AN EMPIRICAL ANALYSIS OF THE FDI AND ECONOMIC GROWTH RELATIONS IN ALBANIA: A FOCUS ON THE ABSORPTION CAPITAL VARIABLES

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Abstract

Over the past three decades, Albania has had positive and increasing foreign direct investment (FDI) inflows that have brought significant changes in many economic sectors. The paper's purpose is to analyze the dynamic relationship between FDI and economic growth, particularly emphasizing absorption capital variables. The research question is if the human capital development level, technological development, trade openness, public expenses, and financial system development in Albania help or hinder the materialization of the expected positive effect of FDI on economic growth? We used empirical analyses to evaluate these relationships based on the model created by Borensztein, De Gregorio, and Lee (1998). We changed a few variables in the model, and we used the multivariate vector autoregressive (VAR) model and the vector error correction model (VECM) to analyze the variables' causal relationships. Some of the results achieved are consistent with other authors' findings, so human capital is considered an essential element of host countries' absorptive capacity. In the long run, in Albania, the FDI's impact on economic growth positively affects human capital development, especially on knowledge and expertise and financial system development. However, the technological difference index gives a negative long-term impact on economic growth, and trade opening is statistically insignificant.

Keywords: FDI, Economic Growth, Absorption Capacity, Human Capital

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1. INTRODUCTION

Over the last decades, foreign direct investment (FDI) inflows into the transition economies were significant, but the amounts were variable across countries. Albania's economic transition from a centralized and planned economy to a free-market economy began in 1990. These years were accompanied by shortages of new technologies development, lack of infrastructure, higher inflation levels, and instability of the financial system. During the transition, some of the country's challenges were scarce domestic savings, high unemployment, and lack of appropriate labor abilities and experiences. The central government started a few reforms during the transition period. At the center of these reforms were the efforts to form a complete legal framework for foreign direct investors and improve the business climate to increase foreign investors' attractiveness. Haskell,

Pereira, and Slaughter (2007) showed the significant importance of inward FDI in the transition economies context offering the desirable capital, technology, and knowledge. Through structural reforms, Albania has continued its efforts to create an economy ready to integrate into the community of developed European economies by stabilizing the political and macroeconomic situation, legislation framework for foreign investors, improvement of the country's investment climate privatization initiatives undertaken by the Albanian government. FDI in Albania is oriented to non-tradable sectors, thus not affecting export stimulation, which in turn would narrow the trade deficit. FDI has increasingly transferred technology to Albania, based on the FDI index. Foreign companies tend to use new technologies, especially in the production process, but not always at the latest because Albania is a country with a relatively cheap labor force compared to the region.

Muharremi (2020) stated that in Albania, FDI is a powerful growth driver for the local economy. Some of the benefits were increased capital inflow, new technologies, higher productivity, new jobs, and improved citizens' living standards. However, besides the potential for attracting FDI is high, a few sectors such as manufacturing, agro-processing, knowhow, and tourism are still underdeveloped. In recent years, the country's economic growth showed fiscal consolidation that reduced the budget deficit and public debt that followed financial stability. Transition countries need FDI inflows because they usually have insufficient financial resources to make required investments, and capital needs are often larger than their domestic savings. According to UNCTAD (2015) this investment funds deficit poses a significant barrier to economic growth, so foreign financial capital is perceived as a means to fill this gap. FDI will be necessary for these economies' economic growth as they transfer developed capital and technologies, and human capital development in host countries. Talamo (2016) showed that existing theories suggest that multinational enterprises invest in countries with a high absorption extent, appropriate infrastructure, and an educated labor force. Nevertheless, when domestic firms cannot engage and adopt spillovers, FDI is not the greatest and potent instrument to encourage technical and engineering development.

Although FDI in Albania has had a positive impact on financing the current account deficit, has developed the financial sector, increased employment, and increased fixed capital, various studies show that Albania has not benefited sufficiently from FDI. However, it has improved the amount of FDI inwards flow continuously over the years (Estrin & Uvalic, 2016; Zisi, 2014). Various emerging countries aim to attract as many FDI inflows as possible, without paying the same attention to improving certain initial conditions necessary to benefit from FDI (World Bank Group, 2017).

The projected effects of FDI inflows in stimulating the growth of the host countries' economic development are dependent on the existing conditions and those further developed of the host country (fiscal, political, or social conditions) (Lleshaj & Malaj, 2016). Therefore, the host countries' officials have a fundamental importance in forming the right circumstances that consent to the positive benefits brought about by foreign investors to spread. Park and Jung (2016) highlighted that the FDI capability to profit the economic growth fruits would be subject to, among other things, the technical progress, human resource development, and host country corruption level.

The research questions that we seek to answer through this study are whether the level of human capital development, technological development, financial system development, trade liberalization, and public expenditures have enforced the positive effect of FDI in Albania in the short or long term. It is essential to clearly understand the impact that the absorption capacity level has on the absorption of FDI. These results are of great importance in formulating appropriate government investment policies in the future. However, the FDI and economic growth relationship based on absorption capital variables are not common in the literature, especially in the Albanian context. The paper intends to contribute to Albania's developing economy viewpoint and the existing and continuing research that associates FDI and economic development, focusing on the absorption capital variables and emphasizing the role of absorption capacity variables in materializing the positive effects of FDI. The paper starts with a theoretical treatment of FDI to continue further with an empirical study of the FDI impact on Albania's economic growth. The theoretical framework is treated according to extensive and contemporary literature, including scientific research papers, articles, and publications by mainly foreign authors and a few papers belonging to Albania. At the center of the theoretical framework are the economic growth models of the most famous authors in economic sciences. However, even in the theoretical treatment, very little is discussed about small developing countries, leaving a gap regarding FDI importance in these countries.

For this reason, we conducted an empirical study on the FDI impact in our country. The paper structure is organized as follows. It starts with the initial introduction. Section 2 represents the literature review and specifically empirical studies in Albania. Section 3 is the research methodology and analysis used; the statistical analysis of data discusses the paper's results in Section 4. Section 5 gives the conclusions, recommendations, and limitations of the paper.

2. LITERATURE REVIEW

Many countries have consistently liberalized investment policies by stepping up efforts to boost FDI inflows. Attracting FDI is at the heart of their short- and long-term development strategies. Through the inflow of international financial flows, which are characterized by higher stability than other global capital flows, the host countries can meet the shortage of capital needed to finance investment growth, increase exports, employment, improve productivity, and promote economic growth. The foreign investor directly transfers to the host country tangible and intangible assets, including physical and human capital, research and development costs, management skills, knowledge of the best production, and technology in the host country (de Mello, 1997). However, in a more recent

study, Ngwakwe (2017) studied FDI inflow risk-effect on employment in a study in South Africa. He found that this relationship was negative because growth in FDI inflow negatively impacted domestic employment by 1.29 percent. These results were reliable with some previous research findings.

According to the exogenous growth theory, FDIs, through a capital increase and technology transfer, help economic growth in the short and medium-term. FDI is a significant initiator of human skills and knowledge spreading from industrialized countries to unindustrialized countries (Miyamoto, 2008; Shahmoradi & Baghbanyan, 2011). Endogenous growth theory offers enormous scope for FDI's impact on economic development in the long run: foreign direct investment brings advanced technology to the host country and develops human capital. FDI helps transfer technology and organizational knowledge and develop social capital skills in the host country (formal and informal employee training). They play a vital role in boosting local businesses' productivity and enable export development by creating opportunities for local firms to become part of the global value-added chain. Most of the empirical research on FDI led spillovers of human skills and knowledge transfer and their impacts in host developing countries is mainly quantitative (Balsvik, 2011; Asli, Behname, & Noormohamadi, 2012; Nilsson-Hakkala & Sembenelli, 2012). The role of absorptive capacity is as important as building the right policies to attract foreign investors. Investor attraction policies and absorption capacity development are steps of a process aimed at attracting and extending the foreign investor's residence time to enable the materialization of benefits for the host country's economy.

The classical growth theory and endogenous growth theory explained these two direct effects. In the exogenous growth theory, FDIs, both through a capital increase and technology transfer, help economic growth in the short and medium-term. Endogenous growth theory offers enormous scope for understanding how FDI aids economic growth, as it supports FDI, also helps develop human capital and transfer developed technology. According to this theory, FDI can continuously intensify the economic growth pace in host countries through technology allocation and knowledge dissemination effects (Nair-Reichert & Weinhold, 2001; Baldwin, Braconier, & Forslid, 2005). Theoretically, the FDI impact on economic progress is realized through the positive effect on technology development in the host country, enrichment of human capital, increased competition in host countries, positive impact on domestic investment, employment growth (Moura & Forte, 2013). Various authors emphasize the importance of a positive level of human capital development in the host country so that host firms can transfer the skills and knowledge developed by multinational companies to their employees and that this knowledge is disseminated in the domestic economy (Borensztein, De Gregorio, & Lee, 1998; Brooks & Jongwanich, 2011; Dorozynska & Dorozynski, 2015).

Bearing in mind these effects of FDI on the host country, developing countries work on policymaking to attract FDI inflows. Estrin (2017) shows that FDI can benefit host countries, such as economic growth, capital increase, advanced technology, productivity, employment, trade, and improved managerial skills in a host country. However, these features of FDI do not automatically translate into benefits in host countries. In particular human capital development and developed institutions are needed. This process requires that host countries, especially transition countries such as Albania, have sufficient capacity to absorb the spread of the positive effects of FDI by improving institutional efficiency and human capital.

The literature shows that this discrepancy of empirical results is due to the various host country circumstances that influence the capabilities to benefit from FDI inflows. The materialization of the positive effects of FDI is contingent on the host country's absorptive capacity, that is, various conditions favorable to economic growth. Multiple studies demonstrate that the host countries capabilities to receive the most extensive positive effects from foreign investors influxes is determined by the human capital development extent, the difference between the host country's and developed countries technological development, and the level of trade openness and financial system development (Kim, 2002; Rama, 2008; Hoekman, Maskus, & Saggi, 2004). The role of absorptive capacity is as important as building the right policies to attract foreign investors. Investor attraction policies and absorption capacity development are steps of a process aimed at attracting and extending the foreign investor's residence time to enable the materialization of benefits for the host country's economy. Seyoum, Wu, and Yang (2015) founded that technology and human skills and knowledge spillovers from foreign multinational enterprise subsidiaries to be positive in local organizations with higher absorptive capacity but negative spillovers to local organizations with lower absorptive capacity. Besides, FDI results in negative impacts on small local organizations and low technology sector industries (Jeon, Park, & Ghauri, 2013). Park (2018) found that research & development – human capital interaction substantially affects GDP growth in contrast to FDI – human capital relation. It is crucial to create a favorable setting where high-quality human resources can participate, work together, and accomplish better outcomes. Iamsiraroj (2016) used a sample of 124 countries for the period 1971-2010. Based on the fixed effect and the generalized method of moments model, he recognized a direct association between FDI and economic growth. However, financial freedom, trade openness, and the workforce increased the income growth directly as the significant determinants of FDI. For FDI host countries, an element that is identified by the literature as very important in disseminating knowledge brought by foreign investors is the host country's technological development. Emerging economies are increasingly focusing on their economic growth models for the country's technological development, trying to narrow the technological gap with developed countries (Filippetti & Peyrache, 2016).

2.1. Empirical studies in Albania

FDI has helped Albania's economic growth and has positively influenced capital increase, value-added growth, increasing employment, and productivity (Demeti & Rebi, 2014; Merollari & Koti, 2015). Lleshaj and Malaj (2016) found a statistically significant positive relation of GDP to FDI, domestic

investment, and average salary. Multinational companies that have invested in Albania are often focused on activities that do not require developed technology (Çakërri, Muharremi, & Madani, 2020). For Albania to benefit from the transfer of a developed technology through foreign investors, the orientation of policies for attracting "green" FDI must be done. These FDI's in this form create more opportunities for technology transfer, which would increase productivity in the country, thus helping economic growth (Demeti & Rebi, 2014). Advanced technological level and best management practices brought by foreign investors can lead to increased productivity and directly lead to changes in the economy's structure (Kraja & Osmani, 2015; Koroçi, 2017). Lleshaj, Malaj, and Tushaj (2014) affirm that FDIs in Albania create possibilities for the development of local businesses and improve living standards. FDI in Albania has helped domestic investments by stimulating them (Mileva, 2008). FDI helps increase domestic investments but maintains dominance over them (Lleshaj & Malaj, 2016).

FDI is more effective than domestic investments because they can differentiate their capital structure and increase their competitiveness. For all these factors, it is crucial to clearly define the most critical factors in attracting foreign investors, which can serve as Albania's competitive advantage in attracting these investors. Albania's economic growth itself seems to have been influential in absorbing FDI inflows into Albania (Sulanjaku & Shingjergji, 2015; Hysa & Hodo, 2016). The sustainability of the economic climate and political stability are essential elements in attracting FDI inflows, while the packages of various financial incentives or non-financial are considered "less important" for investment decisions (Nene & Pasholli, 2011). A positive impact on direct investment inflows in Albania has had government expenditures. The Albanian state's policies tend to increase productive government expenditures that have increased its FDI level (Sulanjaku & Shingjergji, 2015). This result is because the increase in government capital expenditures leads to increased aggregate demand and increased economic growth (Hasnul, 2015). If these government expenditures are not investment-oriented and productive, their economic growth effect is negative (Barro, 1991). Çakërri et al. (2020), based on an empirical study applying the vector error correction model (VECM), concluded that the existence of a long-term Granger (1988) co-integration relationship derived from FDI to economic growth and that FDI flows positively impact the gross domestic product (GDP). They found that GDP does not have a co-integration relationship with FDI, in the long run, to move from domestic product towards FDI. A few studies confirm an insignificant optimistic impact of FDI on Albania's economic growth (Merollari & Koti, 2015), and even an undesirable negative impact (Zisi, 2014). These findings are due to several reasons, especially the moderately small dimensions of the Albanian market; the relatively short time of FDI existence in Albania, which dictates the small number of FDI's, a short period of time insufficient to materialize the positive effects in the host country, and the negative effect of the financial crisis. Also, foreign investors are attracted to invest in Albanian sectors with a low cost of labor,

facilities, and favorable policies and facilities provided by the Albanian government and the use of natural resources.

3. RESEARCH METHODOLOGY

A critical objective of this paper's empirical analysis is to identify a causal relationship between foreign investment and economic growth in Albania and determine the extent of FDI's impact on economic growth in the presence of absorption capacity variables. The study empirically tests whether the effects of FDI on economic growth are contingent on the conditional factors of absorptive capacity such as human capital, the difference in host country technological development with advanced technology, financial system development, public expenses, and openness to international trade. We created the following hypothesis:

H1: There is a causal relationship between FDI and economic growth in Albania, conditioned by absorptive capacity factors, namely human capital, technological development, trade openness, and financial system development.

3.1. Research model

Xu (2000) showed that technology transfer through multinational companies helps increase productivity in developed countries. However, these results are not so in less developed countries because hosting countries benefiting from the transfer of technology must have a certain minimum human capital level. Borensztein et al. (1998) concluded that FDI impact on economic growth is positive only if countries own a confident human capital level. The relationship between FDI and human capital has been measured by Borensztein et al. (1998) empirically. To conduct our empirical study, we started from the model settled by Borensztein et al. (1998):

$$Y(BGL) = f(y0, HK, IHD, infl, govc, war, buroqual) \text{ (1)}$$

which expresses the dependence of real GDP economic growth on the variables initial GDP, human capital, FDI, foreign direct investment, rates inflation base, government spending as a percentage of GDP, wars or political stability and institutions, and the institutional variable that reflects the level of bureaucracy.

We have modified some of the variables by designing the following model:

$$Y(model) = f(\alpha, X1, X2, X3, X4, X5, X6, X7) \qquad (2)$$

The variables for the empirical model of the study are:
- Y – GDP;
- α – constant identifier;
- $X1$ – FDI (inflow), from the Bank of Albania data;
- $X2$ – human capital development, *HC_I*, the human capital level measured through the human capital development index, source: UNDP;
- $X3$ – technological variance, *TEC_I*, is the technological development difference of Albania compared to industrially advanced countries;
- $X4$ – financial sector development, *FinDev*, valued through monetary aggregate indicator M3/GDP;

• *X5* – commercial opening, *TO*, represents the sum of total trade volume, imports, and exports, comparing it to GDP and reflecting the host country's trade policies to facilitate trade opportunities;

• *X6* – public expenses, *PubExp*, based on the Bank of Albania periodicals data;

• *X7* – inflation, *INF*, official inflation degree in Albania.

This paper used secondary quantitative data collected from institutions such as the Bank of Albania, the Albanian Institute of Statistics, and the United Nations Development Programme. The data are processed through the statistical software STATA. Data on FDI inflows, GDP, trade opening, technological difference, and government expenditures are given quarterly from 2002 to 2017. For the capital human development index, data are referred to the period 2002-2015. Data on the development of the financial system, M3/GDP, were collected from the fourth quarter of 2002 to 2017. All data are quarterly data. We used the statistical methodology of studying causal relationships between variables in the study. There is a precondition to distinguishing each variable's order before deciding on using VECM or VAR. In the cases that the variables demonstrate integration at first order *I(1)* with no co-integration, VAR is used; if not, if co-integration exists with the same integration order, VECM is used. The models provide the error correction mechanism in evaluating the VAR model's coefficients and determine the existence or not of causal relationships between the dependent and the independent variables in the short and long term.

We have used the vector autoregressive (VAR) multivariate model and the VECM to analyze the causal relationship between GDP and FDI depending on the co-integration depending on the absorption variables used integration results. We use interactions and create instrumental variables to interpret the relationship between the dependent variable and the variables designated as absorbing capacity representatives. The variables used are in the form of times series. To evaluate their qualities, the following steps are taken: the data are transformed into a logarithmic form; we employed correlation analysis, unit root testing, and co-integration test. In the beginning, we investigate the qualities of time series and evaluate short and long-term relationships between variables. The data are exhibited through the logarithm of their real values, to include the generative effects of the time series created by the data attained in the study. We transform our data in their logarithmic form, enabling the data's variances to be more stable over time. This transformation of the data structure allows the waste to meet homoskedasticity conditions and a normal distribution (Lütkepohl & Xu, 2009).

We perform the empirical analysis, and for doing that, it is necessary to test the time series data for stationarity before testing them for co-integration. Time series data stationary requires no influence from the time variable on the mean, variance, and autocovariance values (Gujarati, 2011). The variable's stationarity is confirmed by the Augmented Dickey-Fuller (ADF) test, which determines the unit root's existence at the level of direct values or the first difference for each variable. The linear multivariate equation expresses the regressive ADF test:

$$\Delta X_t = \delta_0 + \delta_1 t + \delta_2 X_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta X_{t-1} + u_t \qquad (3)$$

when, X_t – natural logarithm of the variable in the time period t; ΔX_{t-1} – the first differences with k-delays (lags); u_t – the variable that indicates autocorrelation errors.

Based on the data processing, the coefficients are projected. The null and the alternative hypothesis for the presence of the unit root for each variable have the form:

$$H_0: \delta_2 = 0 \text{ vs. } H_a: \delta_2 < 0 \qquad (4)$$

Using the ADF test for null hypothesis testing, the acceptance or rejection can be determined by comparing the value of ADF (t-statistic) with the test's critical value at the predetermined statistical significance level (1%, 5%, or 10%). We used a statistical significance of 5% level. If the value of ADF t-statistic is larger than the test's critical value at 5%, the null hypothesis cannot be rejected, so the corresponding variable has a unit root, and this variable is non-stationary. We developed the ADF test, for each model variable, both in the direct level of their values and the first difference. We also used the Phillips and Perron (1988) PP tests.

4. RESULTS, DATA ANALYSIS, AND DISCUSSION

4.1. Empirical results from the VECM with the conditional effect of human capital

The hypothesis raised in this paper seeks to evaluate the FDI impact on economic growth in Albania conditioned by absorbent capacity, namely human capital variables (*lnHC_I*), technological development difference (*lnTEC_I*), level of trade opening (*lnTO*), and financial system development (*lnFinDev*). Before developing the empirical model, new variables have been constructed that are calculated as the interactions (inter) of FDI (*lnFDI*) with each of the absorbent capacity variables as follows:

$$
\begin{aligned}
inter1 &= lnFDI * lnHC\_I \\
inter2 &= lnFDI * lnFinDev \\
inter3 &= lnFDI * lnTEC\_I \\
inter4 &= lnFDI * lnTO
\end{aligned}
\qquad (5)
$$

The analysis begins with testing the stationary nature of the new variables, seeing if the series are stationary or not, and determining the order of their integration. Before conducting static tests, we made sure to decide on the exact length of the lag. The results of the unit root test outputs are presented in Table 1.

Table 1. Unit root test results of variables at levels

Unit root tests	Variables			
	inter1	inter2	inter3	inter4
Augmented Dickey-Fuller (ADF) With constant and trend	-1.784	-0.776	-2.994	-1.076
Phillips Perron (PP) With constant and trend	-5.715	-5.144	-3.191	-5.664

Source: Authors' elaboration.

The unit root test results demonstrate that all variables are non-stationary at levels. New variables of their first differences were created, as follows to determine the order of integration of variables:

$$inter1\_D1 = inter1\_D1_t - inter1\_D1_{t-1}$$
$$inter2\_D1 = inter2\_D1_t - inter2\_D1_{t-1}$$
$$inter3\_D1 = inter3\_D1_t - inter3\_D1_{t-1}$$
$$inter4\_D1 = inter4\_D1_t - inter4\_D1_{t-1}$$

(6)

We applied the ADF and PP tests again to the new series of the first differences of the variables assessed above and tested whether they met the stationary condition or not. Table 2 shows the unit root test results on the first differences.

Table 2. Unit root tests results of variables in the first differences

Unit root tests	Variables			
	inter1_D1	inter2_D1	inter3_D1	inter4_D1
Augmented Dickey-Fuller (ADF) With constant and trend	-5.670	-6.618	-5.435	-4.677
Phillips Perron (PP) With constant and trend	-15.541	-20.900	-15.187	-16.076

Source: Authors' elaboration.

The results show that the first difference variables are stationary, and they are integrated in the first order, *I(1)*. Once we have determined the stationarity, the second step is to identify the presence of a short-term or long-term relationship between *lnGDP* and *inter1*, *inter2*, *inter3*, and *inter4*. The correct length of the lag on the *lnGDP* variables with *inter1*, *inter2*, *inter3*, and *inter4* was determined to avoid inaccurate results.

The level of lag was 4. The Johansen co-integration test was used for each interaction variable created above to *lnGDP* to identify a co-integration relationship. The Johansen co-integration test applies only to variables that have the same integration order. To avoid inaccurate results, we determined each lag's appropriate length over model variables in the beginning. The testing results are exposed in Table 3.

Table 3. Determination of lag length

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	492.443				3.6e - 19	-19.7732	-19.656	-19.4643
1	767.945	551	64	0.000	6.6e – 23	-28.4059	-27.3513	-25.6261
2	869.462	203.03	64	0.000	1.7e – 23	-29.9372	-27.9451	-24.6865
3	978.249	217.57	64	0.000	5.1e – 24	-31.7653	-28.8357	-24.0435
4	1086.03	215.56*	64	0.000	3.7e – 24	-33.5523*	-29.6852*	-23.3596

Note: Selection-order criteria: sample: 2003q4-2015q4. Number of obs. = 49.
Endogenous: lnGDP, lnPubExp, lnFDI, lnTO, lnFinDev, lnTEC_I, lnHC_I, inter1. Exogenous: _cons.
Source: Authors' elaboration.

The results illustrate that there is at least one long-term relationship between *lnGDP* and FDI interaction with the human capital index (*inter1*), while for other variables, the results show that there are only short-term relationships between them. Depending on the results, the second VECM is calculated below. In addition to the variables included in the basic model, we will consist of the variable (*inter1*) to see the conditional FDI effect depending on human capital in Albania's economic growth. Whereas, to see the impact of FDI under other conditioned factors such as technological development (*lnTEC_I*), trade opening (*lnTO*), and financial system development (*lnFinDev*), we will evaluate the third model, which is a model of the

VAR, which only applies when there are short-term relationships between variables. Johansen test is then applied to each of the bivariate links through which we see if there is any long-term relationship between the variables of interaction with economic growth. The VECM results are shown in Table 4. The VECM output provides evidence on the short and long-term variables relationships. The last part of the output is the one that presents statistics about the long-term relationship between the model variables. We can derive the following co-integration equation from the long run between *lnGDP* and *lnPubExp, lnFDI, lnTO, lnFinDev, lnTEC_I, lnHC_I, inter1*.

$$Co-integration\ equation = lnGDP = 1.45\ lnPubExp - 4.40\ lnFDI + 1.58\ lnTO - 9.48\ lnFinDev + $$
$$+1.32\ lnTEC\_I + 133.2lnHC\_I - 11.21 inter1$$

(7)

This means that in the long run equilibrium (when the co-integration equation is equal to 0, we will have:

$$lnGDP = 1.45\ lnPubExp - 4.40\ lnFDI + 1.58\ lnTO - 9.48\ lnFinDev + 1.32\ lnTEC\_I + 133.2lnHC\_I - $$
$$11.21 inter1$$

(8)

Table 4. VECM model

Equation	Parms	RMSE	R-sq	chi2	P > chi2	
D_lnGDP	26	.025636	0.9765	954.1798	0.0000	
D_lnPubExp	26	.116896	0.9322	316.3756	0.0000	
D_lnFDI	26	.390552	0.6889	50.92982	0.0024	
D_lnTO	26	.064113	0.8773	164.4597	0.0000	
D_lnFinDev	26	.02663	0.9735	845.6637	0.0000	
D_lnTEC_I	26	.038493	0.7291	61.89435	0.0001	
D_lnHC_I	26	.002411	0.9116	237.3049	0.0000	
D_inter1	26	.13827	0.7061	55.25	0.0007	
Cointegrating equations						
Equation	**Parms**	**chi2**	**P > chi2**			
_ce1	7	164.6625	0.0000			
Identification: beta is precisely identified						
Johansen normalization restriction imposed						
beta	**Coef.**	**Std. err.**	**z**	**P > |z|**	**[95% Conf. interval]**	
_ce1						
lnGDP	1					
lnPubExp	1.458905	.4219242	3.46	0.001	.6319493	2.285862
lnFDI	-4.40074	.8202252	-5.37	0.000	-6.008352	-2.793129
lnTO	1.586732	.5881124	2.70	0.007	.434053	2.739411
lnFinDev	-9.484407	.986529	-9.61	0.000	-11.41799	-7.550826
lnTEC_I	1.322498	.3354308	3.94	0.000	.6650656	1.97993
lnHC_I	133.2167	24.70619	5.39	0.000	84.79348	181.6399
inter1	-11.21164	2.46623	-4.55	0.000	-16.04536	-6.377915
_cons	65.4842					

Note: Sample: 2003q4-2015q4. Log likelihood = 988.1356; Det(Sigma_ml) = 4.21e-28.
Number of obs. = 49. AIC = -31.55656; HQIC = -28.40723; SBIC = -23.25571.
Source: Authors' elaboration.

VECM model estimated a significant long-term relationship between *lnGDP* and *lnPubExp, lnFDI, lnTO, lnFinDev, lnTEC_I, lnHC_I, inter1*. From the co-integration equation, it is observed that the values of *lnGDP* depend positively on the values of *lnFDI, lnFinDev,* and *inter1*, in the long run, and the values of *lnGDP* depend negatively on the values of *lnPubExp, lnTO, lnHCEC_I.* What is striking is that all the variables have not changed sign regarding the impact on economic growth except the indicator of lnTEC_I, which becomes important in the VECM but has stimulated a negative impact on Albania's economic growth.

Significantly, FDI has not changed its sign, and its impact remains positive and almost the same concerning lnGDP. Interpreting the second co-integration equation produced by the VECM, we conclude that a 1% increase in the log of foreign direct investment (*lnFDI*) will increase the log of GDP by 4.40%. We conclude that there is a Granger causality in the long run derived from FDI towards economic growth.

In terms of interpreting the interaction variable (*inter1*), analyzing the size of the coefficient itself does not make economic sense, but the coefficient sign in front of it in the regression equation must be positive. This result demonstrates that the impact of FDI has been strengthened under the conditional factor of the human capital index and that their influence is expected to increase as human capital in Albania develops. We conclude that there is a Granger causation in the long run derived from FDI under the conditional effect of human capital (*inter1*) towards economic growth.

From the second equation of the co-integration, we conclude an essential and positive long-term relationship between the financial development system (*lnFinDev*) and economic growth (*lnGDP*), and there is a causal relationship Granger that goes from *lnFinDev* to *lnGDP*.

The relation between public spending, trade opening, human capital index, and economic growth (GDP) is significant and long-term negative. This Granger causality derives from *lnPubExp*, *lnTO*, *lnHC_I* towards GDP. The index of technological difference (*lnTEC_I*) is statistically significant and has a long-term negative impact on economic growth. When Albania's technological gap with developed countries diminishes, this positively impacts GDP growth.

To accomplish long-term equilibrium, it must normally rely on the short-term balances between the model variables. From the analysis of the output, we get information about the short term. The short equations and importance are determined by estimating every variables' first differences at the beginning of the output. Each of the equations has as variable dependent the first differences of variables such as *lnGDP_D1, lnINF_D1, lnPubExp_D1, lnFDI_D1, lnTO_D1, lnFinDev_D1, lnTEC_I_D1, lnHC_D1.* We focus mainly on the equations with dependent variable *lnGDP_D1, lnFDI_D1,* and *inter1_D1*, adhering to the paper's purpose.

The time series of the first difference *D_lnGDP* depends significantly on the sequence of the first difference of $lnGDP_{t-2}$, $lnPubExp_{t-2}$, $lnPubExp_{t-3}$, $lnFDI_{t-1}$, $lnHC\_I_{t-1}$, $lnHC\_I_{t-2}$, $lnHC\_I_{t-3}$ and $inter1_{t-1}$. From the outputs, we noticed a term of error correction for the equation where the variable (*D_lnGDP*) appears as the dependent variable. This error correction vector (ce_1) is statistically significant and has a negative value, which means that *lnGDP* is an endogenous variable. This result shows that the dynamic model is stable, as deviations from long-term equilibrium are adjusted by lowering the *lnGDP*. Error correction for (*lnGDP*) represents the negative quarterly adjustment of ($lnGDP_{t-1}$), which will be 8.8% of its co-integrative value of ($lnGDP_t$). Otherwise, it also measures the speed of the adjustment it makes (*lnGDP*) to achieve a steady state.

However, for the second equation, where (*D_lnFDI*) is a dependent variable, the error correction vector is ($ce_1 = 0.073$), but it is not statistically significant, and it does not depend on either the values of its lags or those of other variables. The coefficient before the variable *lnGDP$_{t-3}$* is essential and positive, so we conclude that: economic growth causes changes in FDI in Albania in the short term. This analysis found a short-term Granger causality that stems from economic growth towards FDI, and this relationship is positive.

In terms of the dependent variable, the financial system's development (*lnFinDev*), where the error correction vector is ($ce_1 = 0.099$), is statistically significant and positively valued lnFinDev is an endogenous variable. This outcome indicates that deviations from long-term equilibrium are adjusted by increasing lnFinDev. Error correction for (*lnFinDev*) represents the positive quarterly adjustment of (*lnFinDev$_{t-1}$*), which will be 9.9% of its co-inheritance value of (*lnFinDev$_t$*). Otherwise, it also measures the speed of the adjustment it makes (lnFinDev) to achieve a steady state. We noted that the development of the financial system (*lnFinDev$_{t-3}$*) is statistically significant, and in the short term, it has a positive effect on FDI. So, we conclude that there is a short-term cause of Granger that results from the development of the financial system towards FDI, and this relationship is positive.

Regarding the dependent variable of the human capital development index (*lnHC_I*), where the error correction vector is ($ce_1 = 0.0047$), it is statistically significant and has a positive value indicating that *lnHC_I* is an endogenous variable. This result suggests that deviations from long-term equilibrium are adjusted by increasing *lnHC_I*. Error correction for (*lnHC_I*) represents the positive quarterly adjustment of (*lnHC_I$_{t-1}$*), which will be 0.4% of its co-inheritance value of (*lnHC_I*). Otherwise, it also measures the adaptation speed it does (*lnHC_I*) to achieve a steady state. Whereas for the equation where (*D_inter1*) is a dependent variable, the error correction vector is ($ce_1 = 0.051$),

but it is not statistically significant, and it does not depend on either the values of its lags or those of the other variables.

4.2. Diagnosis of the VECM, the impact of FDI on economic growth with the conditional effect of human capital

Diagnostic tests were applied, and specifically, the durability test was initially used to see that the model has no mistakes. If the residual modules' values are higher than one, the model is not steady, and the results are inaccurate. However, if the eigenvalues are less than or equal to 1, the model is accurate, and its results can be used for forecasting. The second test was applied, the lagrange multiplier (LM) autocorrelation test. Its results show that the waste is uncorrected up to the lag defined in the corresponding VECM. Finally, to test whether model residues have a normal distribution, Jarque-Bera statistics were used. The Jarque-Beras, Skewness, and Kurtosis statistics results do not refute the null hypothesis on residues' normality, which we conclude that the residues have a normal distribution.

4.3. Empirical results of the VAR model, with the conditional effects of financial development, trade opening, and technological development difference

The Johansen test showed that FDI interaction variables with absorption factors of financial development, trade opening, and technical differences concerning economic growth have a short-term relationship. We applied the Granger causality test under the VAR model to examine this connection. Before using the model, we made sure that we correctly determined the right length of the lag, which is lag = 4. The results are given in Table 5.

Table 5. Determination of lag length, VAR model

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-293.404				.027679	7.76442	7.82051	7.90909
1	-164.671	97.465	16	0.000	.008615	6.5954	6.87584	7.31874
2	-115.501	98.341	16	0.000	.00266	5.41074	5.91553	6.71276
3	-57.4249	116.15	16	0.000	.000606	3.90803	4.63717	5.78872
4	-25.9051	63.04	16	0.000	.000364	3.35375	4.30724	5.81311

Note: Selection-order criteria: sample: 2004q1-2017q4. Number of obs. = 56.
Endogenous: lnGDP_D1, inter2_D1, inter3_D1, inter4_D1. Exogenous: _cons.
Source: Authors' elaboration.

The VAR model results show four equations of the first differences of the variables *lnGDP, inter1, inter2, inter3, and inter4.* The results show that all four models are statistically significant. Based on the paper's purpose, we will focus only on the first equation, a dependent variable, the first difference

of *lnGDP* (*lnGDP_D1*) (see Table 6). This equation has an $R^2 = 0.95$, which means that the independent variables explain the variable dependent variable in our case of *lnGDP* at 95%, so the model is significant and has high explainability. We rewrite the equation of the VAR model as follows:

$$lnGDP_{D1} = 0.019 - 0.45\,lnGDP\_D1_{t-2} - 0.44\,lnGDP\_D1_{t-3} + 0.59\,lnGDP\_D1_{t-3} + 0.012\,inter2\_D1_{t-4} - 0.027\,inter3\_D1_{t-4} \tag{9}$$

Table 6. VAR model

Equation	Parms	RMSE	R-sq	chi2	P > chi2	
lnGDP_D1	17	.028363	0.9559	1213.9	0.0000	
inter2_D1	17	1.71831	0.6502	104.1092	0.0000	
inter3_D1	17	.906363	0.6691	113.2538	0.0000	
inter4_D1	17	1.42931	0.7679	185.275	0.0000	
beta	Coef.	Std. err.	z	P > |z|	[95% Conf. interval]	
lnGDP_D1						
L1.	- .4545067	.1074998	-4.23	0.000	- .6652025	- .2438109
L2.	- .3968118	.1152431	-3.44	0.001	- .622684	- .1709395
L3.	- .4474584	.1097885	-4.08	0.000	- .6626399	- .232277
L4.	.5877176	.1057388	5.56	0.000	.3804732	.7949619
inter2_D1						
L1.	.0011382	.0069829	0.16	0.871	- .012548	.0148244
L2.	- .0027615	.0071585	-0.39	0.700	- .0167919	.011269
L3.	- .0015586	.0066678	-0.23	0.815	- .0146272	.01151
L4.	.0120122	.0058031	2.07	0.038	.0006384	.0233861
inter3_D1						
L1.	- .0003727	.0084336	-0.04	0.965	- .0169022	.0161568
L2.	- .0013045	.0093249	-0.14	0.889	- .019581	.016972
L3.	- .0015575	.0099277	-0.16	0.875	- .0210154	.0179004
L4.	- .0271851	.0086533	-3.14	0.002	- .0441452	- .010225
inter4_D1						
L1.	- .0023169	.0065475	-0.35	0.723	- .0151498	.010516
L2.	.0035216	.0067694	0.52	0.603	- .0097462	.0167894
L3.	.0019282	.0062503	0.31	0.758	- .0103222	.0141786
L4.	.0015937	.0064532	0.25	0.805	- .0110544	.0142417
_cons	.0195807	.0060384	3.24	0.001	.0077458	.0314157

Note: Sample: 2004q1-2017q4. Log likelihood = -25.90506; FPE = .0003639; Det(Sigma_ml) = .0000296.
Number of obs. = 56. AIC = 3.353752; HQIC = 4.307239; SBIC = 5.813108.
Source: Authors' elaboration.

Equation (9) shows that the variable of FDI interaction conditioned by financial development is statistically significant but has a positive impact on economic growth only in the fourth period. Whereas the variable of FDI interaction conditioned by *lnTEC_I* is statistically significant but has a negative impact on economic growth only in the fourth period. The variable of FDI interaction conditioned by trade opening is statistically insignificant. Summing up the results, we conclude that the effect of FDI is conditioned only by financial development and the index of technological changes in the short run to economic growth. The Granger test is applied to assess the causality between interaction and economic growth variables, and the results are presented in Table 7.

Table 7. Granger's causality test under the VAR model

Equation	Excluded	chi2	df	Prob > chi2
lnGDP_D1	inter2_D1	5.741	4	0.219
lnGDP_D1	inter3_D1	14.627	4	0.006
lnGDP_D1	inter4_D1	1.6225	4	0.805
lnGDP_D1	All	16.935	12	0.152
inter2_D1	lnGDP_D1	9.767	4	0.045
inter2_D1	inter3_D1	6.9153	4	0.140
inter2_D1	inter4_D1	5.3089	4	0.257
inter2_D1	All	28.049	12	0.005
inter3_D1	lnGDP_D1	26.907	4	0.000
inter3_D1	inter2_D1	6.9971	4	0.136
inter3_D1	inter4_D1	10.913	4	0.028
inter3_D1	All	62.897	12	0.000
inter4_D1	lnGDP_D1	14.555	4	0.006
inter4_D1	inter2_D1	.96465	4	0.140
inter4_D1	inter3_D1	8.7586	4	0.257
inter4_D1	All	56.628	12	0.005

Source: Authors' elaboration.

There is a causal relationship between short-term Granger resulting from FDI interaction with technological change (*inter3_D1*) towards economic growth (*lnGDP_D1*). There is a Granger short-term causal relationship arising from FDI interaction with the trade opening (*inter4_D*) towards the variable of FDI interaction with technological changes (*inter3_D1*). Finally, it is observed that there is a short-term causal Granger relationship derived from economic growth (*lnGDP_D1*) straight (*inter2_D1*), (*inter3_D1*), and (*inter4_D1*).

4.4. Diagnosis of VAR model, with the conditional effects of financial development, trade opening, and technological development difference

From the results of the diagnostic test results, we can conclude that the model used is stable. Also, the second test that has been applied is the LM autocorrelation test between wastes. Its results show whether the residues are uncorrected up to the lag defined in the corresponding VAR model. Finally, to test whether model residues have a normal distribution, Jarque-Bera statistics were used. Jarque-Beras, Skewness, and Kurtosis's statistics data do not refute the null hypothesis on residual normality. Thus, we conclude that the waste has a normal distribution.

5. CONCLUSION

The results of the study of the impact of absorbent capacity variables on the relationship between GDP and FDI inflows allow us to conclude that Albania's technological development is an obstacle to following the positive effects of FDI's as Albania is a technologically underdeveloped country, characterized by a system of initial innovation and very little developed research and development. A sizeable technological difference between Albania and the technologically advanced countries becomes an obstacle in absorbing the positive effects of FDI and often determines the entry of less developed technologies. This conclusion is in line with Glass and Saggi (1998), Li and Liu (2005), Jordaan (2017). So, technological development's growth would increase foreign direct investment's positive effect on Albania's economic growth. This result means that when Albania's technological gap with developed countries diminishes, this positively will impact economic growth from increasing FDI inflows.

The model's findings, which examine the human capital role as an absorption capacity factor for direct inflows of FDI, allow us to conclude a Granger causality in the long run derived from FDI under human capital conditional effect (inter1) towards economic growth. If we have a 1% increase in the log of FDI (lnFDI), it will increase the GDP log by 4.40%. Human capital exerts a positive impact in the long run on the relationship between total GDP and FDI, increasing FDI's impact on economic growth. Although not very developed, human capital in Albania has absorbed the knowledge transferred by foreign investors in the country and creates the possibility of spreading this knowledge to local businesses. In Albania, FDI does not require a high level of human capital development, as it is focused on sectors such as trade, services, extractive industry sectors, which accept a low level of development of human capital and bring more slightly developed technology. Foreign investors directly in Albania are oriented towards jobs that require little skill.

Financial development positively impacts the relationship between the total GDP and FDI, increasing the FDI inflows' impact on GDP. The increase in M3/GDP in Albania over the years is an indicator of an increase in the volume of transactions in the Albanian financial system, thus reflecting on rapid economic development. The country's financial development itself has had a positive impact on economic growth in Albania. In this way, foreign investors' entry conditions are created, mainly those foreign investors looking for a market. The entry of foreign investors into Albania led to the local business's development (Mileva, 2008) and helped the country's economic growth. The paper shows that the variable of FDI interaction conditioned by financial development is statistically significant and positively impacts economic growth in the fourth period. Banks' strengthening of corporate lending policies explains the above result and delays the spread over time of foreign investors' positive effects.

Trade opening appears insignificant on the relationship between GDP and FDI. Although Albania has made significant improvements in facilitating international trade through international free trade agreements, which have effectively increased trade volume and improved the customs code, increasing imports has doubled its export growth. Moreover, imports have been mainly driven by importing goods rather than importing machinery and equipment. Also, foreign investors directly in Albania have not always brought the most advanced technology. These bring about a negligible impact of trade opening on FDI inflows and economic growth relationship (Lim, 2001). Trade opening has a positive effect on economic growth in countries that have developed human capital and import raw materials for developed industrial sectors (Kneller, Morgan, & Kanchanahatakij, 2008) and in countries with innovation capacities at approximate levels.

Finally, our model highlighted the existence of a short-term causal Granger relationship that stems from economic growth toward improving the absorptive capacity of the effects arising from the entry of foreign investors. Albania's economic development helps to benefit from foreign investors' access directly, definitely an important conclusion, even considering that economic growth does not cause changes in FDI inflows into Albania. If we can have economic growth, the ability to benefit directly from foreign investors will increase.

We recommend that it is essential to implement policies that affect Albania's investment climate, such as reducing the fiscal burden on businesses and facilitating utilities such as electricity, drinking water, and internet access. Solving property titles' problems would affect the expansion of activities carried out by foreign investors as property rights problems continue to appear as problematic in the Albanian economy's development. It is necessary that the legal framework, rather than theoretically improved, make its implementation more transparent, including relevant regulations and procedures. The Albanian government and institutions should also increase transparency, reduce corruption, and increase public administration service level that will affect investors' attraction in various economic sectors.

Based on the empirical analysis findings in our study, we can suggest the improvement of Albania's absorption capacity to benefit as much as possible from the inflows of FDI flows. Another crucial factor that determines the possibility of benefiting from the entry of foreign investors is the human capital in the host country, which must be developed to be able to absorb the knowledge brought by foreign investors and later spread this knowledge in the host country, thus helping to increase productivity in the country. Albania needs to change the source of wealth creation, follow other countries' models, strengthen human capital, and increase its contribution to the economy. Human capital development requires increased investment in education in Albania and vocational training. Albania needs to increase spending on education to create the premises to have an education system with a better product. Through the enrichment of human capital, it becomes possible to develop a competitive advantage that is often more efficient than the free labor force, which is one of the main factors that attract FDI in Albania. Investments in research and development businesses are essential to increase the country's absorption capacity.

The business's research and development, which is almost non-existent in Albania, should be stimulated. Albania's innovative potential that can bring significant economic benefits, such as increasing its competitiveness and productivity by increasing exports, must be fostered. An important suggestion is that Albania must develop the country's industrial production sector. The growth of the industrial production sector creates opportunities for the development of continuous technology and innovation. In this way, the human capital in the country is developed. Through appropriate foreign investors' policies directly in this sector, the orientation would help the country's reindustrialization significantly because the FDI is known for its effect on changing host economies' structure. Finally, continuous monitoring of the financial system's development should be carried out, especially with the non-banking market's development. The growth of the financial system's non-banking market would facilitate access to finance for domestic businesses and increase the financial capacity to adopt technologies already made known by foreign investors directly in the country.

The first limitation is related to the data used in the model. Albania recognized FDI in the early 2000s, which conditions a short time series of data. The small-time series of 15 years dictates the use of quarterly data. Another limitation is the non-inclusion in the model of other variables, which from the review of the theoretical and empirical literature, appears necessary for analyzing economic growth. Having a limited number of observations, the inclusion of other variables would negatively affect the assessment. Such variables are the quality of infrastructure, exchange rate, remittances.

Although our paper has managed to clarify some issues linked to the impact of FDI on Albania's economic growth, we acknowledge that this paper is just the beginning to understand better how Albania can benefit from FDI inflows. Using data at the micro-level will shed more light on how foreign investors' dissemination of knowledge to domestic business occurs, increasing domestic firms' productivity. Assessing the process of disseminating knowledge from foreign investors to domestic business would create the possibility of comparing it with the extent of incentives offered to attract these foreign investors. This result is significant as often, FDI may fail to make high positive contributions to economic growth, and these government incentives may have been used inefficiently. Another critical moment for further studies would be analyzing the impact of FDI on Albania's economic growth based on different economic sectors. The sectoral distribution of FDI also determines the extent of knowledge dissemination. An analysis of FDI by sectors presents the impact of FDI on host countries' economic development.

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