FDI inflows, human development and export upgrading: evidence from EU transition economies

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Abstract

The increased movements of goods and services across international borders has generated a vivid academic debate regarding the consequences of foreign direct investment and human development on the terms of trade and economic growth. In this context, the developing states have received particular attention. Yet, the findings differ depending on the selected countries, variables and used methodology. Therefore, to bring more light on the existing literature, the aim of this study is to investigate the impact of FDI inflows and human development on the export upgrading in the EU transition economies during the period 1995-2014. The empirical analyses revealed that, generally, the human development positively influenced the export upgrading in the long term, but the FDI inflows had a significant impact on the export upgrading in only a few countries included in the sample. However, the impact was relatively lower than the human development and its direction varied between the states.

Keywords: FDI inflows, human development, export upgrading, EU transition economies

Introduction

One of the major macroeconomic consequences of globalization was the rapid rise in the international trade flows. The benefits of the increased movements of goods and services across international borders were reflected in the fast and sustained economic growth, especially in the developing countries. In this context, a vivid academic debate regarding the type and quality of exports has emerged (Lin, 2011; Lederman and Maloney, 2012). Some studies emphasized the impact of foreign direct investment (FDI) on the export value. While a part of the researchers

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argued that FDI has facilitated the transfer of productivity-enhancing techniques and knowledge from industrialized to developing nations (Hoekman and Javorcik, 2006; Moran, 2011), others mentioned that, in certain economies, foreign investors have lowered the terms of trade (Li *et al.,* 2007). For example, while Harding and Javorcik (2011) mentioned the fact that the transfer will be negatively impacted by the pricing power of multinationals, Darity Jr. (1990) underlined that the terms of trade might be negatively influenced on the long term by the FDI's effects on the aggregate marginal product of capital.

This subject is still under discussion even nowadays because it is considered, especially in the case of the developing states, that the long-term economic growth largely depends not on how much it is exported, but on what is exported. Several studies put a great emphasis on the positive consequences of trade, underlying that the benefits are derived from the increase in the amount of new products (Amiti and Freund, 2010), especially those located at the higher end of the quality spectrum (Hausmann *et al.*, 2007). Such products have become an important driving force in enhancing global trade quality (Broda and Weinstein, 2006). Since many of the higher-value manufactured exports were among the top 10 exported goods in 2014 in Thailand, Wacker *et al.* (2016) considered that FDI helped this country upgrade the export's portfolio. The same idea is supported by Nguyen (2013) who added that, in the case of Thailand and, subsequently, in Indonesia and Vietnam, the Japanese FDI inflows had a large contribution, being export oriented and clustered in the electronics value chain. Yet, Zhang and Xing (2018) support the idea that, due to the weak innovation ability, developing countries have an inappropriate industrial structure. Therefore, in the case of the sample investigated by them, the high volume of exports is accompanied by low quality products, leading to the so-called 'low-end locking dilemma' (Zhang and Xing, 2019). Since higher quality products require more highly skilled workers in the production process, one possible explanation could be related to the fact that developing states specialize in less skills-intensive products due to abilities' shortage (Hausmann *et al.*, 2007). Another possible explanation can be found in the fact that the intellectual property rights protection mediates the relationship between FDI and the quality of exports. Since the system aimed at protecting the intellectual property rights is poor in the developing states, the uncertain business environment may discourage the investors that might become reluctant to taking risky decisions (Zhang and Yang, 2016). Despite this view, several other approaches underlined a U shape relationship between property rights' protection and export quality (Ma and Li, 2015). Meanwhile, other researchers noticed that the property rights protection has no significant impact on trade (Zheng, 2010).

Taking into account all these aspects, we do consider relevant to investigate the impact of FDI inflows and human development on the export upgrading in the EU transition economies. Therefore, two specific research objectives can be attributed to our study. The first one consists in analysing the role played by the attracted FDI into the considered states in improving the quality of the exports. The

second specific objective is to identify whether human development has a significant contribution to the improvements of the exported goods and services, in the analysed countries. Our study focused on the period 1995-2014. Since, to our knowledge, there is no other exhaustive research that investigates the impact of the FDI inflows and human development on the export upgrading in the EU transition economies between 1995 and 2014, our study brings added value not only at the theoretical level, by broadening the existing literature, but also to the business environment, by encouraging policy makers to implement appropriate legislative measures that could enhance FDI inflows.

The paper is structured as follows: a brief presentation of the theoretical aspects is included in section two, part three shows the data and the methodological approach, the results and discussions are presented in section four and the last part concludes.

1. Literature overview

At the beginning of the 21st century, some researchers launched the hypothesis of the 'export-led growth', which claims that the promotion of export is the appropriate way to accelerate economic growth. This argument was used to explain the rapid growth and development of some Asian economies (Hausmann *et al.*, 2007). Yet, authors such as Rodrik (2006) mentioned the importance of export composition for economic growth and development. In this context, those countries that put a greater emphasis on the exportation of more 'sophisticated' goods have the chance to grow and develop faster. In the case of the developing states, the exportation of the sophisticated goods, or the so-called export upgrading, was considered a 'herculean task' (Kollie, 2020) taking into account the required resources, especially human but also financial. Since foreign investments are one of the best options to improve both human and financial resources, it is not surprising to find out that competition among governments to attract FDI inflows has increased during the last three decades (Aranda and Sauvant, 1996; Odhiambo, 2022). Actually, many studies have indicated the positive impact of FDI on the host countries' economic growth, which can be translated into higher levels of total investments, on one side, and technology, knowledge and productivity spillovers, on the other side (Liang *et al.*, 2021; Lin and Zhang, 2019; Muhammad, 2010).

During the last two decades, numerous studies intended to investigate the determinants of export upgrading, but the findings differ depending on the selected countries, variables and used methodology. Yet, it was agreed that there is a strong positive relationship between the quality of exports, on one side, and the economic growth, measured through per capita income, and development of a country, analysed from human capital's perspective, on the other side (Minondo, 2010; Xu, 2010). Moreover, other empirical results suggest that the level of human capital, the type of FDI inflows and the existence of the export processing zones are directly linked to the quality of the exports (Harding and Javorcik, 2012).

The two major theoretical attempts to explain the determinants of foreign investments refer to the neoclassical trade theory and to the internalization theory. The first one was introduced in the 1960s and was based on the Heckscher-Ohlin trade model, which explained the reasons behind investors who operate production chains abroad, but export products back to their home country (Phung, 2016). Taking into account the Heckscher-Ohlin theory, researchers pointed out that a country's factor endowments influence the relative costs of production and, thus, the specialization and structure of its exports. Since developing states, such as China or India, have an abundant labour force, they are more likely to produce and export labour-intensive goods. The same happens in Pakistan or Bangladesh, which have managed to obtain only modest market shares at the exports in low-skill textile manufacturing (Wacker *et al.,* 2016). The developed states that are endowed with knowledge capital are able to trade technology-intensive products (Schott, 2008). Meanwhile, other countries, which have understood the importance of increasing the human capital stock through education at early stages of the development process (Borensztein *et al.*, 1998), attained considerable market shares at the exports in higher-skill products. It is the case of Malaysia that nowadays is one of the largest exporters of electronics and other knowledge intensive goods (Wacker *et al.*, 2016).

The internalization theory was introduced by Buckley and Casson (1976) and suggests that, as an alternative to outsourcing different parts of the production stages, internalizing these processes may be the least costly way for the multinational corporations to benefit from a foreign market. Dunning (1977) combined the two theories, neoclassical trade theory and internalization theory, into the eclectic paradigm according to which one can analyse the reasons behind foreign investments: ownership, location and internalization. More recent approaches mention that the main economic determinants of the FDI inflows into a host country are related to resource-seeking, market-seeking FDI or to efficiency-seeking (Nunnenkamp, 2001).

Regarded from the investments' perspective, some studies underlined that the human capital stock influences the type of FDI inflows: vertical or horizontal. When the foreign investors come from developed states, with a high level of human capital, and the host economy is a less developed one, with lower endowment in skilled labour force, then the horizontal FDI might be reduced (Blonigen *et al.*, 2003) and the vertical FDI increases (Davies, 2008). Wacker *et al.* (2016) offer the example of the South Asian states that have low levels of human capital and are more attractive for the vertical FDI than for the horizontal ones. In the case of vertical FDI, which involve more intermediary products, Zhang and Markusen (1999) indicated that the production process might be geographically fragmented if the countries differ from the points of view of prices and endowment with factors of production. However, it is considered that when the intermediary goods produced in the host state are exported in the origin country of the multinational company, FDI has a direct positive impact on the local economy (Markusen, 2002).

Some researchers consider that the direct and indirect effects of FDI on the host country's exports depend on micro and macroeconomic elements, such as technological and human capital stock of the local producers (Girma *et al.,* 2007), competition in the domestic markets and government policies regarding trade facilities (Barry and Bradley, 1997). Yet, the presence of a multinational firm may increase the intensity of the competition in that sector, an aspect that has both positive and negative consequences on local players. Apart from enhancing the national firms to improve the quality of their products and innovate more, foreign investors might have a negative impact on exports, when the loss of exports of the domestic companies is not compensated by the exports of the multinational's subsidiary (Barrios *et al.*, 2005). There are also cases in which FDI attracted into a non-exporting sector may improve the performances of the domestic exporters if the foreign companies sell intermediary goods to the local firms, process known as forward linkages (Kutan and Vukšić, 2007). Another positive consequence may occur if the foreign investor facilitates the access to the export markets for the domestic producers, by lobbying for favourable treatment of exports from the host economy into their home economies (UNCTAD, 1999). An example is brought by Aitken *et al.* (1997) on the case of 2104 Mexican manufacturing plants. They noticed that, during 1986-1990, the presence of the exporting multinationals in Mexico reduced the costs of exporting for local firms.

Other studies agree with the idea according to which the competitive assets of multinational companies make them more productive than domestic firms, thus having a positive impact on the host economy's exports (Helpman *et al.*, 2004). All these assets that include innovative products, human capital of employees and patents (Girma *et al.*, 2007) have a positive indirect effect on the domestic firms from the host country. Thus, by copying the operations of the foreign producers or by attracting workers trained in multinational firms, local companies may also contribute to the increase of exports' competitiveness (Fan, 2002). Yet, Khandelwal (2010) argues that exports' quality upgrading is not the same thing as exporting products that require more technology. Hwang (2007) considers that the less developed states focused only on the last aspects, their products lacking quality. Or, to obtain sustained economic growth, it is mandatory to export higher quality products (Hallack, 2006). Harding and Javorcik (2012), analysing 105 states, conclude that attracting foreign investors may represent a good start for raising the quality of exports in the developing countries, since FDI offer the potential for quality upgrading. However, Khandelwal (2010) found that this depends on the type of goods, being higher in manufactures than in agricultural products and natural resources.

From a similar perspective, it was viewed that imports matter for export upgrading, because the knowledge embedded in imported goods offers learning opportunities (Schiff and Wang, 2006). Therefore, the openness to trade is the most accessible tool for knowledge and technology acquisition (Grossman and Helpman, 1991). Consequently, trade restrictions involve, apart from the monetary costs, an

efficiency loss due to the foregone opportunity to benefit from new goods (Romer, 1994). Imported goods, which are different from the local ones, also offer new production ideas to local companies that can subsequently export a larger variety of sophisticated products (Frenken *et al.*, 2007). Apart from this direct effect of FDI, the foreign investors may also have an indirect impact on the host country's exports, by bringing new ideas and best practices (Moran, 2011). The spillover impact of FDI on domestic firms' level of innovation could be divided into horizontal and vertical spillovers (Truong and Dong, 2021). The horizontal effect indicates the extent to which the foreign investment in the same industry enhances the productivity of the domestic firms that, via learning-by-observation, will be able to produce more complicated goods. Meanwhile, the local companies can benefit from developed technologies and new managerial skills by hiring workers who were initially trained in the foreign firms (Tran *et al.*, 2020). The vertical spillovers measure the positive consequences on the domestic suppliers or customers generated by the presence of foreign companies, such as enhancing the production capability of the local providers or the participation of the domestic firms in higher global value chains (Wang and Chen, 2020). Swenson (2007) noticed that the multinationals' information spillover might be the main determinant of the increased export connections of the Chinese firms.

2. Data and econometric methodology

The aim of the present study is to investigate the effect of FDI inflows and human development on export upgrading in a sample of 11 EU transition economies. We have chosen these countries because they experienced a significant institutional and economic transformation in the contexts of the transition to a market economy and of the EU membership negotiations. In turn, they attracted the FDI inflows and experienced improvements in human development.

2.1. Data

Developing the comparative advantages of the countries enhances improvements in the quality of goods, which, in a globalized word, leads to an increase in export revenues. Therefore, export upgrading is important for the economic performance of the countries. In the econometric analysis, the export upgrading was represented by the unique export quality index of IMF (2021). The methodology of export quality index based on unit values is a modified version of Hallak's (2006) and included the export quality indicators for over 800 export products (see Henn *et al.*, 2017, for detailed information about the index methodology). Both FDI inflows and human development have potential to foster export upgrading through know-how and technology transfer, and more qualified human capital. Therefore, FDI inflows were proxied by FDI net inflows offered by

World Bank (2021). Human development was proxied by human development index from UNDP (2021) and the index is the geometric mean of normalized indices for long and healthy life, knowledge, and living standard. All the variables were annual and the availability of the export quality data influenced us in choosing the analysed period: 1995-2014, because the export quality data are available only until 2014.

Table 1. Data description

Variables	Description	Source
EXQUAL	Export Quality Index	IMF (2021)
FDI	FDI, net inflows (% of GDP)	World Bank (2021)
HDI	Human development index	UNDP (2021)

Source: Authors' representation

The study sample consisted of Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The econometric analysis was conducted with the help of software packages of Stata 14.0 and Gauss 10.0. The main characteristics of the dataset are shown in Table 2.

Table 2. Summary statistics of the dataset

Variables	Mean	Std. Deviation	Minimum	Maximum
EXQUAL	0.9416472	0.0293901	0.8716448	0.9914038
FDI	5.10368	6.052252	-15.98922	50.50475
HDI	0.7916455	0.0488653	0.673	0.887

Source: Authors' representation

The average of export quality index was about 0.94% in the sample and the standard deviation was 0.02. The average FDI net inflows were about 5.1% of GDP in the sample, but they varied considerably from one country to another. Lastly, average HDI was about 0.79 and did not change considerably between countries.

2.2. Econometric approach

The causality analysis enables us to see the short-run interaction between variables, while the cointegration analysis allows us to analyse the long run interaction among the series. Furthermore, any shock in a country from our sample can also influence the other countries of the sample due to the globalized world (De Hoyos and Sarafidis, 2006). Therefore, using the causality and cointegration tests with cross-sectional dependence enhances the robustness of the findings. In this context, Westerlund and Edgerton (2007) bootstrap cointegration test and Kónya (2006) bootstrap causality test were utilized to analyse the short-run and long-run interaction between FDI inflows, human development and export upgrading.

The Westerlund and Edgerton (2007) LM bootstrap cointegration test is based on the McCoskey and Kao (1998) LM test and regards both cross-sectional dependence and heterogeneity. Furthermore, the test produces robust results for small samples. The cointegration test statistic is:

$$LM_N^+ = \frac{1}{NT^2} \sum_{i=1}^{N} \sum_{t=1}^{T} \widehat{w}_i^{-2} s_{it}^2 \qquad (1)$$

The s_{it} term in the above-mentioned equation represents the partial sum of error terms, while $\widehat{w}_i^{-2}$ is the long-run variance. Both terms are derived from the cointegration model estimated by a full, modified ordinary least squares method. For the test involving LM_N^+, critical values, bootstrapping should be employed in the event of a cross-sectional dependence among the series.

Finally, the country-level reciprocal interaction among FDI inflows, human development, and export upgrading was analysed with bootstrap Granger causality test of Kónya (2006) regarding both cross-sectional dependency and heterogeneity. Furthermore, the test is based on the Wald test with country-specific bootstrap critical values, so it does not require the joint hypothesis for all members of a panel. Lastly, it does not need any pre-testing and, in turn, it is not exposed to the weaknesses resulting from the pre-tests.

3. Results and discussions

The specification of cross-sectional dependence and heterogeneity's presence among the cross-sections is very important for choosing the correct econometric tests of unit root, cointegration and causality tests. For this reason, Breusch and Pagan's (1980) LM test, Pesaran's (2004) LM CD test and the $LM_{adj.}$ test of Pesaran *et al.* (2008) was used to test the cross-section dependence, taking into consideration the dataset characteristics. The test results presented in Table 3 reveal the presence of a cross-sectional dependence among the series. As a result, second-generation unit root and cointegration tests would be utilized to check for the existence of the unit root and cointegration relations.

Table 3. Cross-sectional dependency tests' results[*]

Test	Test statistic	Prob. value
LM	388.1	0.0000
LM adj*	71.17	0.0000
LM CD*	18.82	0.0080

Note: [*]two-sided test.
Source: Authors' representation

Afterwards, the cointegration coefficients' homogeneity was checked by using the homogeneity tests of Pesaran and Yamagata (2008). The test results are shown in Table 4. The null hypothesis in favour of homogeneity was rejected and, thus, the cointegration coefficients were revealed as heterogeneous.

Table 4. Homogeneity tests' results

Test	Test statistic	Prob.
$\tilde{\Delta}$	7.739	0.000
$\tilde{\Delta}_{adj.}$	8.601	0.000

Source: Authors' representation

The presence of a unit root in the panel data was checked with the CIPS (Cross-Sectional IPS (cf. Im-Pesaran-Shin, 2003)) unit root test of Pesaran (2007) by taking into account the presence of cross-sectional dependence. The test consequences are shown in Table 5. They reveal that all the series had unit root at their level, but they prove to be stationary after first-differencing.

Table 5. Westerlund and Edgerton (2007) LM bootstrap cointegration test

LM_N^+	Constant			Constant and Trend		
	Test statistic	Asymptotic p-value	Bootstrap p-value	Test statistic	Asymptotic p-value	Bootstrap p-value
	Test statistic	Asymptotic p-value	Bootstrap p-value	Test statistic	Asymptotic p-value	Bootstrap p-value

Source: Authors' representation

The cointegration coefficients were determined with the help of the AMG (augmented mean group) estimator of Eberhardt and Teal (2010), by taking into account the heterogeneity and cross-sectional dependence. The test consequences are shown in Table 6. The panel cointegration coefficients reveal that human development positively affected the export upgrading, but FDI inflows had no significant impacts on the export upgrading.

Moreover, the individual cointegration coefficients revealed that human development positively influenced the export upgrading in most of the countries including Croatia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia, but the size of effect varied among the countries. Furthermore, while FDI inflows positively influenced the export upgrading only in Croatia, they negatively impacted the export upgrading in Hungary and Poland, but the size of effect was too small to be considered. These results differ from the findings of other studies. For example, Lomachynska *et al.* (2020) noticed that the FDI inflow has a positive impact not only on the exports' growth of all the Visegrad Group countries (Poland, Czech

Republic, Slovakia and Hungary), but also on their structure, increasing the share of the capital-intensive engineering products. Jensen (2002) also showed that, in the case of Poland, FDI has positively influenced the technology intensity of exports. Even immediately after the EU adhesion, some of the EU emerging economies, particularly Czech Republic and Latvia, improved the exports quality due to the technologies used by the multinational companies (Harding and Javorcik, 2012).

However, it should be mentioned that the share of medium and high-tech goods in the structure of national production in Poland, but also in Czech Republic, Slovakia or Hungary, is below the EU average. That is why a positive impact of FDI on the structure and dynamics of their international trade can only be achieved if the transition to a knowledge-based economy of the countries will be continued, which might lead to an increase in the share of high-tech industries in the national production.

The positive relationship between both FDI and human development on export upgrading in the case of Croatia can be related to the fact that the FDI inflows into this new EU country created a higher level of competitive advantage, which spread to the local producers, a fact that did not occur in the rest of the analysed states. This allowed Croatian exporters to shift from low technology towards high technology intensive industries. Stojcic and Hashi (2011) showed that, even from the pre-EU adhesion period, Croatia benefited from the technological spillovers generated by the foreign investors. Actually, the resulting technological improvements, together with the high level of human development, which enhanced the innovations, played a key role in raising the relative quality of exports (Stojcic and Hashi, 2011).

Table 6. Estimation of cointegration coefficients

Country	FDI	HDI
Bulgaria	0.0000402	0.1021507
Croatia	0.000954*	0.1220562***
Czech Republic	-0.000356	-0.0083565
Estonia	0.000129	0.2156402***
Hungary	-0.0001599***	0.166787***
Latvia	0.0009522	0.1051936***
Lithuania	0.0000134	0.3899586***
Poland	-0.0013745*	0.3326702***
Romania	-0.0006942	0.5015285
Slovak Republic	0.0001894	0.1653331
Slovenia	0.0005555	0.0891074***
Panel	0.0000226	**0.1983699***

Notes:*, **, *** indicate rejection of the null hypothesis at 1%, 5% and 10% significance levels respectively.
Source: Authors' representation

The causal interaction between export quality, FDI inflows and human development at country level was analysed by using bootstrap panel Granger causality test of Kónya (2006), considering both heterogeneity and cross-sectional dependency. The results are presented in Tables 7, 8 and 9. First of all, the causal relationship between FDI inflows and export upgrading was tested and the results revealed a unilateral causality from FDI inflows to export upgrading in Estonia and Slovakia, and two-way causality between two variables in Bulgaria. These different findings at the level of the entire sample might be explained through the fact that the official statistics on FDI inflows may be misleading. They may include the capital inflows of local owners that want to hide their identity and, for that, the investments are returning back into the country in terms of FDI.

Table 7. Bootstrap panel Granger causality between EXQUAL and FDI*

Countries	H_0: FDI is not cause of EXQUAL		H_0: EXQUAL is not cause of FDI	
	Wald stat.	Bootstrap P Value	Wald stat.	Bootstrap P Value
Bulgaria	**12.044**	**0.059**	**12.749**	**0.018**
Croatia	8.709	0.154	0.012	0.944
Czech Republic	3.991	0.385	7.360	0.199
Estonia	**20.166**	**0.037**	0.005	0.961
Hungary	0.008	0.968	0.242	0.773
Latvia	0.477	0.741	1.873	0.446
Lithuania	3.884	0.574	3.545	0.284
Poland	1.817	0.451	3.731	0.359
Romania	0.001	0.982	1.549	0.331
Slovakia	**20.483**	**0.069**	9.592	0.156
Slovenia	1.666	0.531	3.362	0.414

Note: *Number of bootstrap replications: 10,000.
Source: Authors' representation

Secondly, the causal relationship between human development and export upgrading was analysed and the results revealed a bilateral causality between two series in Bulgaria and a one-way causality from human development to export upgrading only in Estonia and a one-way causality from export quality to human development in Latvia and Romania.

Finally, the causal relationship between human development and FDI inflows were tested and the results revealed no significant short-run connection between FDI inflows and human development in the analysed sample. This finding is not surprising considering the fact that the positive effects of education can be seen especially on the long-run.

Table 8. Bootstrap panel Granger causality between EXQUAL and HDI*

Countries	H_0: HDI is not cause of EXQUAL		H_0: EXQUAL is not cause of HDI	
	Wald stat.	Bootstrap P Value	Wald stat.	Bootstrap P Value
Bulgaria	**20.297**	**0.006**	**5.663**	**0.087**
Croatia	4.269	0.474	0.413	0.668
Czech Republic	2.988	0.171	0.014	0.929
Estonia	**15.417**	**0.086**	0.035	0.903
Hungary	12.691	0.214	2.936	0.261
Latvia	7.873	0.149	**29.324**	**0.020**
Lithuania	6.159	0.791	2.050	0.288
Poland	2.475	0.947	0.248	0.962
Romania	20.376	0.868	**32.627**	**0.018**
Slovakia	18.170	0.142	3.191	0.341
Slovenia	7.951	0.304	10.548	0.126

Note: *Number of bootstrap replications: 10,000.
Source: Authors' representation

Table 9. Bootstrap panel Granger causality between FDI and HDI*

Countries	H_0: HDI is not cause of FDI		H_0: FDI is not cause of HDI	
	Wald stat.	Bootstrap P Value	Wald stat.	Bootstrap P Value
Bulgaria	1.427	0.182	2.311	0.170
Croatia	0.143	0.734	1.066	0.461
Czech Rep.	1.789	0.302	5.436	0.208
Estonia	0.176	0.740	2.277	0.695
Hungary	0.059	0.811	0.015	0.931
Latvia	2.733	0.249	1.973	0.407
Lithuania	5.057	0.106	0.407	0.897
Poland	0.902	0.502	0.004	0.990
Romania	1.376	0.249	16.712	0.298
Slovakia	1.481	0.424	9.208	0.274
Slovenia	0.742	0.539	0.192	0.850

*Number of bootstrap replications: 10,000.
Source: Authors' representation

Many researchers argued, with examples brought from the case of the Asian states, that there is a bilateral causality between FDI and human development in the host countries. Kusago and Tzannatos (1998) noticed, on one side, that better educated individuals were the prime candidates for employment in the export processing zones of countries such as Taiwan, Malaysia or China. On the other side, the educational attainment of workers in these areas has changed dramatically over

time, which is associated with the improvements in school enrolment in the host countries (Kusago and Tzannatos, 1998). Moreover, the foreign investors offered job trainings for the local employees, which also contributed to the increase in the stock of human capital of the host countries.

Our results differ from the findings of other studies. For example, Zhu and Fu (2013) show that the stock of human capital and the R&D investment have a consistent and robust positive impact on export upgrading in high, middle and low income states. However, Harding and Javorcik (2011) found no evidence regarding the similar impact of FDI on export upgrading in the case of the developing and developed states. Pavlinek and Zenka (2011) agree with the fact that the impact of FDI on the export upgrading in the Central Europe largely depends on the type of industry, and that, therefore, generalization is impossible.

Conclusions

As noticed in other studies, FDI inflows can contribute not only to a higher volume of exports, but also to improving their value since multinational companies have better knowledge, superior technology and more connections with the supply chain of the parent firm than the local companies. Meanwhile, the spillover effects generated by the multinationals' activity can have a positive impact on the productivity of domestic firms, not only by improving their technological process and assets, but also by increasing their stock of human capital. Therefore, better trained people, with superior knowledge and abilities, with improved methods of production, can obtain higher quality goods and services, which can upgrade the exports of the FDI host country.

The results of our study conducted on 11 EU transition economies revealed that, while the human development positively influenced the export upgrading in almost all the analysed states, the FDI inflows had an impact only in a few countries, the size of the effect varying between them. Moreover, we found no significant short-run connection between FDI inflows and human development in the analysed sample.

Our results have important implications for the policymakers, not only in the investigated countries, but also in other transition economies. First of all, our results support the idea according to which there is a positive relationship between the level of the skills and abilities of a country and the structure of its exports. Secondly, since our findings showed that FDI had positive effects on the export upgrading, especially in the newer EU members, it may be assumed that the amount of the FDI stock accumulated over time does not have an impact on the exports' quality. These results might be encouraging for the policy makers of the countries that have more recently joined the EU. They can enhance the FDI inflows by designing appropriate measures and policies, such as skills upgrading, tax reforms, financial deepening and investments' promotion.

References

Aitken, B., Hanson, G. and Harrison, A. (1997), Spillovers, Foreign Investment, and Export Behavior, *Journal of International Economics*, 43, pp. 103-132. http://dx.doi.org/10.1016/S0022-1996(96)01464-X

Amiti, M. and Freund, C. (2010), An anatomy of China's export growth, in: Feenstra, R. and Wei, S.J. (eds.), *China's growing role in world trade,* Chicago, USA: University of Chicago Press.

Aranda, V. and Sauvant, K. (1996), *Incentives and Foreign Direct Investment*, UNCTAD, Current Studies, Series A, No. 30, Geneva.

Barry, F. and Bradley, J. (1997), FDI and trade: The Irish host-country experience, *The Economic Journal*, 107(445), pp. 1798-1811. http://dx.doi.org/10.1111/j.1468-0297.1997.tb00083.x

Barrios, S., Gorg, H. and Strobl, E. (2005), Foreign direct investment, competition and industrial development in the host country, *European Economic Review*, 49, pp. 1761-1784. https://doi.org/10.1016/j.euroecorev.2004.05.005

Breusch, T. and Pagan, A.R. (1980), The Lagrange Multiplier Test and Its Applications to Model Specification in Econometrics, *Review of Economic Studies*, 47(1), pp. 239-253. https://doi.org/10.2307/2297111

Blonigen, B.A., Davies, R.B. and Head, K. (2003), Estimating the Knowledge-Capital Model of the Multinational Enterprise: Comment, *American Economic Review*, 93(3), pp. 980-94. https://doi.org/10.1257/000282803322157214

Borensztein, E., De Gregorio, J. and Lee, J.-W. (1998), How Does Foreign Direct Investment Affect Economic Growth?, *Journal of International Economics*, 45(1), pp. 115-135. https://doi.org/10.1016/S0022-1996(97)00033-0

Broda, C. and Weinstein, D.E. (2006), Globalization and the gains from variety, *Quarterly Journal of Economics,* 121(2), pp. 541-585. https://doi.org/10.1162/qjec.2006.121.2.541

Buckley, P. and Casson, M. (1976), *The Future of the Multinational Enterprise*, London: Palgrave Macmillan. https://doi.org/10.1007/978-1-349-02899-3

Darity Jr., W.A. (1990), The Fundamental Determinants of the Terms of Trade Reconsidered: Long-Run and Long-Period Equilibrium, *American Economic Review*, 80(4), pp. 816-827.

Davies, R.B. (2008), Hunting High and Low for Vertical FDI, *Review of International Economics*, 16(2), pp. 250-267. https://doi.org/10.1111/j.1467-9396.2008.00735.x

De Hoyos, R.E. and Sarafidis, V. (2006), Testing for Cross-sectional Dependence in Panel-data Models, *Stata Journal*, 6(4), pp. 482-496. https://doi.org/10.1177/1536867X0600600403

Dunning, J. (1977), Trade, location of economic activity and the MNE: A search for an eclectic approach, in: Ohlin, B., Hesselborn, P.O. and Wijkman, P.M. (eds.), *The International Allocation of Economic Activity*, London: Palgrave Macmillan, pp 395-418. https://doi.org/10.1007/978-1-349-03196-2_38

Eberhardt, M. and Teal, F. (2010), Productivity analysis in global manufacturing production, *Discussion Paper*, 515, Department of Economics, University of Oxford (retrieved from http://www.economics.ox.ac.uk/research/WP/pdf/paper515.pdf).

Fan, E.X. (2002), Technological spillovers from foreign direct investment - A survey, *Asian Development Bank Working Paper*, no. 33. (retrieved from https://www.adb.org/sites/default/files/publication/28326/wp033.pdf).

Frenken, K., Van Oort, F.G. and Verburg, T. (2007), Related variety, unrelated variety and regional economic growth, *Regional Studies*, 41(5), pp. 685-697. https://doi.org/10.1080/00343400601120296

Girma, S., Kneller, R. and Pisu, M. (2007), Do exporters have anything to learn from foreign multinationals?, *European Economic Review*, 51(4), pp. 981-998. https://doi.org/10.1016/j.euroecorev.2006.07.003

Grossman, G.M. and Helpman, E. (1991), Quality Ladders in the Theory of Growth, *NBER Working Paper*, No. 3099.

Hallack, J.C. (2006), Product quality and the direction of trade, *Journal of International Economics*, 68(1), pp. 238-265. https://doi.org/10.1016/j.jinteco.2005.04.001

Harding, T. and Javorcik, B.S. (2011), Roll Out the Red Carpet and They Will Come: Investment Promotion and FDI Inflows, *Economic Journal*, 121(557), pp. 1445-1476. https://doi.org/10.1111/j.1468-0297.2011.02454.x

Harding, T. and Javorcik, B.S. (2012), FDI and export upgrading, *The Review of Economics and Statistics,* 94(4), pp. 964-980. https://doi.org/10.1162/REST_a_00226

Hausmann, R., Hwang, J. and Rodrik, D. (2007), What You Export Matters, *Journal of Economic Growth*, 12(1), pp. 1-25. https://doi.org/10.1007/s10887-006-9009-4

Hausmann, R., Hwang, J. and Rodrik, D. (2007), Introduction of new goods, convergence and growth, *Journal of Economic Growth*, 12(1), pp. 1-25. https://doi.org/10.1007/s10887-006-9009-4

Helpman, E., Melitz, M.J. and Yeaple, S.R. (2004), Export versus FDI with heterogeneous firms, *American Economic Review*, 94(1), pp. 300-316. https://doi.org/10.1257/000282804322970814

Henn, C., Papageorgiou, C., Romero, J.M. and Spatafora, N. (2017), Export Quality in Advanced and Developing Economies Evidence from a New Data Set, *World Bank Policy Research Working Paper*, no. 8196.

Hoekman, B. and Javorcik, B.S. (2006), *Global Integration and Technology Transfer*, Palgrave Macmillan and CEPR.

Im, K.S., Pesaran, H.M. and Shin, Y. (2003), Testing for unit roots in heterogeneous panels, *Journal of Econometrics*, 115(1), pp. 53-74. https://doi.org/10.1016/S0304-4076(03)00092-7

IMF (2021), *Export Diversification and Quality* (retrieved from https://data.imf.org/?sk=3567E911-4282-4427-98F9-2B8A6F83C3B6).

Jensen, C. (2002), Foreign direct investment, industrial restructuring and the upgrading of Polish exports, *Applied Economics*, 34(2), pp. 207-217. https://doi.org/10.1080/00036840010025641

Khandelwal, A. (2010), The long and short (of) quality ladders, *Review of Economic Studies,* 77(4), pp. 1450-1476. https://doi.org/10.1111/j.1467-937X.2010.00602.x

Kollie, G.B. (2020), Export-Led Growth Hypothesis in ECOWAS: A Panel Data Analysis, *African Journal of Economic Review*, 8(2), pp. 258-275. http://dx.doi.org/10.22004/ag.econ.304725

Kónya, L. (2006), Exports and Growth: Granger Causality Analysis on OECD Countries with a Panel Data Approach, *Economic Modelling*, 23(6), pp. 978-992. https://doi.org/10.1016/j.econmod.2006.04.008

Kusago, T. and Tzannatos, Z. (1998), Export Processing Zones: A Review in Need of Update, *SP Discussion Paper* No. 9802, Washington: World Bank.

Kutan, A.M. and Vukšić, G. (2007), Foreign Direct Investment and Export Performance: Empirical Evidence, *Comparative Economic Studies*, 49, pp. 430-445. https://doi.org/10.1057/palgrave.ces.8100216

Lederman, D. and Maloney, W.F. (2012), *Does What You Export Matter?*, Washington, DC: World Bank.

Li, H., Huang, P. and Li, J. (2007), China's FDI Net Inflow and Deterioration of Terms of Trade: Paradox and Explanation, *China & World Economy*, 15(1), pp. 87-95. https://doi.org/10.1111/j.1749-124X.2007.00055.x

Liang, C., Shah, S.A. and Bifei, T. (2021), The Role of FDI Inflow in Economic Growth: Evidence from Developing Countries, *Journal of Advanced Research in Economics and Administrative Sciences*, 2(1), pp. 68-80. https://doi.org/10.47631/jareas.v2i1.212

Lin, J.Y. (2011), New Structural Economics: A Framework for Rethinking Development, *World Bank Research Observer*, 26(2), pp. 193-221. https://doi.org/10.1093/wbro/lkr007

Lin, J.Y. and Zhang, J. (2019), Learning to Catch up in a Globalized World, in: Oqubay, A. and Ohno, K. (eds.), *How Nations Learn: Technological Learning, Industrial Policy, and Catch-up*, Oxford: Oxford University Press, pp. 149-172. https://doi.org/10.1093/oso/9780198841760.003.0008

Lomachynska, I., Babenko, V., Yemets, O., Yakubovskiy, S. and Hryhorian, R. (2020), Impact of the Foreign Direct Investment Inflow on the Export Growth of the Visegrad Group Countries, *Estudios de Economia Aplicada*, 38-3(1), pp. 1-11. http://dx.doi.org/10.25115/eea.v38i3%20(1).4005

Ma, L.L. and Li, Q. (2015), Intellectual property protection, industry characteristics and comparative advantage of China's manufacturing export, *South Economy*, 5, pp. 82-96.

Markusen, J.R. (2002), *Multinational firms and the theory of international trade*, Cambridge: MIT Press.

McCoskey, S. and Kao, C. (1998), A residual-based test of the null of cointegration in panel data, *Econometric Reviews*, 17(1), pp. 57-84. https://doi.org/10.1080/07474939808800403

Minondo, A. (2010), Exports' quality-adjusted productivity and economic growth, *Journal of International Trade and Economic Development*, 19(2), pp. 257-287. https://doi.org/10.1080/09638190802573071

Moran, T.H. (2011), *Foreign Direct Investment and Development: Launching a Second Generation of Policy Research: Avoiding the Mistakes of the First, Reevaluating Policies for Developed and Developing Countries*, Washington, D.C.: Peterson Institute for International Economics.

Nguyen, T.D. (2013), *The Great Migration: How FDI is Moving to ASEAN and India*., Hong Kong, China: HSBC Global Research.

Nunnenkamp, P. (2001), *Foreign Direct Investment in Developing Countries: What Policymakers Should Not Do and What Economists Don't Know*, Discussion Papers. Kiel: Kiel Institute for World Economics, p. 380.

Odhiambo, N.M. (2022), Is export-led growth hypothesis still valid for sub-Saharan African countries? New evidence from panel data analysis, *European Journal of Management and Business Economics*, 31(1), pp. 77-93. https://doi.org/10.1108/EJMBE-06-2020-0156

Pavlinek, P. and Zenka, J. (2011), Upgrading in the automotive industry: firm-level evidence from Central Europe, *Journal of Economic Geography*, 11(3), pp. 559-586. https://doi.org/10.1093/jeg/lbq023

Pesaran, H.M. (2007), A Simple Panel Unit Root Test in the Presence of Cross-section Dependence, *Journal of Applied Econometrics*, 22(2), pp. 265-312. https://doi.org/10.1002/jae.951

Pesaran, H.M., Aman, U. and Yamagata, T. (2008), A Bias-adjusted LM Test of Error Cross-section Independence, *Econometrics Journal*, 11(1), pp. 105-127. https://doi.org/10.1111/j.1368-423X.2007.00227.x

Pesaran, H.M. and Yamagata, T. (2008), Testing Slope Homogeneity in Large Panels, *Journal of Econometrics*, 142(1), pp. 50-93. https://doi.org/10.1016/j.jeconom.2007.05.010

Phung, H.B. (2016), Determinants of FDI into Developing Countries, *Mark A. Israel '91 Endowed Summer Research Fund in Economics*, 4 (retrieved from https://digitalcommons.iwu.edu/israel_economics/4).

Rodrik, D. (2006), *Industrial development: stylized facts and policies*, Massachusetts: Harvard University Press.

Romer, P. (1994), New goods, old theory, and the welfare costs of trade restrictions, *Journal of Development Economics*, 43(1), pp. 5-38. https://doi.org/10.1016/0304-3878(94)90021-3

Schiff, M. and Wang, Y. (2006), North-South and South-South trade-related technology diffusion: an industry-level analysis of direct and indirect effects, *Canadian Journal of Economics,* 39(3), pp. 831-844. https://doi.org/10.1111/j.1540-5982.2006.00372.x

Schott, P.K. (2008), The relative sophistication of Chinese exports, *Economic Policy*, 23(53), pp. 6-49. https://doi.org/10.1111/j.1468-0327.2007.00195.x

Stojcic, N. and Hashi, I. (2011), The structure and quality upgrading of Croatian exports to EU15 market, *MPRA Paper* No. 108761 (retrieved from https://mpra.ub.uni-muenchen.de/108761/1/MPRA_paper_108761.pdf).

Swenson, D. (2007), Multinationals and the Creation of Chinese Trade Linkages, *NBER Working Paper*, no. 13271.

Tran, T.H, Truong, Q.H. and Dong, V.C. (2020), Determinants of Product Sophistication in Viet Nam: Findings from the Firm-Multi-Product Level Microdata Approach*, ERIA Discussion Paper Series* No. 314, Jakarta: Economic Research Institute for ASEAN and East Asia.

Truong, Q.H. and Dong, V.C. (2021), Spillover Effects of Foreign and Domestic Exporting Firms on Export Decisions of Local Manufacturing Firms: Evidence from Viet Nam*, ERIA Discussion Paper Series* No. 410, Jakarta: Economic Research Institute for ASEAN and East Asia.

UNCTAD (1999), *World investment report: Foreign direct investment and the challenge of development*, New York and Geneva: United Nations.

UNDP (2021), *Human Development Data (1990-2017)* (retrieved from http://hdr.undp.org/en/data(20.07.2019)).

Wacker, K.M., Grosskurth, Ph. and Lakemann, T. (2016), Foreign Direct Investment, Terms of Trade, and Quality Upgrading: What Is So Special about South Asia?, *Asian Development Review*, 33(1), pp. 28-55. https://doi.org/10.1162/ADEV_a_00060

Wang, Y. and Chen, S. (2020), Heterogeneous Spillover Effects of Outward FDI on Global Value Chain Participation, *Panoeconomicus*, 67(5), pp. 607-626. https://doi.org/10.2298/PAN171024009W

Westerlund, J. and Edgerton, D.L. (2007), A panel bootstrap cointegration test, *Economics Letters*, 97(3), pp. 185-190. http://dx.doi.org/10.1016/j.econlet.2007.03.003

World Bank (2021), *Foreign direct investment, net inflows (% of GDP)* (retrieved from https://data.worldbank.org/indicator/bx.klt.dinv.wd.gd.zs).

Xu, B. (2010), The sophistication of exports: Is China special?, *China Economic Review*, 21(3), pp. 482-493. https://doi.org/10.1016/j.chieco.2010.04.005

Zhang, H. and Xing, Y. (2019), FDI, IPR protection and export quality: an empirical analysis based on national data, *Nankai Business Review International*, 10(2), pp. 166-178. https://doi.org/10.1108/NBRI-12-2017-0071

Zhang, H. and Yang, X. (2016), Intellectual property rights protection and export quality, *International Journal of Development Issues*, 15(2), pp. 168-180. https://doi.org/10.1108/IJDI-11-2015-0071

Zhang, K.H. and Markusen, J.R. (1999), Vertical multinationals and host-country characteristics, *Journal of Development Economics*, 59(2), pp. 233-252. https://doi.org/10.1016/S0304-3878(99)00011-5

Zheng, G.H. (2010), The impact of china's intellectual property protection on export trade, *Statistics and Decision*, 2, pp. 125-127.

Zhu, S. and Fu, X. (2013), Drivers of Export Upgrading, *World Development*, 51, pp. 221-233. https://doi.org/10.1016/j.worlddev.2013.05.017