positive,

statistically significant and the largest effect is found for the FDI in real estate sector. Cipollina et al. (2012) analyze 22 developed and developing countries in the period from 2001 to 2014, focusing on FDI in 14 manufacturing sectors and conclude that the positive effect of FDI on growth is mostly found in capital-intensive and technologically advanced sectors. Alfaro and Charlton (2013) scrutinise the aggregate impact of FDI on growth using industry-level data (19 sectors) from 22 OECD countries in the period from 1990 to 2001. They conclude that sectoral FDI leads to higher growth in value added. Moreover, they find this relationship to be larger for industries that depend more on external capital, and are skill-dependent. Ali and Asgher (2016) analyse the influence of sectoral FDI on growth in a panel of five countries (China, Pakistan, India, Bangladesh and Sri Lanka) during 2000-2015. Their findings point towards the conclusion that FDI in manufacturing sector contribute the most to GDP growth, while FDI in services sector has the lowest impact. Miteski and Stefanova (2017) explore the growth-effects of FDI in the industrial, construction and services sectors in 16 Central, Eastern and Southeastern European countries during 1998-2013. They find that the impact of FDI in the industrial and services sectors is significant and positive, while the impact of FDI in the construction sector is statistically non-significant. Ingham et al. (2020) examine the relationship between sectoral FDI and growth in Egypt, over the period 1990-2007. Positive effects are found for FDI in manufacturing.

As can be seen from the literature review above, a key conclusion from majority of papers is that accounting for sectoral aspect of FDI offers new and interesting insights. Moreover, growth effects of FDI often come from the manufacturing sector. This paper, therefore, reexamines the FDI and economic growth relationship focusing particularly on the role FDI inflows play in promoting growth across different sectors, and manufacturing in particular. In order to do this we make use of the WiiW data, which disaggregates FDI across 19 sectors and additionally 13 subsectors within manufacturing; therefore, our analysis is at higher level of disaggregation in comparison to previous studies. This paper additionally contributes to the empirical literature by focusing on the ex-socialist European and Asian countries in the post-global financial crisis period.

Empirical Analysis

The model and the data

In analyzing the determinants of economic growth, a starting point is the Solow growth model, developed by Robert Solow in 1956. In spite of its simplicity, this neoclassical economic growth model is still powerful in its explanation of the growth process. The key variables in this theoretical model are capital/investment and population growth. Mankiw et al. (1992) advocate that when a third variable is added to the equation, namely human capital, the model explains international growth experiences very well. Empirical work regarding growth determinants is not as straightforward, however. As noted by Durlauf et al. (2005), various empirical studies have used over 140 growth determinants, resulting in a plethora of empirical growth models.

In our empirical investigation, therefore, we start by including the three key variables put forward by Mankiw et al. (1992), (sectoral) FDI as our main variable of interest, and a number of additional variables which are added as control variables. In consequence, economic growth is regressed on investment, human capital and population growth, FDI, openness (globalization), government consumption and inflation, as given by equation (1). The effects are estimated econometrically by using panel data analysis. The model to be estimated is of the following form:

$$GDPGROWTH_{it} = \beta_1 FDI_{it} + \beta_2 \log GDP_{it-1} + \\ +\beta_3 HC_{it} + \beta_4 \log POP_{it} + \beta_5 KOF_{it} + \\ +\beta_6 GOV_{it} + \beta_7 INF_{it} + \beta_8 INV_{it} + \varepsilon_{it} \quad (1)$$

where i refers to a country and t to a time period. The dependent variable GDPGROWTHit represents the growth rate of GDP per capita in country i and period t. FDIit is the main variable of interest representing FDI inflows as a percentage of GDP. Later on, we will substitute these total FDI inflows with FDI inflows in specific sectors and subsectors (again as percentage of GDP). The following control variables were initially included in our estimations: lagged logGDPpc, human capital (HC), population growth (POP), KOF globalization index (KOF), share of government consumption in GDP (GOV), inflation (INF) and investment (INV - gross fixed capital formation) as percentage of GDP.

The variables to be used are detailed in Table 1 below. We collected annual data from 2011 to 2019.

The sample includes 10 ex-socialist countries: Croatia, Czechia, Estonia, Hungary, Kazakhstan, Lithuania, Poland, Russia, Serbia and Slovenia. The main criterion for the selection of countries was availability of data. The WiiW FDI database provides data on FDI inflows by activities which is particularly suitable for our analysis. The data we use is in EUR based on NACE Rev. 2 classification. The specific activities (Industry/Products) are reported below in Table 2. Each of the values of FDI by activity (in EUR) is

divided by GDP (in EUR) to have it as ordinarily applied in growth regression, i.e. as FDI as a share of GDP.

Later on, in our investigation we will use more disaggregated FDI data, with more details being reported accordingly.

Econometric results

The impact of FDI on growth is estimated in this subsection using the growth model which is set quite broadly, as explained previously. In addition to FDI, whose effects on

Table 1
Description of variables and sources

Variable	Definition	Source
GDPGROWTH	GDP per capita growth rate (%)	World Bank WDI
FDI (% of GDP)	FDI inflows (% of GDP)	WiiW FDI database
logGDPL	Logarithm of GDP per capita lagged	World Bank WDI
Human capital	Human capital	Penn World Table (Feenstra et al., 2015)
Population growth	Population growth (annual %)	World Bank WDI
KOF	KOF index of globalization	Gygli et al. (2019)
Government (% of GDP)	General government final consumption expenditure (% of GDP)	World Bank WDI
Inflation	Annual rate of inflation (%)	World Bank WDI
Investment (% of GDP)	Gross fixed capital formation (% of GDP)	World Bank WDI

Table 2
WiiW data on FDI inflows by activity

Classification	Digit	Industry/Product
NACE Rev. 2	NACE 1-letter	Total by activities
NACE Rev. 2	NACE 1-letter	A Agriculture, forestry and fishing
NACE Rev. 2	NACE 1-letter	B Mining and quarrying
NACE Rev. 2	NACE 1-letter	C Manufacturing
NACE Rev. 2	NACE 1-letter	D Electricity, gas, steam, air conditioning supply
NACE Rev. 2	NACE 1-letter	E Water supply, sewerage, waste management, remediation
NACE Rev. 2	NACE 1-letter	F Construction
NACE Rev. 2	NACE 1-letter	G Wholesale, retail trade, repair of motor vehicles etc.
NACE Rev. 2	NACE 1-letter	H Transportation and storage
NACE Rev. 2	NACE 1-letter	I Accommodation and food service activities
NACE Rev. 2	NACE 1-letter	J Information and communication
NACE Rev. 2	NACE 1-letter	K Financial and insurance activities
NACE Rev. 2	NACE 1-letter	L Real estate activities
NACE Rev. 2	NACE 1-letter	M Professional, scientific and technical activities
NACE Rev. 2	NACE 1-letter	N Administrative and support service activities
NACE Rev. 2	NACE 1-letter	O Public administration, defense, compulsory social security
NACE Rev. 2	NACE 1-letter	P Education
NACE Rev. 2	NACE 1-letter	Q Human health and social work activities
NACE Rev. 2	NACE 1-letter	R Arts, entertainment and recreation
NACE Rev. 2	NACE 1-letter	S Other service activities

Source: WiiW

growth we are primarily interested in this paper, we also take into account the effects of globalization, investment, government consumption, inflation, human capital and population growth. Initially all the controlled variables mentioned above were included in our estimations. However, a number of control variables turned out to be consistently statistically insignificant across the models including GDP per capita lagged, population growth, and inflation. In order to avoid misspecification, we excluded them and re-estimated our models and the ensuing results are presented below.

We start with the model focusing on total FDI inflows and its effects on growth (Table 3, Column 1).

Table 3 in its Column 1 reports the estimated effects of total FDI inflows on economic growth, together with the estimated effects of other growth determinants. The estimated model (Column 1) suggests that total FDI inflows (as percentage of GDP) have a positive and statistically significant impact on growth. This finding conforms with the predominant positive effects found in the empirical literature. As for the other determinants, the results reported in Column 1 suggest that human capital exerts a strong positive and statistically significant effect on growth, while globalization and government spending have statistically significant and negative effects on growth. Investment is found to be statistically insignificant in this setting.

As for the remaining three models (Column 2, 3 and 4) reported in Table 3, the econometric estimations were conducted using the sectoral FDI inflows data. A careful reader will already link these to the sectors reported earlier in Table 2 and recognize that among the 19 sectors reported in Table 2 only in three of them we find the statistically significant effects. This relates to the FDI inflows in Manufacturing – sector C (as reported in Column 2 in Table 3), Wholesale and retail trade – sector G (as reported in Column 3 in Table 3) and Real estate – sector L (as reported in Column 4 in Table 3). FDI inflows in other sectors appear not to have statistically significant effects on growth and for space preservation reasons these results are not reported in Table 3. Overall, Table 3 reports that total FDI inflows, as well as FDI inflows in Manufacturing, Wholesale and retail trade and Real estate, exert a positive and statistically significant effect on growth. As for the other variables in Columns 2, 3 and

Table 3

FDI inflows and economic growth: Total FDI inflows and FDI inflows across sectors

	FDI inflows – Total and by sector			
	(1)	(2)	(3)	(4)
Variables	Total	C	G	L
FDI (% of GDP)	0.240*	0.753***	0.660**	1.210***
	(0.129)	(0.232)	(0.282)	(0.456)
Human capital	12.085***	12.969***	14.724***	15.335***
	(4.198)	(2.908)	(3.429)	(3.042)
KOF	-0.457***	-0.464***	-0.448**	-0.491**
	(0.162)	(0.136)	(0.195)	(0.198)
Government (% of GDP)	-1.230***	-1.101***	-1.164***	-1.158***
	(0.144)	(0.153)	(0.167)	(0.173)
Investment (% of GDP)	0.117	0.153*	0.101	0.130
	(0.083)	(0.083)	(0.098)	(0.083)
Observations	90	90	90	90
Number of countries	10	10	10	10
R-squared	0.533	0.555	0.513	0.531
Hausman test (test statistic and p value)	27.33 (0.00)	32.45 (0.00)	25.97 (0.00)	28.97 (0.00)
	Fixed effects	Fixed effects	Fixed effects	Fixed effects

White standard errors in parentheses; *** significance 1%, ** significance 5%, * significance 10%

Source: Own research

4 they remain the same as in Column 1 (the model with the total FDI inflows) with one exception being related to investment turning statistically significant at the 10% level in sector C (Manufacturing).

As suggested previously, in this paper we take advantage of the FDI inflows data reported across different sectors and subsectors to investigate the effects of the sectoral FDI inflows on economic growth. In this sense the WiiW data is particularly handy and allows econometric investigations which are usually not conducted in empirical investigations. A particular advantage for investigation in this paper arises from the WiiW FDI inflows data being disaggregated across the subsectors within the manufacturing sector. This is important as the FDI inflows in this sector were found to exert a positive and statistically significant effect on growth (as reported in Table 3). Moreover, our review of previous literature identified manufacturing as a sector in which FDI inflows were found to have a positive and statistically significant effect. Unfortunately, it is only the manufacturing sector that has the FDI inflows data disaggregated across subsectors in the WiiW FDI database. Consequently, our subsequent investigation of the effects of FDI inflows across subsectors can only be conducted for manufacturing. Across the other sectors (Wholesale and retail trade and Real estate) in which the FDI inflows were found to have a significant and positive effect, this further investigation is not possible. This, however, should not be seen as a major disadvantage as disaggregation across subsectors in Wholesale and retail trade and Real estate is nowhere near as meaningful as in Manufacturing.

In Table 4 below, we report the subsectors for which the FDI inflows data is reported and we use this data to test econometrically the effects of FDI inflows in these subsectors on economic growth in our sample of countries.

Table 5 reports the results of our econometric estimations across the subsectors in Manufacturing. In Table 5 in Column 1 we report (repeat) the results related to the effects of FDI inflows in sector Manufacturing (previously reported in Column 2 in Table 3) to allow comparison with the results across subsectors. Table 4 listed 13 subsectors across which we have the FDI inflows data available. In Table 5, however, we report only those subsectors in which the effects of FDI inflows were found to be statistically significant. Our investigation thus identified six subsectors (out of 13) within Manufacturing in which FDI inflows were found to have a statistically significant effect on growth. In all six subsectors the effects were estimated to be positive. These six subsectors are as follows: Wood and paper products and printing (CC) – Column 2; Chemicals and chemical products (CE) – Column 3; Basic metals, fabricated metal products, ex machinery & equipment (CH) – Column 4; Computer, electronic, optical products (CI) – Column 5; Electrical equipment (CJ) – Column 6; Other manufacturing, repair, install of machinery & equipment (CM) – Column 7. As for the other determinants of economic growth the general findings reported in Table 3 are confirmed here in Table 5 with the same variables being statistically significant and with the same signs as before. Additionally, investment is now found to be statistically significant on more occasions.

Table 4

WiiW FDI data (subsectors of Manufacturing)

Classification	Digit	Industry/Product
NACE Rev. 2	NACE 2-letter – Manufacturing	CA Food products, beverages and tobacco products
NACE Rev. 2	NACE 2-letter – Manufacturing	CB Textiles, apparel, leather, related products
NACE Rev. 2	NACE 2-letter – Manufacturing	CC Wood and paper products and printing
NACE Rev. 2	NACE 2-letter – Manufacturing	CD Coke and refined petroleum products
NACE Rev. 2	NACE 2-letter – Manufacturing	CE Chemicals and chemical products
NACE Rev. 2	NACE 2-letter – Manufacturing	CF Pharmaceuticals, medicinal chemical & botanical products
NACE Rev. 2	NACE 2-letter – Manufacturing	CG Rubber, plastics, other non-metall. mineral products
NACE Rev. 2	NACE 2-letter – Manufacturing	CH Basic metals, fabricated metal products, ex machinery & equipment
NACE Rev. 2	NACE 2-letter – Manufacturing	CI Computer, electronic, optical products
NACE Rev. 2	NACE 2-letter – Manufacturing	CJ Electrical equipment
NACE Rev. 2	NACE 2-letter – Manufacturing	CK Machinery and equipment n.e.c.
NACE Rev. 2	NACE 2-letter – Manufacturing	CL Transport equipment
NACE Rev. 2	NACE 2-letter - Manufacturing	CM Other manufacturing, repair, install of machinery & equipment

Source: WiiW FDI database

Table 5

FDI inflows and economic growth: FDI inflows in manufacturing and subsectors of manufacturing

	FDI inflows – Manufacturing and subsectors of Manufacturing						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables	C	CC	CE	CH	CI	CJ	CM
FDI (% of GDP)	0.753***	4.760***	2.050***	1.914***	5.801***	3.130*	3.905**
	(0.232)	(1.784)	(0.649)	(0.541)	(1.170)	(1.724)	(1.806)
Human capital	12.969***	14.262***	16.386***	13.039***	14.574***	15.548***	15.329***
	(2.908)	(2.851)	(2.967)	(3.421)	(3.009)	(3.680)	(3.584)
KOF	-0.464***	-0.514**	-0.513***	-0.405***	-0.469***	-0.236	-0.586**
	(0.136)	(0.199)	(0.185)	(0.131)	(0.209)	(0.164)	(0.224)
Government (% of GDP)	-1.101***	-1.159***	-1.119***	-1.061***	-1.120***	-1.405***	-1.090***
	(0.153)	(0.184)	(0.171)	(0.118)	(0.112)	(0.361)	(0.246)
Investment (% of GDP)	0.153*	0.185**	0.134	0.162*	0.030	0.005	0.210***
	(0.083)	(0.076)	(0.102)	(0.090)	(0.099)	(0.117)	(0.050)
Observations	90	89	71	89	89	51	69
Number of countries	10	10	8	10	10	7	9
R-squared	0.555	0.536	0.602	0.535	0.598	0.612	0.591
Hausman test (test statistic and p value)	32.45 (0.00)	31.38 (0.00)	27.72 (0.00)	23.19 (0.00)	23.45 (0.00)	12.39 (0.03)	21.82 (0.00)
	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects

White standard errors in parentheses; *** significance 1%, ** significance 5%, * significance 10%

Source: Own research

In the rest of this section we conduct a robustness check of our results. We thus estimate our models across sectors and subsectors but without investment included in the model. In Section 2 capital formation was identified as an important determinant of economic growth. As capital formation might be coming from both domestic and foreign sources, we excluded the domestic component to test whether the effect of FDI inflows remains the same. These results are reported in Table 6 below.

Table 6 reports the robustness check with the model being estimated without investment included. Interestingly, this exercise resulted in practically the same results as in our previous estimations. The statistically significant and positive impact of FDI inflows on economic growth was identified in the same categories as before (total FDI inflows – Column 1 in Table 6, FDI inflows in sectors C, G and L – Columns 2, 3 and 4 in Table 6, and FDI inflows in subsectors – CC, CE, CH, CI, CJ and CM – Columns 5-10 respectively in Table 6). Regarding the other variables across estimated models, in general it can be observed that the same general results concerning the statistical significance and signs are identified.

Admittedly, the finding that only 3 (Manufacturing; Wholesale and retail trade and Real estate) out of 19 main sectors are FDI-driven may be a bit unexpected. However, it is these three sectors, together with the financial sector, that typically receive most of the FDI inflows. We also expected to find the FDI inflows in Financial and insurance activities to be significant, but this was not supported by our econometric estimations. As for the manufacturing subsectors, we find 6 out of 13 to be FDI-significant further confirming the importance of the FDI inflows in the manufacturing sector.

Taken together our results provide empirical support to the importance of FDI inflows on economic growth in the group of 10 ex-socialist countries in the post global financial crisis period. The effect of FDI inflows appears to be statistically significant and positive, and robust. This in particular holds for the total FDI inflows, and within it for the FDI inflows in the manufacturing sector. The same can be concluded for the impact of FDI inflows on economic growth for several subsectors within the sector of manufacturing. These findings have also important policy recommendations pointing towards which sectors

(subsectors) should be in the focus of policy makers when attempting to attract the FDI inflows.

Conclusion

This paper investigated the impact of FDI on economic growth in a sample of 10 ex-socialist European and Asian countries. The paper contributes to empirical literature by econometrically investigating the effects of FDI inflows in specific sectors using the panel data estimation techniques. In addition to confirming the positive impact of total FDI inflows on economic growth, the paper finds significant effects of FDI inflows in manufacturing on economic growth, whereas FDI inflows in other sectors are only sporadically statistically significant. This finding conforms well to previous studies using the sectoral approach. The finding on the importance of FDI inflows in manufacturing motivated further investigation of the importance of specific subsectors (NACE 2-letter classification) within manufacturing. The empirical investigation at the subsector level found that not all FDI inflows within manufacturing enhance economic growth. Econometric results showed that among 13 subsectors FDI inflows only in Wood and paper products and printing (CC); Chemicals and chemical products (CE); Computer, electronic, optical products (CI); Basic metals, fabricated metal products, ex machinery & equipment (CH); Electrical equipment (CJ) and Other manufacturing, repair, install of machinery & equipment (CM) are statistically significant and positive.

Our findings highlight the need for policy makers to evaluate benefits of FDI from a sectoral perspective, and adopt policies that will attract more inflows of FDI in the above-mentioned manufacturing sectors. A wide array of policies could be used, such as lowering taxes and/or unit labour costs in those sectors; increasing research and development in those sectors through subsidies, as well as providing sector specific incentives to increase the share of higher educated workers (which is, admittedly, relatively low in our sample of countries compared to, say, USA), reducing barriers to FDI via investment agreements etc. Of course, country-specific differences and restrictions should be considered when applying various FDI related policies. In particular, the budgetary limitations of policy changes should be considered, and these could potentially be significant.

Admittedly, while the empirical investigation in this paper fills in some of the identified gaps in the empirical literature, especially regarding the importance of sectoral FDI inflows for economic growth, there are limitations in the present study that should be addressed in future studies of this sort. As the present study focused on the particular region,

Table 6

FDI inflows and economic growth: FDI inflows in manufacturing and subsectors of manufacturing – robustness test (model without investment)

	FDI inflows – Total, Manufacturing, Real estate, subsectors of manufacturing									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	Total	C	G	L	CC	CE	CH	CI	CJ	CM
FDI (% of GDP)	0.247*	0.742***	0.731**	1.227***	4.324**	2.176***	1.842***	5.874***	3.161**	3.165**
	(0.130)	(0.246)	(0.281)	(0.446)	(1.767)	(0.565)	(0.522)	(1.053)	(1.410)	(1.837)
Human capital	12.432***	13.543***	15.093***	15.814***	14.951***	16.895***	13.669***	14.669***	15.562***	15.736***
	(4.217)	(3.015)	(3.308)	(2.888)	(2.856)	(2.872)	(3.347)	(2.855)	(3.813)	(3.566)
KOF	-0.453***	-0.460***	-0.443**	-0.487**	-0.504***	-0.523***	-0.403***	-0.468**	-0.237	-0.569**
	(0.165)	(0.143)	(0.196)	(0.203)	(0.208)	(0.192)	(0.139)	(0.209)	(0.164)	(0.230)
Government (% of GDP)	-1.235***	-1.105 ***	-1.166***	-1.160***	-1.164***	-1.123***	-1.067***	-1.120***	-1.406***	-1.146***
	(0.149)	(0.146)	(0.171)	(0.177)	(0.178)	(0.175)	(0.118)	(0.111)	(0.347)	(0.259)
Observations	90	90	90	90	89	71	89	89	51	69
Number of countries	10	10	10	10	10	8	10	10	7	9
R-squared	0.528	0.546	0.509	0.524	0.523	0.595	0.525	0.598	0.612	0.576
Hausman test (test statistic and p value)	23.98 (0.00) Fixed effects	28.25 (0.00) Fixed effects	23.36 (0.00) Fixed effects	25.08 (0.00) Fixed effects	28.41 (0.00) Fixed effects	20.04 (0.00) Fixed effects	20.87 (0.00) Fixed effects	23.69 (0.00) Fixed effects	8.11 (0.09) Fixed effects	19.80 (0.00) Fixed effects

White standard errors in parentheses; *** significance 1%, ** significance 5%, * significance 10%

Source: Own research

the sample of countries should be broadened which would allow more internationally relevant evidence with possibly stronger policy implications. In addition, longer time periods might result in more reliable findings. Notwithstanding these limitations, this study provides interesting and important findings suggesting that the sectoral perspective is very important when investigating the FDI – economic growth relationship.

References

Agbloyor, E.K., Gyeke-Dako, A., Kuipo, R., & Abor, J.Y. (2016). Foreign direct investment and economic growth in SSA: the role of institutions. *Thunderbird International Business Review, 58*(5), 479-497. DOI: https://doi.org/10.1002/tie.21791

Alfaro, L. (2003). *Foreign Direct Investment and Growth: Does the Sector Matter?* Harvard Business School mimeo, available at: https://www.researchgate.net/publication/228966060_Foreign_Direct_Investment_and_Growth_does_the_sector_matter

Alfaro, L., & Charlton, A. (2013). Growth and the Quality of Foreign Direct Investment: Is All FDI Equal? In J.E. Stiglitz, & J.L. Yifu, (Eds), *The Industrial Policy Revolution I: The Role of Government Beyond Ideology*. IEA Conference Volume no. 151-1. London: Palgrave Macmillan. DOI: https://doi.org/10.1057/9781137335173.0020

Ali, H., & Asgher, M. T. (2016). The Role of the Sectoral Composition of Foreign Direct Investment on Economic Growth: A Policy Proposal for CPEC and Regional Partners. *The Pakistan Development Review*, 2016, Papers and Proceedings: The 32nd Conference of the Pakistan Society of Development Economists, December 13 - 15, 2016, Islamabad (2016), 89-103.

Alvarado, R., Iñiguez, M., & Ponce, P. (2017). Foreign direct investment and economic growth in Latin America. *Economic Analysis and Policy*, 56, 176-187. DOI: https://doi.org/10.1016/j.eap.2017.09.006

Aykut, D., & Sayek, S. (2007). The Role of the Sectoral Composition of Foreign Investment on Growth. In L. Piscitello & G. Santangelo, (Eds.), *Do Multinationals Feed Local Development and Growth?* Amsterdam, Boston: Elsevier.

Baharumshah, A.Z., Slesman, L., & Devadason, E.S. (2017). Types of foreign capital inflows and economic growth: new evidence on role of financial markets. *Journal of International Development, 29*(6), 768-789. DOI: https://doi.org/10.1002/jid.3093

Carbonell, J.B., & Werner, R.A. (2018). Does foreign direct investment generate economic growth? A new empirical approach applied to Spain. *Economic Geography, 94*(4), 425-456. DOI: https://doi.org/10.1080/00130095.2017.1393312

Cipollina, M., Giovannetti, G., Pietrovito, F., & Pozzolo, A. (2012). FDI and growth: What cross-country industry data say? *The World Economy, 35*(11), 1599–1629. DOI: https://doi.org/10.1111/j.1467-9701.2012.01478.x

Durlauf, S.N., Kourtellos, A., & Tan, C.M. (2008). Are Any Growth Theories Robust? *Economic Journal, 118*(527), 329–46. DOI: https://doi.org/10.1111/j.1468-0297.2007.02123.x

Feenstra, R.C., Inclaar, R., & Timmer, M.P. (2015). The Next Generation of the Penn World Table. *American Economic Review, 105*(10), 3150-3182. DOI: https://doi.org/10.1257/aer.20130954

Grilli, V., & Milesi-Ferretti, G. M. (1995). Economic Effects and Structural Determinants of Capital Controls. *IMF Staff Papers 42*, 517–551. DOI: https://doi.org/10.2307/3867531

Gygli, S., Haelg, F., & Sturm, J. (2019). The KOF Globalisation Index – Revisited. *The Review of International Organizations, 14*, 543-574. DOI: https://doi.org/10.1007/s11558-019-09344-2

Herzer, D. (2012). How does foreign direct investment really affect developing countries' growth? *Review of International Economics, 20*(2), 396-414. DOI: https://doi.org/10.1111/j.1467-9396.2012.01029.x

Hirschman, A. (1958). *The strategy of economic development*. New Haven, CT: Yale University Press.

Ingham, H., Read, R., & Elkomy, S. (2020). Aggregate and Heterogeneous Sectoral Growth Effects of Foreign Direct Investment in Egypt. *Review of Development Economics, 24*(4), 1511-1528. DOI: https://doi.org/10.1111/rode.12698

Iram, S., & Nishat, M. (2009). Sector Level Analysis of FDI-Growth Nexus: A Case Study of Pakistan. *The Pakistan Development Review*, Winter 2009, 48(4), Papers and Proceedings PARTS I and II The Silver Jubilee Annual General Meeting and Conference of the Pakistan Society of Development Economists Islamabad, March 16-18, 2010 (Winter 2009), 875-882.

Khaliq, A. & Noy, I. (2007). *Foreign Direct Investment and Economic Growth: Empirical Evidence from Sectoral Data in Indonesia*. No. 200726, Working Papers, University of Hawaii at Manoa, Department of Economics.

Kinoshita, Y. (2011). Sectoral Composition of Foreign Direct Investment and External Vulnerability in Eastern Europe. *IMF Working Papers No. 2011/123*. Washington: International Monetary Fund. DOI: https://doi.org/10.5089/9781455263400.001

Kraay, A. (1998). In Search of the Macroeconomic Effects of Capital Account Liberalization, unpublished, The World Bank, discussed in: Edison et al. (2002). Capital Account Liberalization and Economic Performance: Survey and Synthesis, *IMF Working Paper No. 2002/120*. Washington: International Monetary Fund. DOI: https://doi.org/10.5089/9781451854282.001

Mahmoodi, M., & Mahmoodi, E. (2016). Foreign direct investment, exports and economic growth: evidence from two panels of developing countries. *Economic Research-Ekonomska Istraživanja, 29*(1), 938-949. DOI: https://doi.org/10.1080/1331677X.2016.1164922

Mankiw, G., Romer, D., & Weil, D. (1992). A Contribution to the Empirics of Economic Growth. *The Quarterly Journal of Economics, 107*(2), 407-437. DOI: https://doi.org/10.2307/2118477

Mencinger, J. (2009). The "Addiction" with FDI and Current Account Balance. *Ekonomski horizonti, 11*(2), 5-17.

Miteski, M., & Stefanova, D.J. (2017). The Impact of Sectorial FDI on Economic Growth in Central, Eastern and Southeastern Europe, Working Paper, No. 1/2017, National Bank of the Republic of Macedonia, Skopje.

Mitra, P. (2011). Capital Flows to EU New Member States: Does Sector Destination Matter? *IMF Working Paper No. 11/67*. Washington: International Monetary Fund. DOI: https://doi.org/10.5089/9781455228034.001

Pečarić, M., Kusanović, T., & Jakovac, P. (2021). The Determinants of FDI Sectoral Structure in the Central and East European EU Countries. *Economies, 9*(66), 1-16. DOI: https://doi.org/10.3390/economies9020066

Riedl, A. (2008). *Contrasting the Dynamic Patterns of Manufacturing and Service FDI: Evidence from Transition Economies*. Working Papers No. 117. Vienna: Vienna University of Economics and Business, Department of Economics.

Rodrik, D. (1998). Who Needs Capital-Account Convertibility. In: P. Kenen, (Ed). *Should the IMF Pursue Capital Account Convertibility?* Essays in International Finance 207, Princeton University Press.

Singer, H. (1950). The distribution of gains between investing and borrowing countries. *American Economic Review, 40*(2), 473–485.

Solow, R. (1956). A Contribution to the Theory of Economic Growth. Quar*terly Journal of Economics, 70*(1), 65-94. DOI: https://doi.org/10.2307/1884513

Vu, T.B., & Noy, I. (2009). Sectoral analysis of foreign direct investment and growth in the developed countries. *Journal of International Financial Markets, Institutions and Money, 19*(2), 402-413. DOI: https://doi.org/10.1016/j.intfin.2008.04.002

WiiW - Vienna Institute for International Economic Studies (Wiener Institut für Internationale Wirtschaftsvergleiche – WiiW) available at: https://wiiw.ac.at/

Walsh, J.P., & Jiangyan, Y. (2010). *Determinants of Foreign Direct Investment: A Sectoral and Institutional Approach*. IMF Working Paper No. 10/187. Washington: International Monetary Fund. DOI: https://doi.org/10.5089/9781455202218.001

Wang, M. (2009). Manufacturing FDI and Economic Growth: Evidence from Asian Economies. *Applied Economics, 41*(8), 991-1002. DOI: https://doi.org/10.1080/00036840601019059

Neposredne tuje naložbe in gospodarska rast: novi pogled s sektorske perspektive

Izvleček

Ta članek raziskuje vpliv neposrednih tujih naložb na gospodarsko rast na vzorcu desetih nekdanjih socialističnih evropskih in azijskih držav. Medtem ko je bila povezava med neposrednimi tujimi naložbami in gospodarsko rastjo obsežno raziskana v empirični literaturi, ta članek prispeva k tej literaturi z ekonometričnim raziskovanjem učinkov priliva neposrednih tujih naložb v posamezne sektorje z uporabo tehnik ocenjevanja panelnih podatkov. Poleg potrditve pozitivnega vpliva skupnih prilivov neposrednih tujih naložb na rast je z uporabo podatkovne baze neposrednih tujih naložb WiiW (Dunajski inštitut za mednarodne ekonomske študije), ki razčlenjuje podatke o neposrednih tujih naložbah po različnih panogah, v članku ugotovljen pomemben vpliv prilivov neposrednih tujih naložb v predelovalni industriji na gospodarsko rast, medtem ko so prilivi neposrednih tujih naložb v drugih sektorjih le občasno statistično značilni. Ta ugotovitev služi kot podlaga za nadaljnje raziskovanje posameznih podsektorjev (dvočrkovna klasifikacija NACE) v predelovalnih dejavnostih, empirična raziskava pa ugotavlja, da vsi prilivi neposrednih tujih naložb v predelovalnih dejavnostih ne povečujejo gospodarske rasti.

Ključne besede: gospodarska rast, sektorski podatki, proizvodnja