Foreign Direct Investment as a Key Driver for Export in Algeria: Complements or Substitutes?
- Gravity Model Analysis-

الإستثمار الأجنبي المباشر كمحرك رئيسي للتصدير في الجزائر: تكامل أو بدائل؟

- تحليل باستخدام نموذج الجاذبية –

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Abstract:
In view of the extended role of FDI in the economic growth, an analysis of impact of FDI on different economic variables has received global attention. The analysis of impact of FDI on exports of a host country is one such aspect being widely explored by the research scholars as well as different economic organizations. This paper examines the impact of FDI on exports of Algeria at macro level (Substitutes or complements) using econometric techniques (expanded Gravity Model). In the study special attention has been paid to select the most appropriate time series data to minimize the likely distortions resulting from political and economic instabilities in the country. The results provide statistically significant evidence of the positive impact of FDI on exports of Algeria.
Keywords: Foreign Direct Investment, investment climate, exports, gravity model, panel data.

الملخّص:

نظرا للدور الموسع للإستثمار الأجنبي المباشر في النمو الاقتصادي، يحظى تحليل أثر الاستثمار الأجنبي المباشر على المتغيرات الإقتصادية المختلفة اهتماما عالميا. فتحليل أثر الإستثمار الأجنبي المباشر على صادرات البلد المضيف هو واحد من هذه الجوانب التي يجري استكشافها على نطاق واسع من الإقتصاديين وكذلك المنظمات الإقتصادية المختلفة. وتبحث هذه الورقة أثر الإستثمار الأجنبي المباشر على صادرات الجزائر في المستوى الكلي (بدائل أو تكامل) باستخدام أساليب الاقتصاد القياسي (نموذج الجاذبية الموسع). وفي هذه الدراسة تم إعطاء اهتمام خاص لتحديد بيانات السلاسل الزمنية الأنسب للحد من التشوهات المحتملة الناجمة عن عدم الاستقرار السياسي والاقتصادي في البلاد. وقد توصلنا من خلال هذه الورقة للتكامل ولأثر الإيجابي للإستثمار الأجنبي المباشر مع صادرات الجزائر.

الكلمات المفتاحية: الإستثمار الأجنبي المباشر، المناخ الإستثماري، الصادرات، نموذج الجاذبية، بيانات البانل.

Introduction:

The trade and foreign direct investment are two variables that have an important impact on globalization process, the relationship among them being different from a country to another. The causality between these two variables definitively influences the decision-making process. Two major directions have been identified in literature: the FDI determines the international trade or the other way round and FDI is a substitute or a complement of international trade [1].

The share of foreign affiliates of transnational corporations (TNCs) in world exports rose over time, reaching an estimated 60% in 2016. Though, the extent to which foreign affiliates contribute to exports varies greatly from country to country, as UNCTAD statistics demonstrate. The impact of FDI undertaken by TNCs on host-country exports will differ according to its rationale. Resource and efficiency-seekers evidently tend to be more export-oriented than market or strategic asset-seekers. As far as the literature review is concerned, the debate of domestic market vs. export orientation of foreign affiliates generally leads to different conclusions. As Meyer (2005) found out for a series of countries, about three quarters of FDI aims at supplying the domestic market in the host country.

One of two possible relationships- substitutes or complementary-describes FDI and exports. A substitute's relationship indicates that an increase in FDI will decrease exports to foreign countries and vice versa. In contrast, a complementary relationship indicates that FDI and exports move in the same direction.

According to Mendel, foreign direct investment (FDI) is substitute to exports, leading to a general decline despite the increase in exports of intermediate goods and raw materials needed for the production process. FDI flows are aimed at improving the competitiveness of multinational companies as compared to domestic and foreign industries. While the incentive for these overseas investments to benefit from cheap labor and raw materials, lower transportation costs, leading to increased sales, increased demand for raw materials from the home country, which increases their exports.

Some economists like Kojima also believe that foreign direct investment flows do not replace exports but rather stimulate

*(**Complements**). This is mainly because companies can find a broader distribution base and thus expand the range of products sold in foreign markets, Achieved if all sales are channeled through export from the home market.*

The structure of this study is as follows. The first section presents a theoretical literature on FDI-exports linkages. Section 2 presents the New Relevance of FDI; Section 3 Showing gravity model theory; while section 4 describes the econometric procedure and discusses the empirical results, and section 5 concludes.

I. *Literature Review*

These approaches consider FDI and exports as alternative manners of supplying a foreign market and, consequently, one substitutes the other. From among the main FDI approaches, we can point out the internalization theory and the eclectic paradigm.

*According to the literature, as in Buckley and Casson (1976), the origin of the internalization theory goes back to **Coase** and his theory of the firm and to later contributions by **Williamson**. In the context of this theory, firms and markets are considered as alternative forms of organizing production since the intra-firm and market mechanisms exhibit, potentially, different efficiency levels in the execution of different transaction types. The firm's role is fundamental whenever the costs of using the market mechanism (transaction costs) were larger than the organization costs of the same activities inside the firm. In these conditions the firm will internalize those activities [2].*

The systematized application of the internalization concept to the MNE begun with Buckley and Casson. These authors suggested that a MNE will internalize its activities in a foreign country through FDI if the internalization cost (internal organization costs, such as communication costs, administrative costs, etc.) is inferior to the cost associated with export or to other forms of entry.

Thus, the internalization theory considers that FDI substitute's exports when enough costs exist associated with external transactions[3].

*The eclectic paradigm, developed by **Dunning (1980**) considers that the firm will prefer FDI rather than other modes of entry if three types*

of advantages exist: ownership advantages of a firm, Location advantages of a market and internalization advantages of integrating the transactions inside the firm [4]. The ownership advantages refer to the specific assets and qualifications of the firm: to compete with foreign firms in their own markets, MNEs should possess superior assets and qualifications that could have sufficiently high remunerations to compensate the high costs of serving these markets. The location advantages reflect the attractiveness of a specific country, in terms of its market potential (size and growth) and investment risk. Measures of location advantages include similitude in culture, in market infrastructures and the availability of lower production costs. Finally, the internalization advantages are concerned with the costs of choosing a hierarchical way of operation (FDI) instead of an external way. Whenever the three types of advantages are gathered, firms will engage in FDI. If the location advantage does not exist but the firm possesses the others, it will opt to export. The greater the ownership advantages the firm possesses, the greater the incentive to internalize; the greater the attractiveness of an external country relative to the domestic country, the greater the probability of the firm to engage in foreign production. Also, in this case, FDI and export are seen as two alternative entry modes [5].

***Vernon (1966**) in its Product Life Cycle (PLC) theory also explained a positive role of FDI in promoting exports from host countries. He argued that technology passes through four stages of production. Theses stages are innovation, growth, maturity and decline. In the third stage of maturity, innovating firms, in order to reduce cost and protect them from imitating competitors, start production in foreign countries and export a part of production to home country. In the last phase, product and technology becomes mature and standardized, and becomes accessible to local imitators that thanks to the low labor cost become international competitors. This leads to increase in export of the host countries. In this case flow of trade may be reversed. The original innovating may relocate production further into host countries and reimport the product to the home country [6].*

Complementary, between export and FDI, is normally found when foreign Investment is vertical, meaning that the MNE fragments/splits the production process across countries in order to reduce costs. In

these types of models, as is the case of Helpman (1984), and Grossman (1991), the differences in relative factors endowments between countries play a determinant role in explaining both trade and FDI. They are particularly useful to explain FDI from developed into developing Economies. Complementary is still possible when countries have identical endowments, preferences and technology. Markusen (1984) additionally assumes multi-plant economies of scale, and distinguishes firm/headquarter specific activities– R&D, marketing, distribution - from plant specific activities, that refer to the production process. One possible solution for the model is a multinational monopoly, in which Headquarter activities concentrate at the home country and the production plant goes to the host country, originating bilateral trade – headquarter services and final goods [7].

Markusen and Venables (1995) develop such a model considering countries that are different in factor endowments and technologies and discover that trade and FDI have a reverse (substitution) relationship as they become similar considering the relative factor endowments and technologies [8]. Moreover, Markusen (1984) predicts a substitution relationship between horizontal FDI and exports, whereas horizontal FDI arises as a product of the interaction of plant-level activities and firm-specific activities (R&D, marketing, managerial services, etc.). Therefore, whether an MNE establishes an affiliate or tends to export depends on the trade costs (tariffs) on the one hand, and the costs of establishing a new firm near the customers on the other hand. Finally, as horizontal FDI tends to take place between countries that are similar in terms of factor endowment, income, and technologies, the model predicts a negative link between skill differences and horizontal FDI [9].

II.   *The New Relevance of FDI: The Global Value Chains (GVC) Perspective*

Trade in today's world is radically more complex. The information and communications technology revolution has internationalized supply chains, which has created a tight supply-side linkage between trade and FDI: the "trade–investment–service– IP nexus". Today's international commerce comprises complex‹ two-way flows of goods, services, people, ideas and investments in physical, human and knowledge capital – in addition to trade in raw materials and final

goods. These connections make it almost irrelevant to talk about trade without also talking about FDI – at least for many products and markets.

As complex international supply chains are pervasive features of modern manufacturing, it is useful to have a simple diagram to organize thinking on trade and FDI linkages. The most natural focus is on the trade behaviour of foreign affiliates, i.e. the share of affiliate production sold in the local market, and the share of affiliate intermediate inputs that is sourced from the local market. Figure 1 plots the sales and sourcing behaviour for a given FDI affiliate as one point in the box. Affiliates engaged in the traditional categories of FDI appear as dots around the edges of the box. The substitutability of FDI and trade increases along the diagonal (southwest to northeast); the market-seeking aspect of FDI increases for points higher up in the box [10].

- *Pure "market-seeking" FDI is the northeast corner: affiliates sell all output locally and source all intermediates locally.*
- *Pure "efficiency-seeking" FDI is the eastern border: all intermediates are sourced locally, but some of the output is exported.*
- *Pure "export platform" FDI (i.e. outward processing) is the southwest corner: all intermediates are imported and all output is exported.*
- *"Tariff-jumping assembly" FDI – in which all intermediates are imported and all output is sold locally – is the northwest corner.*
- *Pure "resource-extraction" FDI is the southwest corner: intermediate inputs are sourced locally and all output is exported (e.g. cash-crop agriculture, mining, and fishing). In many cases (e.g. oil drilling), some intermediates may be imported, so the point would be on the interior of the bottom edge of the box.*

Most affiliates today are in the middle of the box – especially those engaged in global value chains. They import some (but not all) of their intermediates and export some (but not all) of their output. Trade and FDI are intimately connected for such affiliates. Indeed, trade and investment are either complements or substitutes – they are simply two facets of a single economic activity: international production sharing.

Figure 1: *The Sales-Sourcing Box Diagram*
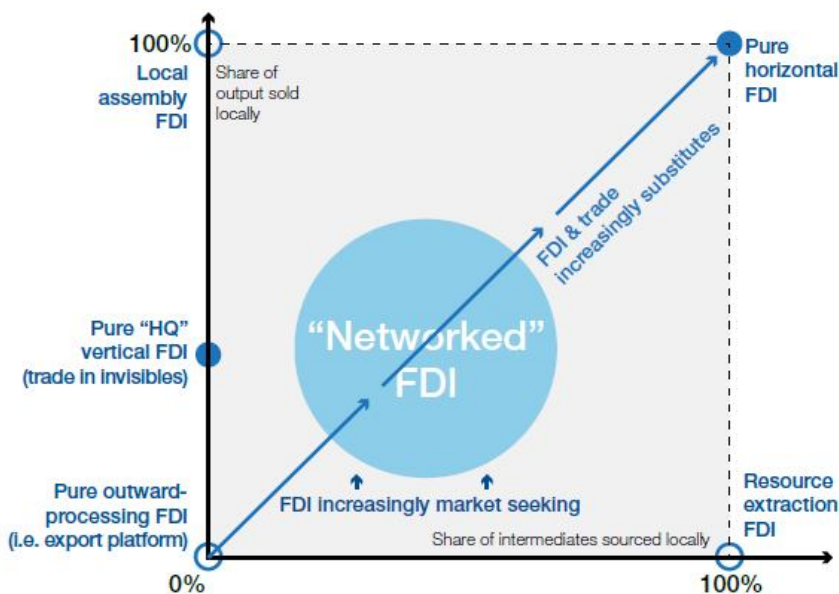
The sales-sourcing box can also illustrate typical development strategies involving FDI (Figure 2). The traditional import-substitution strategy, for example, involves starting with local assembly and pushing multinationally to produce more intermediates locally; the eventual goal is to export. This would show up as a move from the northwest corner towards the southeast corner. The 21st-century version of this strategy – pursued by China and other East Asian nations – starts from the southwest "outward processing" point and seeks to induce multinationals to source more intermediates locally. This is a pure "eastward" move from the lower left-hand corner. In some cases, there is also a desire to develop the local market for the final good. This would be a push to move affiliates' positions northeastwardly.

Figure 2: FDI and Development Strategies
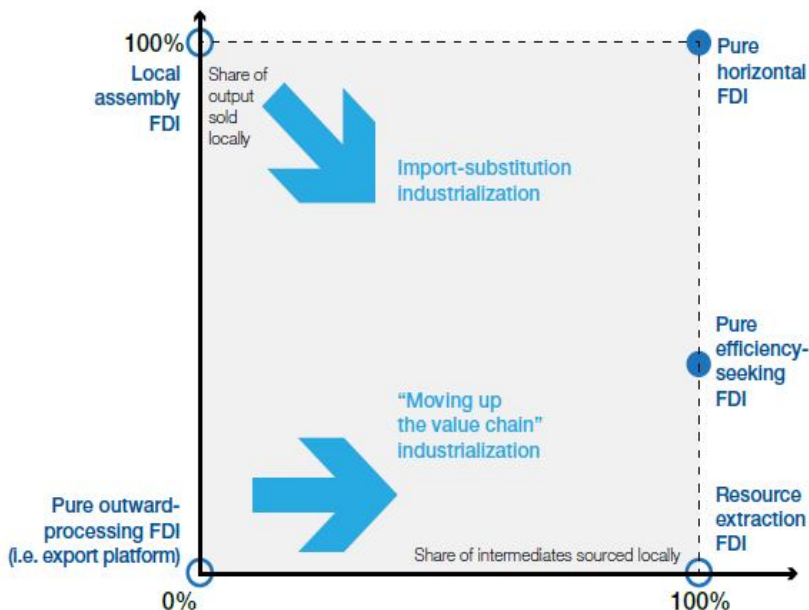
III.   THEORY OF THE GRAVITY MODEL

The classical and new trade theory can successfully explain the reasons for countries to join in world trade; however they cannot answer the question of the size of the trade flows. Another trade theory, the gravity model, which has been used intensively in analyzing patterns and performances of international trade in recent years, can be applied to quantify the trade flows empirically [11]. The model applies Newton's universal law of gravitation in physics, which states that the gravitational attraction between two objects is proportional of their masses and inversely relate to square of their distance [12]. The gravity model is expressed as follows [13]:

$$F_{ij} = G\frac{M_1 M_2}{\tau^2}$$

Where:

Fij : is the gravitational attraction

Mi, Mj : are the mass of two objects

$\boldsymbol{\tau^2}$ **:** *is the distance*

G: is the gravitational constant

   Tinbergen (1962) proposed that the same functional form of Newton's law could be applied to international trade flows. However, since that time, this model has been applied to many fields including migration, tourism, and foreign direct investment [14]. The basic form of the gravity equation is as follows [15]:

$$F_{ij} = G \frac{GDP_i^\alpha GDP_j^\beta}{D_{ij}^\theta}$$

Where:
Fij: indicates bilateral trade between country i, and j.

GDP i: indicates the economic size of i, measured by GDP.

Dij: indicates the bilateral distance between the two countries.

The parameters α, β, and θ are often estimated in a log-linear reformulation of the model.

   This equation explains bilateral trade using economic size and distance: the larger the two trading partners, the larger the trade flows; the larger the distance between the two countries, the smaller bilateral trade. Usually the model explains 70%–80% of the variance in bilateral trade flows [16].

We use the specification of the gravity equation proposed by **Anderson and Van Wincoop (2003, 2004)**. In a monopolistic competition framework, these authors demonstrate that in a one-sector economy where consumers have CES preferences with a common elasticity among all goods (σ > 1), the gravity equation can be written as [17]:

$$EXPORT_{ij} = \frac{Y_i Y_j}{Y_w} \left(\frac{t_{ij} \pi}{\pi_i P_j} \right)^{1-\sigma}$$

$$P_j^{1-\sigma} = \sum_i \pi_i^{\sigma-1} \theta_i t_{ij}^{1-\sigma} \forall_j$$

$$\pi_i^{1-\sigma} = \sum_j p_j^{\sigma-1} \theta_j t_{ij}^{1-\sigma}$$

*where **Yi** et **Yj** are levels of **GDP**, **Yw** is world GDP, **θi** is the income share of country **i**, and **tij** are costs associated to trade from country i to country j (tij ≥ 1). With the symmetry of trade costs (**tij = tji**), **Πi = Pi** and equation 1 then becomes:*

$$EXPORT_{ij} = \frac{Y_i Y_j}{Y_w} \left(\frac{t_{ij}}{P_i P_j} \right)^{1-\sigma}$$

*Price indexes **Pi** and **Pj** are "multilateral resistance" terms. They summarize the average trade resistances between a country and all its trading partners. If there is a consensus to consider price indexes in gravity equations, other methods have been proposed to tackle or circumvent inherent difficulties. However, the advantage of country fixed effects is to quantify "multilateral resistance" in a way that integrates omitted variables and makes possible the isolation of "bilateral" and "unilateral" effects of institutional variables.*

*In addition to factors of distance and the size of the economy, the economic literature has sought to expand the determinants of trade flows, for example show that foreign direct investment and trade partner's average income has a positive impact on exports because it reflects the buying power of consumers, as studies show that the variables that reflect the proximity such as borders and shared language and history positively affect overall trade flows and patterns of this kind is called '**'Expanded Gravity Models''**.*

IV.   Empirical Analysis

*For the purposes of the study will use the expended gravity model by introducing a variable **FDI** flows to Algeria as an independent variable, in addition to the original form of independent variables:*

GDP, distance, number of populations. It takes the form of the following formula:

$$LnEXPORT_{it} = \alpha_0 + \alpha_1 LnFDI_{it} + +\alpha_2 LnGDP_{it} + \alpha_3 LnGDP_{jt}$$
$$+ \alpha_4 LnPOP_{it} + \alpha_5 LnPOP_{jt} - \alpha_6 Ln\, D_{it} + \mu_i + \gamma_t$$
$$+ \varepsilon_{it}$$

$LnEXPORT_{it}$: *Exports of the country i to country j at time t (us $ million)*

FDI_{it}: *Net FDI inflows to the country i (million $)*

GDP_{it} , GDP_{jt}: *The gross domestic product of countries i and j (million $)*

POP_{it} , POP_{jt}: *The total population of the two countries i and j*

D_{it}: *The distance between the country i and j trading partner (km)*

μ_i: *Sectional differences and subtle effects*

γ_t: *Effects or time differences.*

ε_{it}: *Reduce the random model with conventional hypotheses.*

1. The study sample

This study covers the fourteen countries, in the period (1995-2015), where:

European countries: *Italy-Spain- France- Britain- Netherlands-Belgium.*

Arab countries: *Egypt, Tunisia, Morocco.*

North America: *United States – Canada.*

Latin America: *Brazil.*

Asia: *China-Japan.*

2. Sources of data

Obtain data Total Algerian exports to trading partners of the **UNCTAD** *organization database, while the net foreign direct*

investment flows and the population of the World Bank database, but a variable distance between the capitals is obtained from the site specialized in measuring distances between States.

http:www.distancecalculator.globefeed.com/Country_Distance_Calc (ulator.asp)

3. Estimation of the model

In the beginning, we must make a set of statistical tests on the variables in the model and the study sample.

Table 2: Descriptive statistics for explanatory variables

Variables	Mean	Median	Std.Dev	Max	Min	Kurtosis	Skewness
LnEXPORT	6.322	6.937	2.50	12.73	-3.7	4.510	-1.277
LnFDI	0.450	0.000	1.725	8.02	0.00	14.523	3.647
LnGDP	13.468	13.733	1.695	16.67	9.79	2.306	-0.349
LnPOP	17.891	17.872	1.246	21.20	16.0	3.439	0.775
LnD	7.241	7.413	2.170	9.28	0.00	8.47	-2.313

Source: Prepared by the researcher depending on the results of the program Eviews 9

4. Correlation between explanatory variables:

Check the matrix correlations between explanatory variables identify possible links between these variables, and make sure that the model is free of problems that can occur when we estimate the model.

Table 3: correlation matrix between the variables of the model

Variables	LnX	LnPOP	LnGDP	LnFDI	LnD
LnEXPORT	1.000	-	-	-	-
LnPOP	0.047	1.000	-	-	-
LnGDP	0.524	0.625	1.000	-	-
LnFDI	0.759	-0.117	-0.298	1.000	-
LnD	-0.547	0.418	0.512	-0.873	1.000

Source: Prepared by the researcher depending on the results of the program Eviews9

Seen through the table (3) the following results:

- There is a positive and strong correlation between the independent variable (LnFDI) dependent variable (LnEXPORT), has estimated the explanatory power of this variable to 75.9%, also we note the

presence of weak and Medium relation is positive for the variables (LnPOP) and (LnGDP) regarding the variable (LnEXPORT), where it's estimated the explanatory power of the variables: 4.7% and 52.4% respectively.

- There is a negative correlation between the variable-distance (LnD) and dependent variable (LnEXPORT), where it's estimated the explanatory power of a variable distance of about 54.7%.

5. *Stability of Time Series (Unit Root Test)*

We must test the stability of a time series and cross-sectional through reliance on various tests most commonly used (Augmented Dickey-Fuller ADF) (Phillips & Perron PP) and we found the results shown in the following table:

Table 4: Unit Root Test

1st Difference I(1)	Level I(0)	Test	Variables
202.326 (0.000)*	19.839 (0.870)	ADF	LnEXPORT
435.770 (0.000)*	29.039 (0.410)	PP	
-	22.587 (0.000)*	ADF	LnFDI
-	19.288 (0.0001*)	PP	
88.384 (0.000)*	10.510 (0.999)	ADF	LnGDP
82.122 (0.000)*	10.489 (0.999)	PP	
-	44.385 (0.000)*	ADF	LnD
-	67.827 (0.000)*	PP	
-	57.071 (0.0021)*	ADF	LnPOP
-	84.635 (0.000)*	PP	

- *Values in brackets indicate level of significance variables of the study.*
* *Variables have a level of significance at 1%.*
Source: *Prepared by the researcher depending on the results of the program Eviews9*

*We note from the table (4) absence root of unity at the level of the studied variables of: Foreign direct investment, distance, population, which shows the stability of these variables at the level, while the integrated first-class variables at the level of 1%, was results proved the existence of two variables: exports and **GDP**.*

6. Cointegration Test

After testing stability and the presence of some of unstable and integrated variables of the same class, which grow in the same direction in the long term, and that leads us to Cointegration Test between these variables using **Pedroni** test, results are as follows:

Table 5: Cointegration Test (Pedroni)

Prob	Weighted statistic	Statictic	Common AR coefs
0.0184	0.883	-1.734	**Panel V-statistic**
0.0002	-3.493	-3.560	**Panel RHO-statistic**
0.000	-5.743	-7.343	**Panel PP-statistic**
0.000	-5.274	-7.899	**Panel ADF-statistic**
Prob	**Statistic**		**Individual AR coefs**
0.0065	-1.095		**Group RHO-statistic**
0.000	-5.131		**Group PP-statistic**
0.000	-4.400		**Group ADF-statistic**

Source: *Prepared by the researcher depending on the results of the program Eviews 9*

Results shown in the table indicate absence of cointegration between the integrated variables studied in the same class, and this is what we observe through statistical V, RHO, PP, ADF shows the rejection of the alternative hypothesis and accept the null hypothesis, so there is no cointegration inside (com.AR). It also statistical group RHO, PP, ADF shows there is no cointegration between (Indiv.Ar), so accept the null hypothesis in one of the seven statistics for Pedroni.

7. Selection between fixed effects and random effects model:

Has been used data of time and Cross-sectional series (Panel Data) through the application of three models: Pooled Regression Model, Fixed Effects Model and Random Effects Model, the results are shown in the following table:

Table 6: Estimating the relationship between FDI and Exports in Algeria

Random Effects	Fixed Effects	Pooled Regression	Variables
4.152 (0.291)	8.054 (0.000)*	7.748 (0.000)*	Constante
-0.666 (0.000)*	0.846 (0.000)*	-1.287 (0.000)*	LnFDI
1.840 (0.000)*	1.348 (0.000)*	0.99 (0.000)*	LnGDP
-0.299 (0.01)*	-0.526 (0.000)*	-0.520 (0.000)*	LnD
-1.126 (0.000)*	-0.486 (0.000)*	-0.584 (0.000)*	LnPOP
300	300	300	Observation
0.436	0.758	0.6762	R-Squared
0.4288	0.738	0.6718	Adjusted R-Sq
57.124 (0.000)*	37.660 (0.000)*	154.028 (0.000)*	Prob (F-Sta)
1.113	0.697	0.5875	Dw

- Values in brackets indicate level of significance variables of the study
* Variables have a level of significance at 1%
Source: *Prepared by the researcher depending on the results of the program Eviews 9*

Most econometric studies indicate that the fixed effects is most suitable for cross-sectional data across countries, but it can't be confirmed only after the use of **test Hausmann**, the following table shows the results obtained through this test.

Table 7: **Hausmann test**

Chi-sq. Statistic	Chi-sq.df	Prob
51.029	3	(0.000)*

* Variables have a level of significance at 1%
Source: *Prepared by the researcher depending on the results of the program Eviews 9*

We note through this test that the statistical value (51.029) is bigger than the value table, estimated at (17.56), which indicates that the fixed effects model is the best, and the model is given as follows:

LnEXPORT=8.054+0.846LnFDI+1.348LnGDP-0.526LnD-0.486LnPOP

8. Analysis of the results:

- *Show the significance and the quality of the model clearly through (R-Squad), through which we note that the explanatory variables controlling for 75.8% of the changes that occur in exports, indicating a strong correlation between exports and variables that explained him, while the ratio of 24.2% explained by other factors not included in the model, including the error term, we also note that the parameter has a statistical significance at level of 1%.*

- *Parameter FDI is positive, meaning that the relation between the dependent and independent variable is compatible with the logic of economic theory, where if foreign direct investment increased by 1%, this leads to the growth of Algerian exports to 0.846%, we also note that the parameter has a significance statistical at level of 1% .*

- *Parameter GDP is positive, and this is what compatible the logic of economic theory, where if GDP increased by 1%, this leads to the growth of Algerian exports to 1.348%, we also note that the parameter has a significance statistical at level of 1%.*

- *Parameter distance between the capitals commercial is negative, which represents the cost of export (transport and communications), where if distance increased by 1% leads to a decline in exports to 0.526%, we also note that the parameter has a significance statistical at level of 1%.*

- *Parameter population is negative, where if the population is rising by 1% leads to a decline in exports to 0.486%, also we note that the parameter has significance statistical at level of 1%.*

V.   Conclusion:

This study has investigated the relationship between FDI and Exports. The theoretical models show the ambiguity of the relationship between FDI and Exports. Some earlier theoretical models have focused mainly on either vertical or horizontal FDI, and have predicted either a substitute relationship between FDI and export or Complementary. Yet some empirical studies, using either macroeconomic or microeconomic data series, have revealed a positive relationship between FDI and exports.

The present study, as against a number of previous studies, has provided adequate and statistically significant evidence of positive

linkage between FDI and exports of Algeria. As a whole, if different studies are taken together, the results are somewhat conflicting and ambiguous. As elaborated in sufficient detail, a possible reason (in case of Algeria) is the selection of time series data used for analysis. Moreover, the determinants of exports are much more complex and FDI could not be assumed as the only explanatory variable for predicting variations in exports. In view of conflicting results of different studies for Algeria, a different approach is also required to analyses the impact of FDI on exports. For example, in a comprehensive structural equation for exports, FDI should also be used as an explanatory variable. Moreover, besides macro level studies, the linkage between FDI and exports should be examined at sector, subsector and micro enterprise level with full elaboration of both direct and indirect channels of transmission. The key finding of this study is that FDI has a positive impact on promoting Algerian trade flows with the rest of the world. Therefore, the regression results are consistent with a complementarity relationship between FDI and exports.

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