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# Foreign Direct Investment and Trade—Between Complementarity and Substitution. Evidence from European Union Countries

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**Abstract:** This aim of this work is to study the relationship between foreign direct investment (FDI) and trade. FDI is a driving force for economic growth for host countries. The positive effects of FDI are seen in many aspects of the economy. However, the implications of FDI on foreign trade are questionable. Therefore, this study uses a Granger causality technique to test whether the relationship between FDI and foreign trade is complementary or substitutive. The findings of this study indicate that this relationship appears to be complementary, and FDI investment does cause an increase in trade flow in the countries that are taken into consideration. This research aims to make a comparison between the relations of FDI flows of three groups of countries from the European Union (EU)—Romania and Bulgaria, the Visegrád Group and the Euro area—for the period of 2005 to 2019. However, the results indicate that this link between the variables is not yet found for the three group of countries, and further research is required in this aspect. This leads to the conclusion that the FDI impact on foreign trade of the host country depends on the type of investment and absorptive capacity of the receiver, the economic development of host and home countries, and not every type of FDI leads to more trade.

**Keywords:** foreign direct investment; trade; complementarity; substitution; EU countries; economic growth



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## 1. Introduction

The foreign direct investment is the driving force of structural transformation for host countries (Zaman and Vasile 2012; Beatrice 2013; Kottaridi and Filippaios 2015; Islam et al. 2018; Asada 2020; Ioan et al. 2020; Djokoto 2021). The beneficial effects of foreign capital are felt on several levels, but differently depending on the characteristics and potential of the host country (Iacovoiu and Panait 2014; Voica and Mirela 2014; Ullah et al. 2015; Erkomaishvili et al. 2018; Islam et al. 2020; Gupta et al. 2021; Kyove et al. 2021). However, the positive externalities are overshadowed by the negative effects that transnational companies generate in their pursuit of profit maximization (Akbar and Ahsan 2015; Hysa and Hodo 2016; Rjoub et al. 2016; Comes et al. 2018; Davidescu et al. 2018; Li et al. 2018; Iacovoiu and Stancu 2019; Vladi and Hysa 2019; Vasa and Angeloska 2020; Philip et al. 2021).

Accessing external markets is done in different ways, the most used method being the export of goods and foreign direct investment (FDI), which involve the establishment or acquisition of local companies so that products and services are made locally and are no longer subject to any tariff or non-tariff barriers created to protect national economies from

foreign competition. Therefore, exports and FDI are alternative forms of market access, but the relationship between the two is much more complex. Practice has shown that companies often test foreign markets through exports, after which they carry out FDI for the development of local productive capacities in order to better adapt products to market requirements. Product differentiation is achieved, especially in the case of consumer goods. The Uppsala theory of internationalization, for instance, builds a model of incremental internationalization of firms, where the companies expand internationally gradually and increase their level of commitment after gaining enough knowledge about foreign markets (Johanson and Vahlne 1990). Therefore, in the early stages, firms enter on foreign markets through export and later on establish themselves in those foreign markets through FDI. At first glance, FDI can be considered to reduce exports, but recent research on international trade emphasizes that FDI does not diminish trade flows but rather encourages them, leaving a complementary relationship between them (Matei 2004; Africano and Magalhães 2005; Martínez et al. 2012; Cieslik 2015; Akadiri et al. 2020; Feruni and Hysa 2020).

The relationship of FDI–foreign trade depends on the type of investment (market seeking, resources or efficiency seeking) but also on the strategy adopted by transnational corporations. In the case of the stand-alone strategy of the branch, the trade between the host country and the home country consists in the export of specialized goods/services from the parent company to the branches. When the transnational corporation adopts a simple integration strategy, the volume of exports from the host country can be significant. As the adopted integration strategy becomes more complex, exports of products, resources, information, services intensify both within the corporate system and in relation to other companies. Moreover, local firms, as a result of the spillover effect, may have access to new foreign markets through links with TNCs as a result of arrangements such as subcontracting. FDI helps to achieve export-oriented capacities and facilitates industrial restructuring, thus improving the competitiveness of the host country.

The capacity of foreign subsidiaries to export more compared to local companies is based on aspects such as productivity, costs, product quality, marketing strategy based on a rigorous knowledge of foreign markets, consumer requirements, storage and transportation facilities, the existence of products branding and providing after sales service. Additionally, the products of the subsidiaries enjoy an easier access on the markets of the developed countries (with consequences on the selling price), based on the integration or free trade agreements signed with the country of origin of the parent company (Brenton et al. 1999; Bedi and Cieslik 2000; Subic et al. 2010; Rjoub et al. 2017; Cieřlik 2018; Simionescu 2018; Noja et al. 2020).

In addition to the quantitative aspect of FDI on exports, the qualitative one should also be mentioned. Exports of foreign subsidiaries are dominated by processed, technology-intensive products. Moreover, TNCs are seen as agents for boosting the comparative advantage of the host country. Dynamism presents itself in different forms depending on the host country level and the time horizon considered. On short term, the dynamization of the comparative advantage may consist in the transition to a higher level of technological complexity of the products. In the long run, in addition of improving the technology and skills used, diversification of the content of exports and increase capacity building are noted; in this way, inherent changes in the world, in terms of demand and technology, are supported. This involves increasing the local content of resources, labor and intermediate products, the use of complex inland technological functions (design, research and development), and intensifying links with the local technological systems. The contribution that foreign investors can make to boost the comparative advantage of the host country depends on the share of foreign investors in the host country's exports, the existing capabilities and the policy promoted by the host country (Panait and Voica 2017; Davidescu et al. 2018; Simionescu 2018). In addition, companies with foreign capital can be important regional players of smart specialization exports of Central and Eastern Europe countries (Nazarczuk et al. 2020).

For example, as a host country and from the perspective of the national financial market size according to Romanian government data, the financial resources needed to achieve the strategic objectives set out in the 2030 Sustainable Development Strategy, in the baseline scenario, are worth EUR 1543.2 billion for the period 2021–2038, with an annual average of EUR 85.7 billion. These are covered by internal financial resources (savings) in the amount of EUR 1378.6 billion in the period 2021–2038 and EUR 164.6 billion in the period 2021–2038 from external resources accordingly. External financing is estimated to be supported by EUR 72.8 billion of foreign direct investment, with an annual average of EUR 4 billion for the period 2021–2038, so the stock of FDI at the end of 2038 will be EUR 146.3 billion, representing about 31.8% of GDP. The difference in external financing is represented by loans and portfolio investments and is worth EUR 91.9 billion, with an annual average of EUR 5.1 billion for the period 2021–2038 ([Government of Romania 2018](#)). Moreover, from the sectoral perspective at the level of the host country exemplified above, there is a need for investments in achieving the following objectives:

- ✓ Climate change, especially in the energy sector, is over EUR 43 billion in the period 2018–2038.
- ✓ Territorial development (infrastructure) is EUR 125.9 billion for the period 2018–2035.

Achieving the strategic objectives, under the budgetary constraints imposed by both the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, and the criteria for accession to the euro area, requires the implementation of unconventional mechanisms in addressing investment, both from the perspective of the allocation model funds, as well as in terms of institutional transformations, necessary for their implementation. These would be the following:

- The implementation of the multiannual budget and budgeting by objectives, at the central and local levels, involves the allocation of budgetary resources to achieve the strategic objectives based on the public policies associated with the objectives. Public policies must include the necessary resources, target result indicators, methods of annual monitoring of the achievement of objectives and efficiency analysis performed by at least three methods, namely, cost–benefit analysis, cost effectiveness and cost-effectiveness analysis.
- The transparency of local financial resources clarifies the objectives and allocation of financial resources to localities and stimulates the involvement of local authorities in creating the conditions for the growth of local economies so as to transition from the role of “arranger” of funding from the public budget to that of the main promoter of local development and investment attractor. The concept of “state–investment promoter” refers to the transformation of the state from investor to investment promoter in areas that are traditionally reserved for it, such as road infrastructure. In the context of increasing pressures on social and education spending, the state can use public resources available for investment, in order to enable the attraction of private resources in long-term implementation projects, in conditions of uncertainty. The change of the state’s position in the investment activity requires a series of institutional transformations that have as object the regulation and approval of some usage tariffs for domains that have the character of natural monopoly, etc. These investment projects envisage implementation in terms of economic efficiency (return on investment) as well as social return (social return on investment).
- Investments in human capital—the Romanian economy faces the need to make the transition to integrated development in international value chains, on the middle to higher levels, as well as the subsequent transition to the digital economy. This process depreciates existing labor resources in terms of the compatibility of their skills with the demand associated with new technologies, with a direct effect on future revenues. The education system is not oriented toward the formation of a human capital of the quality necessary for the digital economy and in particular, it does not have tools for the rehabilitation of the productive capacity of the existing human capital to the requirements of new economies. It is necessary to build and implement public policies,

adequate in the budgetary framework, on objectives for the preparation of a human capital competent in the field of digital economy.

- The circular economy and the green economy—Romania has, on the one hand, many unused resources, consisting of by-products of production and consumption processes (such as ore processing dumps, ash dumps, alumina waste, mineral waste, mineral waste agricultural and animal crops, etc.). With the appropriate technologies, they can be used to make useful products, with a direct effect on environmental protection and increasing the efficiency of the use of material resources, and, on the other hand, by a number of fossil energy resources which, in the context of climate change, can no longer be used on the basis of existing conventional technologies, but by the implementation of new technologies existing globally. The development of the green economy can offer Romania jobs and the possibility to move into the area of activities with high added value, simultaneously with the exploitation in environmentally friendly conditions of the existing fossil and renewable energy resources (Manta 2021; Manta et al. 2021).

The increase in the FDI impact on the dynamization of the comparative advantage is conditioned by the capacity of the host country to ensure the necessary capabilities: natural resources, infrastructure, and a skilled labor force that will be able to use the equipment available to foreign investors. Therefore, the education and training system acquires a special importance. Tang and Zhang (2016) found that the absorptive capacity is a necessary condition to have a positive impact of FDI in exports. Therefore, factors such as R&D, high quality infrastructure and human capital are important to boost exports. For a sustainable increase in exporting, there is a need for countries to build their absorptive capacity. So, the foreign trade–FDI relationship is particularly important for its distinct implications for economic development (Simionescu 2018; Hysa and Mansi 2021) and policy making in fields such as trade policy.

## 2. Literature Review

According to Zarotiadis (2008), there are three main justifications as to why FDI happens and how it affects trade flows. First, FDI flows from the country of origin to the host country because there is a capital abundance in the country of origin; this capital is investment in other countries. In this case, trade flows are impacted negatively since comparative advantages that simulate trade are gone due to FDI investment. The second view states that FDI flows from origin country to a host country because the host country needs to activate comparative advantages. In this case, trade flows increase because exports from host country increase. The last view states that FDI flows from the country of origin to the host country because firms select to enter foreign markets through export or FDI, the form of which they choose depending on factors such as transportation costs, trade barriers or the size of the host country that reflects the demand of goods and services. In this case, the FDI investment substitutes imports of the host country.

The eclectic theory, developed by Dunning (2004), considers that FDI is the result of the interaction of factors specific to several theories that focus on particular interests, such as international trade, the advantage of monopoly, or the internalization of production. According to Dunning (2004), the theory of transnational companies' activity is at the boundary *"between the macroeconomic theory of international trade and the microeconomic theory of the firm, being an exercise in macroeconomic resource allocation and organizational theory."* According to this researcher, certain forms of trade can be explained by country-specific advantages of the exporting company, and others (such as trade with knowledge-intensive products) are determined by advantages specific to the exporting company. The export of products takes place when the specific advantages of the company are better combined with the specific advantages of the exporting country, compared to those of the importing country. Otherwise, FDI is performed. Therefore, FDI occurs as a result of a combination of company-specific advantages and host-country-specific resources.

The transnational company realizes international production through FDI when it has certain property advantages that it can internalize within some facilities offered by a certain host country. If firms have significant ownership and internalization advantages but localization advantages are in favor of the home country, foreign markets will be served by exports. If ownership advantages are best exploited in foreign markets through inter-firm alliances or in the free market, then FDI will be replaced by transfers of assets normally associated with FDI (technology, managerial knowledge).

Trade policy of the host country is very important in attracting FDI. The existence of tariff/non-tariff barriers combined with a permissive FDI policy may lead to a flow of foreign capital in order to support the import substitution strategy. Practice has shown that FDI prefers countries with liberal trade regimes and especially those that are signatories to free trade agreements because the investor has access to a much wider market, the regional market (Matei 2004; Simionescu 2018; Su et al. 2018).

The importance of trade measures on investment flows was also recognized by the World Trade Organization through the Trade-Investment Group. The Investment Related Trade Measures (IRTMs) are trade policy measures that affect the volume, structure and geographical distribution of FDI. Most measures affect the access to the local market and limited imports, but they also have effects on direct investment. Other trade policy measures affect FDI by promoting and stimulating exports or by restricting them for reasons of national security. These measures are classified as follows:

- Measures to restrict market access: tariff and non-tariff barriers, sectoral trade agreements, free trade agreements, anti-dumping regulations, rules of origin, non-monetary trade arrangements and national standards.
- Measures to promote market access: these measures are subject to preferential trade policies and have in mind the attraction of export-oriented FDI in developing countries, diversification of production and development of industry.
- Measures to promote exports: free zones, export financing, taxation system.
- Measures to restrict exports such as export controls which are usually imposed for reasons of military security; these measures may affect STs, which, in order to circumvent these restrictions, decide to place subsidiaries in countries that do not impose such measures.

New theories of trade reveal the importance of learning effects, economies of scale and externalities for the acquisition and development of comparative advantage. Thus, the comparative advantage can be gained if an activity has learning effects and if the cost decreases since workers and managers become familiar with new technologies and methods of marketing and management. In the case of economies of scale, the cost decreases as production increases, and companies can become internationally competitive. Externalities are especially relevant in developing countries, as the social benefits gained through access to technology, marketing and management knowledge are more important than private benefits. New production and marketing methods are spreading to other companies through labor migration, licensing or franchising, so that an entire business segment can gain a comparative advantage (Matei 2004; Comes et al. 2018; Bunduchi et al. 2019).

In addition to training the local workforce, another element that can be used by the government to increase the impact of FDI on comparative advantage is the imposition of legal provisions on increasing the inland content and technological level of exported products. Particular attention should be paid to attracting FDI in fields where the host country has a comparative advantage.

The liberalization of capital movements internationally has also led to the publication of numerous studies on FDI and their role in the process of economic development, given the positive effects they have on host countries (Simionescu 2016; Su et al. 2018; Simionescu 2018; Vasa and Angeloska 2020; Philip et al. 2021). The pursuit by foreign investors of profit maximization inevitably generated negative effects that diminished the aura that initially accompanied FDI. The analysis of statistical data and their processing demonstrated, in some cases, the limited impact of FDI on the process of economic growth.

[Alici and Ucal \(2003\)](#) explored the causal link between exports, foreign direct investment and output, using data for Turkey for the period 1987–2002. The study investigated the specific situation by examining unit root properties and the Granger non-causality tests. The results suggested that no kind of linkage existed between FDI and export growth.

The study conducted by [Liu et al. \(2001\)](#) for China economy focused on the causal relationship between foreign direct investment and trade (exports and imports). China and 19 home countries/regions were analyzed over the period 1984–1998. The authors used as econometric techniques the test unit roots and causality. These researchers considered that “the growth of China’s imports causes the growth in inward FDI from a home country/region, which, in turn, causes the growth of exports from China to the home country/region. The growth of exports causes the growth of imports”.

The research of [Akadiri et al. \(2020\)](#) focused on the relationship of foreign direct investment, trade openness, and economic growth for 25 African countries in the period 1980–2018. The study used the Granger causality approach. The results obtained demonstrate “bidirectional causality running between FDI and trade openness for the sampled countries over the time span”. So, in the case of analyzed African economies, FDI and trade are complementing rather than substituting.

### 3. Materials and Methods

The present research aims to make a comparison between the relations of FDI flux of three groups of countries from the EU: Romania and Bulgaria, the Visegrád Group and the Euro area. These groups are considered because of their characteristics. Romania and Bulgaria are considered to be on the same level of development both from an economic view and from an integrative view to the EU values and concepts, as they were accepted on the same wave as EU members. The Visegrád Group consists of four countries, Poland, Hungary, Czech Republic and Slovakia, also known as V4. The Euro area is composed of the countries that use the Euro as their common currency. The Euro area can be considered a benchmark group which will reveal the main causality links for a broader set of countries. The Euro area is chosen because of the same monetary policy which may or may not influence the level of trade and FDI.

These aspects presented above drive the research in the direction of the next hypothesis.

**Hypothesis 1 (H1).** *Granger pairwise causality test will reveal many links between variables in all three groups.*

The research spans between 2005 and 2019, limited to the data availability. Data are extracted from the UNCTADStat database. The research variables are the following:

- Gross domestic product: total and per capita, current and constant (2015) prices, annual (GDP).
- Foreign direct investment: inward flows, annual (FDI\_I).
- Foreign direct investment: outward flows, annual (FDI\_O).
- Goods and services (BPM6): exports of goods and services, annual (EXP).
- Goods and services (BPM6): imports of goods and services, annual (IMP).

As stated before, the research is conducted on three groups of countries using panel data: Ro-Bg (2 countries), Visegrad Group (4 countries) and Euro area (19 countries). These three groups are chosen, as they are all part of EU and represent countries with different levels of development and different views toward EU. The study is composed of two stages. In the first stage, the database is tested for the unit root, using a batch of tests, including the following: the Levin, Lin and Chu assumes a common unit root processes, and Im, Pesaran and Shin W-stat, ADF–Fisher Chi-square and PP–Fisher Chi-square are used for individual unit root processes.

The second stage consists of testing the Granger causality. The base of causality testing between variables is [Granger’s \(1969\)](#) hypothesis that investigates how much of  $y$  may

be explained by past values of  $y$  and if the addition of past values of  $x$  generates a better approximation.  $Y$  is Granger caused by  $x$  when  $x$  increases the predictive power of  $y$ , or when the prior coefficients of  $x$  are statistically significant. Two-way causality is a common event when  $x$  Granger causes  $y$  and  $y$  Granger causes  $x$ .

Before using a Granger causality test, the lag length must be specified. To acquire the significant information from the past, it is better to use more lags. In line with that, the present study tests for Granger causality relation for 2 and 4 lags. Those lag lengths are chosen because the impact between variables does not happen instantly. In addition, the level of development of a country impacts the speed of variables' interrelations. So, for the high developed countries with high levels of inward and outward FDI, new FDI has a slower impact on foreign trade than in the case of developing countries.

As soon as the lag length is established, the bivariate regression is estimated as follows:

$$y_t = \alpha_0 + \alpha_1 y_{t+1} + \dots + \alpha_l y_{t-l} + \beta_1 x_{t+1} + \dots + \beta_l x_{t-l} + \varepsilon_t \quad (1)$$

$$x_t = \alpha_0 + \alpha_1 x_{t+1} + \dots + \alpha_l x_{t-l} + \beta_1 y_{t+1} + \dots + \beta_l y_{t-l} + \mu_t, \quad (2)$$

for all possible pairs of  $(x, y)$  of the group. F-statistic reported values are the Wald statistics for the consolidated hypotheses:

$$\beta_1 = \beta_2 = \dots = \beta_l = 0 \quad (3)$$

#### 4. Results

For detection, a batch of unit root tests are used: Levin, Lin and Chu assumes a common unit root process while Im, Pesaran and Shin W-stat, ADF–Fisher Chi-square and PP–Fisher Chi-square assume an individual unit root process.

In Table 1, the results of unit root tests are presented for each variable in each panel. The results indicate that for the Euro area, the variables are stationary at the level, while for the other two groups, the variables achieve stationarity at the first difference.

In Table 2 the correlations between variables can be observed for each group. The interpretation of correlation coefficients is different for each domain. To interpret the correlation values, we consider the next intervals to be adequate for our study:  $0$ – $\pm 0.3$  no correlation;  $\pm 0.3$ – $\pm 0.7$  moderate correlation;  $\pm 0.7$ – $\pm 1$  strong correlation (Fassil 2009).

Table 1. Unit root results.

Variable	Test	Euro Area		Visegrád Group				Ro-Bg			
		Level		Level		1st Difference		Level		1st Difference	
		Statistic	Prob	Statistic	Prob	Statistic	Prob	Statistic	Prob	Statistic	Prob
FDI_O	Levin, Lin and Chu t	−4.89599	0.0000	−1.83223	0.0335	0.42281	0.6638	−3.68920	0.0001	-	-
	Im, Pesaran and Shin W-stat	−3.39066	0.0003	−1.20912	0.1133	−2.34578	0.0095	−2.75855	0.0029	-	-
	ADF–Fisher Chi-square	67.7370	0.0021	11.9005	0.1557	18.9866	0.0149	14.9982	0.0047	-	-
	PP–Fisher Chi-square	109.493	0.0000	16.8493	0.0317	55.3741	0.0000	34.3445	0.0000	-	-
FDI_I	Levin, Lin and Chu t	−4.50457	0.0000	−2.27509	0.0115	-	-	−1.22003	0.1112	−3.37014	0.0004
	Im, Pesaran and Shin W-stat	−3.05554	0.0011	−2.11094	0.0174	-	-	−0.71651	0.2368	−2.49337	0.0063
	ADF–Fisher Chi-square	64.6987	0.0044	18.3199	0.0190	-	-	5.29305	0.2585	13.8116	0.0079
	PP–Fisher Chi-square	126.121	0.0000	30.8236	0.0002	-	-	3.57624	0.4664	17.0940	0.0019
GDP	Levin, Lin and Chu t	−6.77346	0.0000	−4.75400	0.0000	-	-	−1.62782	0.0518	−4.13345	0.0000
	Im, Pesaran and Shin W-stat	−5.46858	0.0000	−3.17670	0.0007	-	-	−0.64624	0.2591	−2.46206	0.0069
	ADF–Fisher Chi-square	105.055	0.0000	24.7185	0.0017	-	-	4.93885	0.2936	13.4597	0.0092
	PP–Fisher Chi-square	122.588	0.0000	28.5567	0.0004	-	-	4.14383	0.3869	13.7767	0.0080
EXP	Levin, Lin and Chu t	−4.91367	0.0000	−2.61170	0.0045	−7.51444	0.0000	−0.74802	0.2272	−5.69901	0.0000
	Im, Pesaran and Shin W-stat	−2.44548	0.0072	−0.72518	0.2342	−5.16718	0.0000	1.00556	0.8427	−4.10283	0.0000
	ADF–Fisher Chi-square	64.7333	0.0044	10.5760	0.2269	38.7672	0.0000	0.94128	0.9186	21.3234	0.0003
	PP–Fisher Chi-square	68.9537	0.0016	14.4100	0.0717	55.8738	0.0000	1.24592	0.8705	30.4791	0.0000
IMP	Levin, Lin and Chu t	−5.77202	0.0000	−3.31718	0.0005	−7.11888	0.0000	−2.06438	0.0195	−6.64020	0.0000
	Im, Pesaran and Shin W-stat	−3.75845	0.0001	−1.33799	0.0905	−5.02802	0.0000	−0.92283	0.1780	−4.45986	0.0000
	ADF–Fisher Chi-square	82.1339	0.0000	13.0329	0.1107	37.8305	0.0000	6.47399	0.1664	22.6024	0.0002
	PP–Fisher Chi-square	90.5204	0.0000	15.4274	0.0513	62.3581	0.0000	3.97701	0.4091	22.5365	0.0002

Source: own calculations.



**Table 2.** Correlations matrix.

		FDI_I	FDI_O	GDP	IMP	EXP
FDI_I	Euro area	1.000000	0.684290	0.204755	0.430899	0.428281
	Visegrád Group	1.000000	0.682018	−0.216184	0.603485	0.561492
	Ro-Bg	1.000000	0.181332	−0.042431	0.276780	0.039488
FDI_O	Euro area		1.000000	0.255526	0.682772	0.673378
	Visegrád Group		1.000000	0.081301	0.235767	0.237786
	Ro-Bg		1.000000	−0.196264	−0.357972	−0.379338
GDP	Euro area			1.000000	0.224996	0.236358
	Visegrád Group			1.000000	−0.007400	0.041445
	Ro-Bg			1.000000	0.832669	0.880876
IMP	Euro area				1.000000	0.994846
	Visegrád Group				1.000000	0.990665
	Ro-Bg				1.000000	0.953186
EXP						1.000000

Source: own calculations.

The results are interesting, as, in some cases, there are huge differences between the three groups.

The FDI\_I–FDI\_O coefficient is at the border value between moderate and strong positive correlation in the case of Euro area and Visegrád Group, while in the case of Ro-Bg, the coefficient shows no correlation.

The FDI\_I–GDP coefficient shows that there is no correlation between the variables in the three groups.

The FDI\_I–IMP coefficient shows that there is a moderate positive correlation in the case of Euro area and Visegrád Group, while in the case of Ro-Bg, the coefficient shows no correlation, but we must acknowledge that the coefficient is at the border between no correlation and moderate correlation.

The FDI\_I–EXP coefficient shows that there is a moderate positive correlation in the case of Euro area and Visegrád Group, while in the case of Ro-Bg, the coefficient shows no correlation.

The FDI\_O–GDP coefficient shows that there is no correlation between the variables in the three groups.

The FDI\_O–IMP and FDI\_O–EXP coefficients show different results for each group. Euro area has a moderate positive correlation, and Visegrád Group has no correlation, while Ro-Bg has a negative moderate correlation.

The GDP–IMP and GDP–EXP coefficients show that there is no correlation in the case of Euro area and Visegrád Group and a strong positive correlation in the case of Ro-Bg.

The IMP–EXP coefficients show a strong correlation in all three groups.

In Table 3, the results of the Granger pairwise causality tests are presented for 2 and 4 lags. As it can be seen, there is no hypothesis in which all the three groups have a similar result.

After analyzing the results of the Granger pairwise causality test results, in Table 4, the confirmed links are presented.

As it can be seen from the results, the Euro area group accomplished its role of identifying the most causality links between the variables. The other two groups identified a lower number of causality links, mostly for lag 2. This means that the H1 is correct for the Euro area group; for the other two groups, the number of links is too low to fully confirm the link between FDI and trade.

Table 3. Granger pairwise causality test.

Null Hypothesis:	Group	Lag 2		Lag 4	
		F-Statistic	Prob.	F-Statistic	Prob.
FDI_O does not Granger Cause FDI_I	Euro area	4.21739	0.0158	1.19210	0.3155
	Visegrád Group	0.63734	0.5336	2.29119	0.0819
	RO-BG	0.06562	0.9367	1.92456	0.1764
FDI_I does not Granger Cause FDI_O	Euro area	2.38478	0.0943	0.79192	0.5317
	Visegrád Group	0.24994	0.7800	0.24613	0.9098
	RO-BG	0.73062	0.4947	0.86801	0.5130
GDP_C does not Granger Cause FDI_I	Euro area	2.01561	0.1355	1.54968	0.1893
	Visegrád Group	2.35823	0.1067	0.60287	0.6634
	RO-BG	3.24444	0.0614	0.46821	0.7582
FDI_I does not Granger Cause GDP_C	Euro area	1.96991	0.1417	2.28091	0.0620
	Visegrád Group	0.33141	0.7197	0.36843	0.8292
	RO-BG	1.05279	0.3685	0.26233	0.8960
IMP does not Granger Cause FDI_I	Euro area	4.98573	0.0076	3.13094	0.0159
	Visegrád Group	1.81173	0.1756	0.77848	0.5477
	RO-BG	4.24253	0.0320	0.40997	0.7974
FDI_I does not Granger Cause IMP	Euro area	6.52120	0.0017	2.62211	0.0361
	Visegrád Group	0.33218	0.7192	0.68005	0.6110
	RO-BG	4.15680	0.0339	0.12724	0.9688
EXP01 does not Granger Cause FDI_I	Euro area	5.33610	0.0054	3.68690	0.0064
	Visegrád Group	1.61148	0.2114	0.62423	0.6487
	RO-BG	1.15419	0.3388	0.43156	0.7828
FDI_I does not Granger Cause EXP	Euro area	6.61993	0.0016	4.00157	0.0038
	Visegrád Group	0.13928	0.8704	0.53869	0.7084
	RO-BG	0.62329	0.5480	0.40408	0.8014
GDP_C does not Granger Cause FDI_O	Euro area	1.71606	0.1820	0.99490	0.4114
	Visegrád Group	0.16502	0.8484	0.09256	0.9841
	RO-BG	0.18939	0.8290	0.65968	0.6326
FDI_O does not Granger Cause GDP_C	Euro area	0.72501	0.4854	1.75376	0.1397
	Visegrád Group	0.51727	0.5998	0.65133	0.6303
	RO-BG	0.02396	0.9764	2.30617	0.1232
IMP does not Granger Cause FDI_O	Euro area	19.0206	$2 \times 10^{-8}$	5.20677	0.0005
	Visegrád Group	0.41724	0.6615	0.47993	0.7502
	RO-BG	0.20074	0.8200	0.72455	0.5968
FDI_O does not Granger Cause IMP	Euro area	4.78071	0.0092	4.09947	0.0033
	Visegrád Group	1.08920	0.3456	0.78720	0.5423
	RO-BG	0.31436	0.7344	1.04574	0.4358
EXP01 does not Granger Cause FDI_O	Euro area	19.6652	$1 \times 10^{-8}$	6.47652	$6 \times 10^{-5}$
	Visegrád Group	0.24610	0.7829	0.42659	0.7883
	RO-BG	0.00940	0.9907	1.22664	0.3652
FDI_O does not Granger Cause EXP	Euro area	3.60470	0.0287	6.62978	$5 \times 10^{-5}$
	Visegrád Group	0.48421	0.6195	0.60741	0.6603
	RO-BG	0.04016	0.9607	0.77019	0.5710
IMP does not Granger Cause GDP_C	Euro area	0.67276	0.5113	1.18504	0.3186
	Visegrád Group	0.77143	0.4686	0.50127	0.7350
	RO-BG	0.07868	0.9247	0.40297	0.8021
GDP_C does not Granger Cause IMP	Euro area	0.00868	0.9914	0.60024	0.6629
	Visegrád Group	0.54100	0.5861	0.05602	0.9939
	RO-BG	0.22686	0.7994	0.23562	0.9113

Table 3. Cont.

Null Hypothesis:	Group	Lag 2		Lag 4	
		F-Statistic	Prob.	F-Statistic	Prob.
EXP01 does not Granger Cause GDP_C	Euro area	0.48431	0.6167	0.60653	0.6584
	Visegrád Group	0.56897	0.5703	0.74969	0.5658
	RO-BG	1.51847	0.2473	0.68304	0.6212
GDP_C does not Granger Cause EXP	Euro area	0.26865	0.7646	0.40963	0.8016
	Visegrád Group	1.99710	0.1481	0.29435	0.8794
	RO-BG	0.07069	0.9320	0.28677	0.8794
EXP01 does not Granger Cause IMP	Euro area	1.79065	0.1691	14.6327	$2 \times 10^{-10}$
	Visegrád Group	3.72976	0.0321	2.92525	0.0367
	RO-BG	0.32950	0.7238	0.28036	0.8835
IMP does not Granger Cause EXP	Euro area	0.91744	0.4009	6.48293	$6 \times 10^{-5}$
	Visegrád Group	4.16432	0.0222	2.31034	0.0799
	RO-BG	0.09285	0.9118	0.45960	0.7640

Source: own calculations.

Table 4. Confirmed links by Granger pairwise causality test.

Null Hypothesis	Euro Area		Visegrád Group		RO-BG	
	lag 2	Lag 4	lag 2	lag 4	lag 2	lag 4
FDI_O does Granger Cause FDI_I	x			x		
FDI_I does Granger Cause FDI_O	x					
GDP_C does Granger Cause FDI_I						x
FDI_I does Granger Cause GDP_C		x				
IMP does Granger Cause FDI_I	x	x				x
FDI_I does Granger Cause IMP	x	x				x
EXP does Granger Cause FDI_I	x	x				
FDI_I does Granger Cause EXP	x	x				
IMP does Granger Cause FDI_O	x	x				
FDI_O does Granger Cause IMP	x	x				
FDI_O does Granger Cause EXP	x	x				
EXP does Granger Cause IMP		x	x	x		
IMP does Granger Cause EXP			x			

Source: own calculations.

## 5. Discussion

After the result analysis, the main conclusion is that no link between the variables is found to exist in all three groups. Future analysis must be made, but this may imply that in the cross-country analysis, the number of countries has a larger impact on these variables' relations, and thus, the links identified for the Euro area group. This is also an indicator that the relationship between FDI and trade flow is not constant, and it can change, depending on the country's economic development, type of investment, countries absorptive capacity, time period or the type of measurement used in empirical work. In addition, this analysis also depends on the sectoral level; therefore, a more detailed analysis would be an analysis at the industry level. Studies in this field consider aggregate level data, but this kind of data can mask the true relationship. In order to overcome this, future studies can concentrate in industry and product-based analysis because there are important industry and product characteristics that have their effect in the results, such as the tradability (Panitchpakdi 2006). However, the results above also tell that the relationship between FDI and trade flows is more likely to be a complementary relationship. This means that FDI investment increases trade flows. This conclusion is in accordance with the literature, which on a macroeconomic level suggests a complimentary relationship (Raybaudi 1996). FDI increases the competitive advantages of host countries and therefore, increases their capacity and

exporting ability. International cooperation that invests in different countries are more efficient and productive firms, and they bring advanced technologies and organizational know-how in the host countries, which can increase also the efficiency of domestic firms. [Pelinescu and Radulescu \(2009\)](#) focus on the Romanian economy for the transition period and “consider that exports are supported by the FDI, which generate production mainly for export and that FDI generates an increase in the Romanian competitiveness”.

Studies such as that of [Goh and Tham \(2013\)](#) have also found a complimentary relationship between inward FDI and trade and an insignificant relationship between outward FDI and trade for the home country. For the conclusion of outward FDI, the authors relate to the services-based industry and Malaysia being a developing country. In developed economies, the relationship between outward FDI and trade is more likely to be complimentary. Firms in developed economies have market-seeking and efficiency-seeking motivations and in return, they create a linkage with their home countries; this positively impacts trade. The study of [Djokoto \(2012\)](#) for the economy of FDI and agricultural trade of Ghana noticed that a “relationship between FDI and trade is complementary (vertical) or substitutional (horizontal)”.

The sanitary crisis of COVID-19 has caused the sudden and drastic decrease in companies’ activity, implicitly FDI, liquidity deficit and major risks of losses or bankruptcy. Government interventions require specific measures to support and protect economies, businesses and workers. The European Commission proposed, on 13 March 2020, a “Correspondence Investment Initiative”, with the aim of promoting investment by mobilizing the available liquidity reserves under the European Structural and Investment Funds, European public investment worth EUR 37 billion. In the context of the COVID-19 emergency and its serious implications for the EU economy, the European Commission has stepped up its efforts to strengthen the protection of EU companies ([Manta 2021](#)). On 25 March, the Commission issued guidelines to help Member States protect EU critical assets and technologies from potentially hostile takeovers and investments by non-EU companies:

- ✓ Concerned in particular with companies in European strategic industries, which are acquired by non-European companies, the European Commission establishes a mechanism for cooperation and coordination of national screening procedures for new foreign direct investment at EU level, in the framework of the so-called “FDI Screening Regulation”, which will apply from 11 October 2020.
- ✓ Also for the Member States that have this mechanism (14 states plus the United Kingdom), the European Commission has called for its rigorous use, and for Member States that do not yet have a FDI screening mechanism or whose screening does not cover all relevant transactions, to set up a last minute one.

## 6. Conclusions

The implications of FDI on the foreign trade of the host country must consider such activities carried out by foreign subsidiaries, which must comply with the conditions imposed by the parent company on sources of supply and markets. A high propensity to import is observed in industries with low or high technology: in the first case, subsidiaries are most often limited to processing imported inputs; and in the second case, production is intense in capital goods or requires inputs of a certain quality that are not available locally. The propensity to import is also high in the tertiary sector, especially in tourism. FDI does not lead to a replacement of trade flows, but to an intensification of trade relations. Empirical studies have revealed the complementarity of FDI–trade rather than their substitution, the simultaneity of these two phenomena being determined by the liberalization of trade and national FDI policies. From a historical point of view, the manufacturing companies first carried out foreign trade activities and, later, to initiate FDI in other countries, which is explained by the following aspects:

- Trade is an easier and less risky activity. FDI requires, in addition to long-term commitment and knowledge, experience, significant financial flows and managerial skills.

- Export can be done at any value, while the realization of production abroad requires a certain investment to prove its economic efficiency; exports are often a way of testing the company's product market.
- The possibility of controlling and monitoring the activity of a subsidiary is largely determined by the progress made in the field of communications.

For many countries, foreign direct investment remains an important source of financing economic growth; they are a development factor, but also a sensor and a source of information for markets and investors. However, the strong dominance of some investors (internal or external) can generate a degree of concentration and dependence with an unfavorable effect on the economy. Combined profit and market share strategies create barriers to entry for competitors that do not have the financing capacity of major firms and, consequently, generating the fragmentation of supply and value chains, turning the benefit of low prices into losses for local producers or intermediaries.

Empirical studies have demonstrated the viability of linear sequentiality, used even by experienced large TNCs who prefer this strategy to access certain markets. If similar or identical products made by domestic companies are sold on local markets, TNCs can choose the path of direct access through FDI, including through mergers and acquisitions.

Due to the linear sequentiality strategy, the idea created was that FDIs replace commercial flows. This perception has its origins in the dominant paradigm of the 1960s and 1970s, namely the product life cycle theory that explains the succession of exports–FDI, made by U.S. companies. The line of causation is as follows: restrictions on imports reduce imports and increase FDI, but the increase in FDI does not reduce trade flows.

International production can replace trade flows for a particular product. TNCs subsidiaries, in turn, generate demand for certain products—capital goods, intermediate goods and services that can be provided within the system of transnational companies, by domestic companies or companies from other countries. This creates trade flows and related investments. FDI suppresses but also creates trade flows, in total, FDI being trade creators as evidenced by numerous empirical studies.

Given that both trade and investment flows are dominated by TNCs, and given the increasing export orientation of these entities, trade policy is playing an increasingly important role in attracting and maintaining FDI. The policy of attracting TNCs will focus on the creation of functional processing areas for export, the existence of facilities, such as the possibility of using drawback schemes for foreign inputs for export production and the existence of a stable exchange rate.

This study has its own limitations. The group of countries included are not a homogenous group, even if all the countries are members of the European Union. They have different levels of economic development, endowment with natural resources, policies to attract foreign capital and absorptive capacity. Therefore, they attract various types of inward FDI. Their outward FDI also differ, depending on the level of economic development, technology, labor force, etc. In addition, a larger time span of future studies can give more insight. Future work can concentrate on selecting a more homogeneous group of countries and narrowing the analysis toward an industry and product-based analysis. Additionally, by examining new lag lengths, new causality links may be discovered.

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