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Measuring the dynamic impact of the Euro-Mediterranean partnership on the flow of foreign direct investment to Algeria during the period 1980-2018.

قياس الأثر الديناميكي لاتفاقية الشراكة الأورو-متوسطية على تدفق الاستثمارات الأجنبية المباشرة للجزائر خلال الفترة 1980-2018

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Abstract

This study is concerned with determining the impact of the Euro-Mediterranean partnership on the flow of foreign direct investments in Algeria, by relying on the auto-regression model with distributed laps ARDL after it was found that it is the optimal model for estimating the impact of the variable of trade openness and other explanatory variables in the study on the variable of foreign direct investment in Algeria during the period 1980-2018.The study concluded that there is a long-term balanced relationship between the index of trade openness and the index of foreign direct investment flow in Algeria during the study period, however this relationship is inverse indicating the negative impact of Algeria's international commitment to the content of the partnership contract between it and the European Union.

Keywords

Euro-Algerian partnership; foreign direct investment; **ARDL** model.

JEL Classification Codes : C32 ; F43 ; O40

الملخص

تهتم هذه الدراسة بقياس أثر الشراكة الأورو-متوسطية على تدفق الاستثمارات الأجنبية المباشرة في الجزائر، وذلك من خلال الاعتماد على نموذج **ARDL** بعدما أن تبين أنه هو النموذج الأمثل لتقدير الأثر الذي يحدثه متغير الانفتاح التجاري والمتغيرات التفسيرية الأخرى في الدراسة على متغير تدفق الاستثمار الأجنبي المباشر في الجزائر خلال الفترة 1980-2018، هذا وتوصلت الدراسة إلى وجود علاقة توازنية بعيدة المدى بين مؤشر الانفتاح التجاري ومؤشر تدفق الاستثمار الأجنبي المباشر في الجزائر خلال فترة الدراسة غير أن هذه العلاقة عكسية توضح الأثر السلبي لالتزام الجزائر دوليا بمضمون عقد الشراكة بينها وبين الاتحاد الأوروبي.

الكلمات المفتاحية

شراكة أورو-متوسطية؛ استثمار أجنبي مباشر؛ نموذج **ARDL**.

تصنيف JEL: C32 ؛ F43 ؛ O40

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I. INTRODUCTION:

The contemporary global trends are directed towards economic blocs and partnership agreements, the latter of which is the result of rapid economic, political and technological developments that the world experienced in the period after the Second World War until the beginning of the nineties of the last century, as the three international institutions that underpin the global economic system represented by Both the International Monetary Fund, the World Trade Organization and the World Bank call for the need to fully comply with the principles of economic globalization and the resulting liberalization of prices, as well as the liberalization of trade exchanges and the liberalization of exchange rates, all of this contributed to the emergence of the features of a modern global economic system that has been governed by the principles of liberalism and the rules of market economy, as international trade rates rose to a climax during the 1990s, and this also contributed to high economic growth rates in many countries, especially emerging ones, as the experience of Southeast Asian countries is considered as one of the leading experiences, that explained the importance of economic openness and its impact on growth on the one hand and economic performance on the other hand, Which prompted many developing countries to move toward the commitment to liberalism as a system that gives them the opportunity to integrate into the global economy and facilitate the flow of foreign knowledge and experience towards it.

Algeria is considered one of the most prominent developing countries that could not stay away from what is happening in the global economy, especially as it failed to achieve its economic goals during a development path that lasted for more than a quarter of a century of socialist management, as the petroleum crisis of 1986 revealed the extent of the fragility of the local production machine on the one hand, and the extent to which the national economy is dependent on the hydrocarbon sector, on the other hand, and also the exacerbation of the external debt crisis at the beginning of the eighties and the increase of interest rates on it has worsen the situation, so Algeria lived in that period difficult economic and financial imbalances, which later worsened to social imbalances manifested in demonstrations of the first of October 1988, which prompted Algeria to speed up finding a way out of these crises through its appeal for help from international institutions, the latter which agreed to give Algeria a hand if the government committed to implement a set of economic reform programs that resulted On what is known as credit readiness agreements, during which Algeria adhered to the principles of liberalism in full and expressed its intention towards opening up to the global economy by submitting a memorandum of accession to the General Agreement on Tariffs and Trade GATT, and it continued its efforts to integrate into the global economy through contracting many bilateral and multilateral agreements in the same economic dimension. Perhaps the Euro-Algerian partnership agreement is one of the most prominent ones, through which Algeria was seeking to cause a specific shock in its economic sectoral system, especially through the movement of international capital and the accompanying flow of expertise. And foreign knowledge towards the interior and the positive effects that this has had on causing the economic take off, especially in stagnant sectors.

- **The problematic of the study**: In light of the foregoing mentioned, we can see the features of the problematic of our study, which can be elaborated by asking the following fundamental question:
- **How far does the Euro-Mediterranean Partnership Agreement affect the flow of foreign direct investment in Algeria?**

- **Sub-questions of the study**: In the context of answering the problematic of our study, we decided to attach it to a set of sub-questions as follows:
- What do we mean by the Euro-Mediterranean Partnership Agreement?
- What are the most important reasons that prompted Algeria to conclude the Euro-Algerian Partnership Agreement?
- What are the implications of the Euro-Algerian partnership agreement on the attractiveness of the local investment environment?
- What is the effect of the index of trade openness on the index of foreign direct investment in Algeria?
- **Study hypotheses**: In order to reach sound answers and scientific solutions to the questions raised, this study seeks to test the validity of the following hypotheses:
- The Euro-Mediterranean Partnership leads to trade openness and allows for an improvement in the level of economic performance of countries.
- The partnership agreement may contribute positively to the size of the internal market, and even to the competitiveness of local institutions, through the movement of foreign capital from abroad inward.
- We assume a statistically significant relationship between the index of trade openness and the index of foreign direct investment flow in Algeria in the long run.
- **Objectives of the study**: Through this study, we seek to achieve a set of goals, part of which can be limited to the following:
- Evaluating the Euro-Algerian partnership agreement, especially since the agreement defined several problems that hindered the path of materializing the free trade area in 2017.
- Through this study, we also seek to study the suitability of the goals and contents of the Euro-Algerian Partnership Agreement with the current conditions in the Algerian economy.
- Defining and measuring the impact of the Euro-Algerian Partnership Agreement on the flow of foreign direct investment in Algeria.

II. Theoretical consolidation of the Euro-Mediterranean Partnership Agreement :

The current wave of economic changes and the emergence of globalization, especially in light of the economic openness, have led to the emergence of economic blocs of all kinds, as we have become talking about trade agreements and trade treaties, customs unions, common markets and other aspects of trade integration. Therefore, it has become necessary for any country to integrate In these blocs, especially for developing countries, well reflecting on the dynamics of the new global economic order notes that the last decade of the last century and the first decade of the third millennium were marked by a growth in the number of trade agreements notified by a group of the general agreement on tariffs and trade, as the number of trade agreements in 1990 reached 20 agreements at the international level, to move to 86 agreements in 2001, reaching until the end of 2018 to about 187 agreements, all these statistics confirm that the world is heading towards economic openness, especially that Most of the agreements contained provisions all calling for the lifting of all restrictions that stand in the face of internationalizing trade exchanges, thus facilitating the flow of goods and services between countries of the world, as it allows the movement of international capital and even the movement of labor and foreign knowledge.

1. The concept of the Euro-Mediterranean Partnership Agreement:

In the beginning It should be noted that the term partnership between countries is one of the most prominent modern geostrategic concepts that refer to a form of cooperation and an important type of Convergence between countries in the political, economic and social field, as the emergence of this term coincided with the emergence of the effects of globalization in its various dimensions on the sociology of the international community, some countries may unite among themselves by concluding partnership contracts in several fields by making a unified policy that allows for a high degree of integration, aimed at jointly exploiting the available capabilities and resources as well as achieving common interests between them.

The concept of the Euro-Mediterranean partnership is one of the concepts that accompanied the emergence of economic blocs (M. & A, 1997, p. 51), as it is considered among the most important economic treaties that linked the European side to the Mediterranean countries, i.e. countries on the shores of the Mediterranean, as the European Union initiated to find new ways of cooperation aimed at concluding Agreements for comprehensive partnership between it and the African and Asian countries bordering the Mediterranean in various social, economic, political and cultural fields, by establishing free trade exchange areas and establishing a zone of peace and stability in the Mediterranean, all of this was embodied Through the "Barcelona Conference" held on November 27-28, 1995 in Spain, the conference concluded with the announcement of an important declaration called the "Barcelona Charter" (Attina & Fulvio, 2001, p. 19), which is the cornerstone of the Euro-Mediterranean Partnership.

2. Presenting the Euro-Algerian Partnership:

The topic of the European-Algerian partnership has gained an important place on the agenda of both parties, and this was evident through what the two parties have programmed from negotiations that lasted for more than half a century, as the European Union paid much attention to the issue of partnership with the Mediterranean Countries in general and Algeria in particular, and this is primarily due to the historical ties between the two parties that date back to the colonial era. And also, the European Union is well aware of the position of Algeria in the greater Arab region and specifically within the Arab Maghreb countries, this is because It is also one of the most important developing economies within the North African coast region to become a gateway to Africa and a popular market that has more than 40 million consumers, all of these conditions and others have contributed to and facilitated the embodiment of the partnership agreement between the parties.

Standing against the historical background of the partnership agreement between Algeria and the European Union brings us back to the mid-seventies of the last century, where a trade protocol was signed between the two parties, specifically in 1976 (Benslimene, 2006, p. 113) as this protocol allows the promotion of trade cooperation as well as the promotion of exchanges between them by facilitating the entry of Algerian goods to the European market, this protocol was renewed every five years in order to ensure economic and technical cooperation, especially as it was attached to programs related to financial and development support, which later became known as MIDA financing programs (Lahouel., 1999, p. 78).

However, the modest results achieved during the period between 1976-1989 within the framework of those protocols, especially since Algeria during this period was dependent on a policy of monopolizing the foreign trade sector as a country that relied on the socialist approach as a political and economic option to achieve development, but it did not continue its endeavor to adhere to this developmental approach, especially since it recorded a deteriorating economic situation due to its recording of several external shocks resulting from Its excessive dependency on the hydrocarbon sector, these shocks, which weakened its financial constituents, necessitating the need to find a way out of the stifling crisis that the economy experienced.

Especially as this crisis doubled to turn into a social crisis that emerged through the events of October 1988, And more than that, Algeria was expecting a security crisis that might ravage its entity and national sovereignty, and therefore It went quickly to seek a hand of assistance from international institutions to reschedule its debts with both the Paris Club and London Club Through its conclusion of the credit preparedness agreements that resulted in several programs for economic and even political reforms, Algeria then committed to the provisions of liberalism in full, and this through its presentation of a letter of intent in which it expressed its complete readiness to move towards adopting the capitalist approach as a political and economic option for achieving economic stability within it.

Moreover, the 1989 constitution is considered as the first manifestations of the amendments and corrections that Algeria entered into during that period, and it continued its efforts to open up to the global economy by submitting a memorandum of accession to the General Agreement on Tariffs and Trade GATT in 1989, and even tried to renew its relations in the framework of this approach with the European party, especially since the Barcelona Charter was clear and tempting for it, and accordingly, through the Structural adjustment programs (SAPs), Algeria was able to open the door to negotiate with the European party in 1997 to grant the existing relationship between the European Union and Algeria a new dimension.

Negotiations and meetings between Algeria and the European Union continued in the shadow of the Barcelona Charter rounds, and after attending 17 rounds, the two parties agreed on the content of the agreement, ending with the ratification of the partnership agreement on 19/12/2001 in "Brussels", to finally reach a final agreement on 22/04/2002 in "Valencia" in "Spain", and this agreement entered into force in September 2005 (CASTAGNOS & PAOLI, 2006, pp. 22-23).

3.The objectives and motives of the Euro-Algerian Partnership Agreement:

The Euro-Mediterranean Partnership Agreement aims mainly to achieve economic stability in the countries of the Mediterranean, and the agreement also seeks to reduce economic and social tensions resulting from illegal immigration and problems related to national security, and since Algeria is one of the developing countries that initiated to conclude this agreement, that became known later as the Euro-Algerian Association Agreement, desiring to achieve the following five goals:

- To provide an appropriate framework for political dialogue between the parties, with the aim of strengthening relations between them in all areas of importance.

- To expand exchanges and ensure the development of balanced economic and social relations between the two parties and to define the conditions for the gradual liberalization of exchanges of goods, services and capital.
- Encouraging Maghreb integration by encouraging exchanges within the Maghreb group and between the latter and the European Community and member states.
- Promoting cooperation in the economic, social, cultural, and even security fields.
- Encouraging the human movement between the two parties and facilitating the flow of capital at the international level.

It is also worth noting that the partnership agreement between Algeria and the European party was supported by several motives, the most important of which are the following:

A. **Economic motive:** Both the European Union and Algeria were quick to conclude the partnership agreement between them because of the positive effects on the economic performance for both of them, especially since Algeria was and still represents the first customer of the European Union countries, especially Spain and France, and Algeria was in urgent need to conclude this agreement in order to be liberated from the economic isolation and the trend towards integration into the world economy from the perspective of opening up to the Old Continent with which it has a geostrategic relationship.

B. **Social motivation:** The Euro-Algerian partnership agreement has been concluded in order to enhance social, sociological and cultural cooperation between the two parties, especially since the Algerian society holds many habits inherited from French culture during the colonial period. Therefore, the agreement aspires to solve all problems related to cultural openness as well as fighting a phenomenon of Illegal immigration between the two parties.

C. **Security motivation:** The European side is fully convinced that the stability of the southern bank of the Mediterranean may contribute to strengthening security and stability within the countries of Europe. Algeria may be considered one of the countries with a prominent force in the field of achieving national security in the North African region, especially as it has the necessary experience in dealing with hotbeds of tension in the security field, and therefore, both parties were interested in concluding this agreement to join efforts in the field of limiting all attempts that would destabilize the security and stability of the Mediterranean region.

III. The flow of foreign direct investments in Algeria and its relationship with the Euro-Algerian Partnership Agreement:

Algeria, like the developing countries, has not stopped striving to attract foreign direct investment, especially in light of its increasing openness to the global economy, as its contract of partnership agreement with the European Union is among the most important mechanisms that made it able to improve its investment climate locally (Linda & Kenza, 2011, p. 131), through its economic cooperation with the same party that made several recommendations for issuing a set of laws that stimulate the flow of foreign direct investment, Perhaps the most important of which is the introduction of the e-government project in order to digitize the national economy and move towards a knowledge economy, as well as rehabilitating the tax and banking system to become more dynamic with the performance of institutions of all kinds, whether local or foreign (Kamaly, 2002, p. 102)

1. The reality of foreign direct investment in Algeria:

The interest in foreign direct investment in Algeria is constantly increasing, and this may be shown through the programs and reforms adopted by the Algerian government in an attempt to provide the appropriate investment climate, especially as the reality confirmed that the flow of foreign investment inward is weak compared to the past years, and perhaps the following table confirms this.

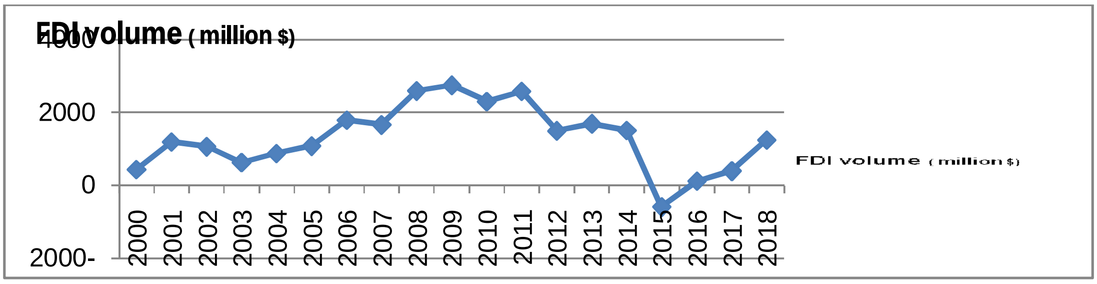
Table No (01): The volume of the incoming foreign direct investment to Algeria during the period 2000-2018. (Million dollars)

The years	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
In flow FDI to Algeria	438	1196	1065	634	882	1081	1795	1662	2594	2746
The years	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**/**
In flow FDI to Algeria	2301	2580	1499	1693	1507	587-	122	398	1251	/

Source: Prepared by researchers, by looking at the following sites:

https://unctad.org/SearchCenter/Pages/Results.aspx.http://www.andi.dz/index.php/ar/

Figure No (01): Curve of foreign direct investment in Algeria.



Source: Prepared by researchers, by looking at the following sites:

https://unctad.org/SearchCenter/Pages/Results.aspx.http://www.andi.dz/index.php/ar/

The volume of the incoming foreign direct investment to Algeria reflects the image of the investment climate in the first place, as it shows the fragility of the local national economy and its excessive dependence on the hydrocarbon sector, where in the period in which fuel prices flourish in the international energy market, foreign direct investment increases its flow at the local level from the standpoint of that Algeria is trying to take advantage of these high prices and from there it gives very significant advantages in the field of hydrocarbon industry, Perhaps table No 01 statistics confirm this, we have noted that the volume of foreign direct investment incoming towards Algeria did not exceed 900 million dollars during the period (2000-2004), although the government implemented during this period many of the reforms in the field of investment that were included in the development program **EGSRP** (Economic Growth Support and Recovery Program).

However, until the prices of fuel (oil) began to improve in the international energy market, the volume of foreign direct investments rose dramatically to reach a peak of the year 2008, the year of financial fortune in which oil prices exceeded the threshold of 100 dollars a barrel, through the initiative to embody opportunistic investments in the field of fossil energy, Algeria intensified its contracts with the leading international companies in the field of exploration and exploitation of fossil energies, as the amount of foreign investment received in 2009 amounted to 2746 million dollars, bearing in mind that the petroleum industry sector (extractive) had the highest percentage of foreign investment reaching 55%, while other industries did not exceed the proportion of foreign investment in which 7% of the total flow, while the tourism sector accounted for a significant percentage of 19.65% of the total flow, and the rest are distributed among other sectors in varying proportions.

We noticed through the table and figure No 01 that the volume of foreign direct investment flow began to decrease with the beginning of the second decade of the third millennium, when it completely decreased in 2015 to reach a negative rate of -587 million dollars, and this is due to the crisis that the economy recorded in Algeria in 2014 as a result of the low price of the barrel In the international energy market, which has made the foreign investments that are locally active, mostly trying to freeze their activities, even for other sectors, the sovereign base for national investment 51/49 that resulted of the 2009 supplementary finance law formed a major problem in the flow of foreign direct investment, just For Algeria later in the context of its efforts to facilitate the process flowing of foreign investment through modern economic "Algeria 2030" model, which allowed higher flow volume and its recovery to reach the value of 1251 million dollars in 2018.

2. Evaluating the Euro-Algerian Partnership Agreement:

The results of the study carried out by the National Agency for the Promotion of Foreign Trade **ALGEX** in cooperation with the Algerian Chamber of Industry and Trade ACCI confirmed that Algeria's exports outside of hydrocarbons to the European Union did not exceed 14 billion dollars since the agreement entered into force in 2005 until the date of the evaluation in 2015, that is, within 10 years, and therefore an annual export rate of 1.4 billion dollars was recorded. On the other hand, imports from the same party in 10 years amounted to 220 billion dollars, or an annual rate of 22 billion dollars. From this standpoint, it became clear that the trade exchange between the two parties did not take the form of the winner/winner relationship, but that Algeria was importing 16 dollars from the European Union in order to export 1 dollar, and the same study also indicated that our exports outside of hydrocarbons, which did not exceed 900 million Dollars, which is an indicator that shows the fragility of the local production sectors, as 75% of these exports were products derived from oil, equivalent to the value of 551.2 million dollars in 2015, and the rest may be represented in some raw materials, agricultural products, and some final commodities, for which value was very weak, in addition to this, in the framework of a partnership, Algeria Has committed with the European partner to proceed with the customs dismantling processing varying proportions and have summarized this process composed of 41 product categories. However, Algeria exploited only 10 items of this package, while the European Union countries exploited all items without exception, in addition to this, as a result of its commitment to reduce levels of customs duties, Algeria incurred very significant financial losses that would have benefited the public treasury, According to some reports submitted by the Accounting Council, as well as some reports issued by the Ministry of Finance, most of which confirmed that Algeria, in the framework of its partnership with the European Union, annually loses 600 million dollars in value., equivalent to 6 billion dollars during a decade of the agreement. All of these funds were lost by Algeria and the public treasury was denied collection under normal taxation.

IV. Measuring the impact of the Euro-Algerian partnership agreement on the flow of foreign direct investment in Algeria.

Through this study, we seek to measure the impact of the Euro-Mediterranean Partnership Agreement on the flow of foreign direct investment in Algeria for the period 1980-2018.

1. Introducing the study variables:

Our in-depth knowledge of the studies that preceded us to determine the nature of the impact of the Euro-Mediterranean Partnership on the flow of foreign direct investment in developing countries made us able to define the basic variables that facilitate our process of building our standard study model, and therefore we relied on the following variables:

A. The dependent variable:

Foreign Direct investment **FDI** is the dependent variable within this standard study.

B. Independent variables:

We relied on several independent variables within our standard study model, and they were as follows:

- **Trade openness OPEN**: It is considered as the main independent variable within the model of the discretionary study, especially since talking about the Euro-Mediterranean Partnership Agreement necessarily implies the commitment of the state to the policy of liberalizing foreign trade within the framework of the agreement. This variable is expressed as the sum of foreign trade in gross domestic product (Baltagi.B, Pfaffermyr, & P, 2005, p. 83).It is considered one of the most prominent and most indicative indicators of the effectiveness of the Euro-Mediterranean Association Agreements. Also, the high level of trade openness means the easy movement of capital to and from the outside world, and the country's ability to integrate more into the global economic system.

- **Per capita gross domestic product GDP_{pc} :**This variable is considered one of the most important explanatory variables that we have tried to include in this standard study as well, especially since its effects seem clear towards the flow of foreign direct investment in different countries, whether developed or developing, as high per capita gross domestic product means improving the living capacity of members of society by improving the level of individual income, which is considered as a specific basis for consumption and even investment, this may directly affect the volume of domestic demand for products through the expansion of markets equivalent to the improvement in the standard of living on the one hand, and the increase in the population growth rate on the other hand. This makes the country that concluded the Euro-Mediterranean Partnership Agreement most in need of the flow of foreign direct investment to meet the needs of the internal market and to exploit the available resources at relative costs.
- **Exchange rate EXR:** We included this variable in our standard study model as an explanatory variable also, it allows to highlight the importance of this indicator in activating the Euro-Mediterranean Partnership Agreement on the one hand between Algeria and the countries of the European Union, it also explains the impact of this on facilitating the flow of foreign investment on the other hand. Especially since Algeria greatly supports the value of its currency in order to increase the competitiveness of its products in foreign markets. In front of low production costs in this country from the premise that it is labor intensive and even raw materials, and in front of the depreciation of its currency, which is floating and managed at a very low margin, the settlement of foreign investments at their level seems more than inevitable for the countries of the Union or outside of it.
- **Inflation rate INF:** We have relied on it also as an explanatory variable within our standard study, especially since it is considered one of the most influencing factors in the volume of foreign direct investment flow for any country, because its high value is considered one of the repercussions of the flow of foreign investments in the sense that it affects the size of markets within those countries on the one hand due to a decrease in purchasing power, as well as an indication of the weak economic policy of the country, and therefore the European Union, in the context of the Euro-Mediterranean Partnership Agreement, has dealt with this issue with great sensitivity, which came in the context of economic cooperation between the two parties.

2. Model Specification:

Most of the experimental studies that preceded us in measuring the impact of the Euro-Mediterranean Partnership Agreement on the flow of foreign direct investment depended on the various mathematical models, and therefore our study model can be written as follows:

$$FDI = C + \beta_1 INF + \beta_2 GDP_{pc} + \beta_3 EXR + \beta_4 OPEN + \varepsilon_t$$

Where C is the Intercept, and ß$_1$, ß$_2$, ß$_3$, and ß$_4$ are the parameters of the independent variables in our study, which express how the FDI dependent variable responds to changes in the explanatory variables of the model, respectively, ε_{-t} represents an error term.

Therefore, the model can be written in logarithmic form as follows:

$$LFDI = C + \beta_1 LINF + \beta_2 LGDP_{pc} + \beta_3 LEXR + \beta_4 LOPEN + \varepsilon_t$$

3. Stationary tests of the time series:

Since we have relied on annual time series data for 38 views, we have to start studying the stability of these series by relying on the unit root test through both the "*Phillips-Perron"* PP test and the ADF "*Dickey-Fuller Developer*", the following table shows the stability results.

Table No (02):Results of the Time Series Stationary Study.

Study variables	Integration Rank	**Tested with constant and direction**			
		Level		**The first differences**	
LFDI	I(1)	t_{cal}	1.200	t_{cal}	-2.961
		t_{tab}	-1.864	t_{tab}	-1.933
		Prob	0.9771	**Prob**	0.0041
LINF	I(0)	t_{cal}	-3.743	/	
		t_{tab}	-2.839		
		Prob	0.0141		
$LGDP_{PC}$	I(1)	t_{cal}	1.547	t_{cal}	-3.915
		t_{tab}	-1.949	t_{tab}	-1.903
		Prob	0.9763	**Prob**	0.0023
LEXR	I(1)	t_{cal}	1.566	t_{cal}	-3.173
		t_{tab}	-1.951	t_{tab}	-1.951
		Prob	0.9738	**Prob**	0.0086
LOPEN	I(1)	t_{cal}	-0.122	t_{cal}	-4.2155
		t_{tab}	-1.874	t_{tab}	-1.963
		Prob	0.6819	**Prob**	0.0001

Source: Prepared by researchers based on Eviews 9-Significant level of 5%-

Through the results shown in Table 02 and according to the assumptions of unit root testing, the time series represented by the inflation variable **LINF** is stable at Level I(0), while other time series represented by the following variables (**LFDI, LGDPPC, LEXR, LOPEN**) settled in the first differences (**1^{ST}Différence**) i.e. at level I (1), and therefore, since all time series are not fully integrated at the same level and since they varied in stability between level I (0) and first differences I

(1), and by reference to the **Pesaran and al** hypothesis, the optimal model for estimating the effects of the short and long term is the Self-correlation model for the autoregressive distributed lag **ARDL**.

The **ARDL** bounds test was developed by Pesaran and al in (2001) is a co-integration test used widely in the econometric researches for detecting a long run relationship between the model's variables. This approach is characterized by three properties in comparison with the other co-integrations approaches. First, ARDL model does not require that all variables to be integrated at the same order, it is valid for both I (0) and I (1) time series, but it requires to be integrated at first difference at most. This means that it cannot be applied in the case of having a second order I (2) time series. Second, ARDL model takes a sufficient number of lag lengths in order to get an optimal data set within the general model. Finally, ARDL model is more efficient in the case of small sample sizes.

4. Primary estimation using ARDL model:

The results of the preliminary assessment can be illustrated using the self-correlation model for the time gaps distributed in the following table by relying on Eviews 09.

<u>Table No (03): Primary estimation results using the ARDL model.</u>

Test Equation:
Dependent Variable: D(LFDI)
Method: Least Squares
Date: 15/12/19 Time: 15:51
Sample: 1980 2018
Included observations: 38

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0046	3.739999	0.147113	0.550201	D(LFDI(-1))
0.4251	-0.835440	0.147036	-0.122840	D(LINF)
0.0134	-3.069438	0.131811	-0.404587	D(LINF(-1))
0.0100	3.251154	0.135204	0.439570	D(LINF(-2))
0.0001	6.841770	0.022316	0.152684	D(LGDPPC)
0.0116	-3.155693	0.063287	-0.199716	D(LGDPPC(-1))
0.1371	-1.632043	0.044970	-0.073393	D(LGDPPC(-2))
0.2397	1.258989	0.027728	0.034909	D(LGDPPC(-3))
0.8719	-0.165949	0.023077	-0.003830	D(LEXR)
0.1622	-1.522405	0.022732	-0.034607	D(LEXR(-1))
0.0083	-3.368747	0.016425	-0.055332	D(LEXR(-2))
0.0010	-4.764575	0.015449	-0.073607	D(LEXR(-3))
0.2499	1.229985	0.019529	0.024020	D(LOPEN)
0.2637	1.192121	0.045863	0.054674	D(LOPEN(-1))
0.2515	1.225480	0.031368	0.038441	D(LOPEN(-2))
0.0043	3.781409	0.026236	0.099210	D(LOPEN(-3))
0.0014	4.562309	0.274774	1.253606	C
0.0663	-2.089321	0.087652	-0.183132	LINF(-1)
0.0006	5.209896	0.064476	0.335915	LGDPPC(-1)
0.1196	1.719586	0.025626	0.044066	LEXR(-1)
0.0917	-1.887763	0.047679	-0.090006	LOPEN(-1)
0.0003	-5.623603	0.177916	-1.000527	LFDI(-1)

0.002940	Mean dependent var	0.981996	R-squared
0.011103	S.D. dependent var	0.939985	Adjusted R-squared
-8.793818	Akaike info criterion	0.002720	S.E. of regression
-7.776150	Schwarz criterion	6.66E-05	Sum squared resid
-8.462084	Hannan-Quinn criter.	158.3042	Log likelihood
3.112658	Durbin-Watson stat	23.37508	F-statistic
		0.000018	Prob(F-statistic)

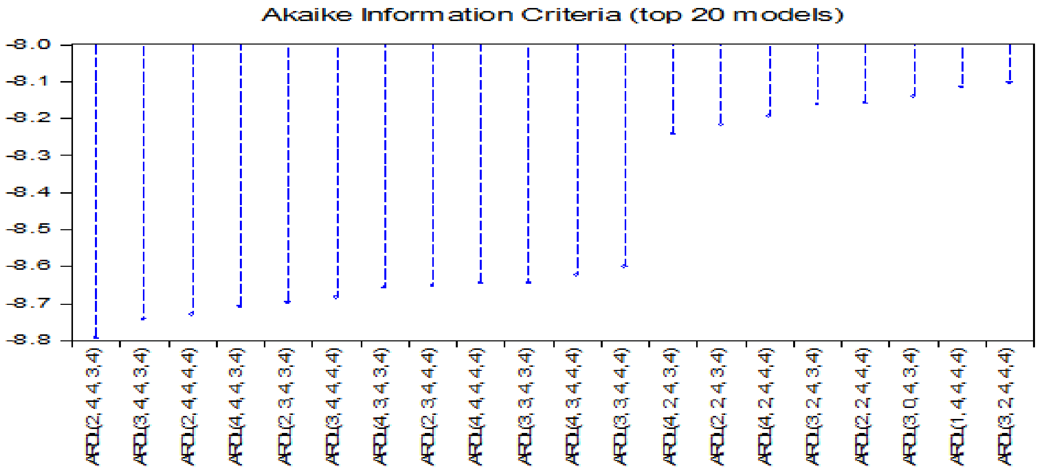
<u>Source</u>: Prepared by researchers using Eviews 09.

Through Table No 03, we note that all variables are significant at the level of 5%, and we note that the correlation coefficient is very strong, amounting to about 98%.

5. Determination of the optimal lag selection of the Unrestricted Error Correction Model (UECM):

Before estimating the aforementioned model, we must first determine the optimal lag degree for each variable in the model, and this may be based on the most important criteria used to test the optimal lag degree represented by **Akaike** (AIC: 1973), **Schwarz** (SC: 1978), **Hannan-Quinn**, and other criteria, we have found that the optimal lag for the model is **ARDL** (2,3,4,4,4), and the following figure shows that.

Figure (02): The optimal lag degree for the model according to **Akaike**



Source: Prepared by researchers based on the outputs of **Eviews 9**.

6. Statistical quality test of the model:

Before adopting this model in estimating the results of the short and long run, we have to determine its quality from a statistical point of view. This may be through relying on a set of the most used tests ever in most of the estimated studies represented in the Diagnosis residual tests, and the following table illustrates this.

Table No (04): Results of the diagnostic residual tests.

Type of test	**Null -hypothesis**	**Test statistics**	**Prob-value**
JARQUE-BERA	Residuals are distributed naturally.	$\varkappa^2 = 2.13$	*0.34 > 0.05*
Autoregressive Condition Heteroskedasticity	Error threshold homogeneity. (Uneven error variation)	$\varkappa^2 = 1.777$	*0.183 > 0.05*
Ramsey reset Test	Convenient model formulation.	**F-Statistic= 0.079**	*0.785 > 0.05*

Source: Prepared by researchers based on the outputs of **Eviews 9**.

Through Table No (04), we note that the model is of high statistical quality, especially that the JARQUE-BERA test confirmed that the residuals are distributed naturally, and the ARCH test confirmed that there is homogeneity in the error limit, and also the Ramsey rest Test predetermined the existence of an appropriate form in the model formulation.

7. Co-integration test using Bounds test:

This step is very important, as it allows us to search for the rays of Co-integration between the variables of the model. Moreover, the bounds test is considered as one of the most prominent tests used in the study of joint synchronization, and in the following table will try to show the nature of the relationship between the explanatory variables in the model and the dependent variable represented by the size of the FDI flow in Algeria.

Table No (05): Co-integration test results according to **Bounds Test.**

ARDL Bounds Test
Date: 15/12/19 Time: 16:04
Sample: 1980 2018
Included observations: 38
Null Hypothesis: No long-run relationships exist

K	Value	Test Statistic
4	10.07129	F-statistic

Critical Value Bounds

I1 Bound	I0 Bound	Significance
3.52	2.41	10%
4.01	2.96	5%
4.49	3.57	2.5%
5.06	3.23	1%

"K" is the number of independent variables in the model-

Source: Prepared by researchers based on Eviews 9

Table No 05 shows that the calculated value of **F-Statistic**, which is estimated as: **F = 10.071**, is higher than the critical values at the minimum and the highest limits at the level of significance 1%, 2.5%, 5%, 10%, and from here we conclude that there is a balanced long-run relationship between the dependent variable of foreign direct investment in Algeria and the variables explained in the model.

8.Estimation of the EUCM-ARDL model in the short and long run:

Having confirmed that there is a long-run balanced relationship between the dependent variable in the model and its explanatory variables through the results of the bounds test, we will then go to an important step of estimating the short and long-run model by ARDL model (p, q1, q2, q3 , q4), we will try to start showing the short run results as follows :

Table No (06): Short-run UECM-ARDL model estimation results.

ARDL Cointegrating
Dependent Variable: LFDI
Selected Model: ARDL(2, 3, 4, 4, 4)
Date: 15/12/19 Time: 15:59
Sample: 1980 2018
Included observations: 38

Cointegrating Form

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0046	3.739999	0.147113	0.550201	D(LFDI(-1))
0.4251	-0.835440	0.147036	-0.122840	D(LINF)
0.0003	-5.692353	0.148297	-0.844157	D(LINF(-1))
0.0100	3.251154	0.135204	0.439570	D(LINF(-2))
0.0001	6.841770	0.022316	0.152684	D(LGDPPC)
0.0066	-3.509909	0.035990	-0.126323	D(LGDPPC(-1))
0.0187	-2.863625	0.037820	-0.108302	D(LGDPPC(-2))
0.2397	1.258989	0.027728	0.034909	D(LGDPPC(-3))
0.8719	-0.165949	0.023077	-0.003830	D(LEXR)
0.3657	0.952598	0.021756	0.020725	D(LEXR(-1))
0.3543	0.976472	0.018715	0.018275	D(LEXR(-2))
0.0010	-4.764575	0.015449	-0.073607	D(LEXR(-3))
0.2499	1.229985	0.019529	0.024020	D(LOPEN)
0.6237	0.508017	0.031953	0.016233	D(LOPEN(-1))
0.0529	-2.227534	0.027281	-0.060769	D(LOPEN(-2))
0.0043	3.781409	0.026236	0.099210	D(LOPEN(-3))
0.0003	-5.623603	0.177916	-1.000527	CointEq(-1)

Source: Prepared by researchers based on Eviews 9 outputs.

The results of Table No 06 show that there is a co-integration relationship between the study variables, especially that all variables are significant at the level of **5%**, The results also showed that the error correction factor coefficient is negative and significant at the level of 5%,as its value was estimated at **-1.000527** and this means that a deviation of the value of the foreign direct investment flow in Algeria from its balance value in the period (t-1), and it will be adjusted in the period (t) by **100.052%**, and this is very logical according to the deteriorating reality experienced by the Algerian economy, especially since the capabilities and resources available at the level of the national economy are sufficient to bring in foreign direct investment a hundred times of what it is now.

Table No (07): Long-run UECM-ARDL model estimation results.

ARDL Cointegrating And Long Run Form				
Dependent Variable: LFDI				
Selected Model: ARDL(2, 3, 4, 4, 4)				
Date: 15/12/19 Time: 16:02				
Sample: 1980 2018				
Included observations: 38				
Cointegrating Form				
Cointeq = LFDI - (-0.1830*LINF + 0.3357*LGDPPC + 0.0440*LEXR -0.0900 *LOPEN + 1.2529)				
Long Run Coefficients				
Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0744	-2.017715	0.090714	-0.183036	LINF
0.0000	9.710609	0.034574	0.335738	LGDPPC
0.1360	1.637343	0.026899	0.044043	LEXR
0.0808	-1.966386	0.045748	-0.089958	LOPEN
0.0011	4.738943	0.264393	1.252946	C

Source: Prepared by researchers based on Eviews 9 outputs.

Based on the results obtained by estimating the UECM-ARDL model, the long-run equation for the study model takes the following formula:

$$\boxed{\text{LFDI} = 1.25 - 0.1830\,LINF + 0.3357\,LGDP_{PC} + 0.0440\,LEXR - 0.090\,LOPEN}$$

We also notice from Table No 07 that all variables are statistically significant at the level of 5% and 10% and that the results of the short and long run are similar in terms of indication.

V. Analyzing the results economically:

1. The results of the estimation show that there is a significant and negative effect of the variable of trade openness on the flow of foreign direct investment in Algeria, and this indicates that there is an inverse relationship between these two variables, as the decrease in the rate of trade openness by 1% will contribute to increasing the flow of foreign direct investment in Algeria by 0.09 %, which is a result that is consistent with the content of modern theories that explain the negative effects resulting from the commitment of developing countries to the policy of trade openness and that may make these countries unable to take advantage of the benefits of this liberalization, but rather it falls within the cycle of inequality in exchanges and this is confirmed by both ***'Raoúl Prebisch'***, ***'Ergrie Emmanuel'***, ***'Theirwell'*** and others, and accordingly, the partnership agreement with the European Union never facilitated the flow of knowledge or even foreign expertise, but the agreement remained interested in the mechanisms that make the countries of the Union promote their products directly to the Algerian markets, and the evidence for this is the size of the bill of our imports from the European Union countries for the length of the agreement period that exceeded all considerations, as explained by the policy of freezing the agreement in 2015 by

imposing quotas and suspending imports in a smooth way from European markets to raise again the volume of foreign direct investment flow, which amounted to 1251 million dollars in 2018 embodied in many mechanical, food and electronic industries in Algeria.

2. We also reached through the results of the estimation that there is a negative impact of the inflation rate variable on the variable of the foreign direct investment flow in Algeria, which shows the inverse relationship between these two variables in the long run, so that the 1% decrease in the inflation rate in Algeria will contribute to raising the rate of foreign direct investment flow by 0.18%, and this is fully consistent with the content of the economic theory, as whenever inflation rates decrease, the more this contributes to the improvement of the individual welfare level within the economy of any country, which drives the consumption process and thus expanding the size of local markets, to show the need in developing countries for the flow of foreign investment to increase the utilization of available local resources at relative costs on the one hand, and the transfer of expertise and knowledge on the other.
3. The results of the estimation show that there is a positive and significant effect of the variable Per capita gross domestic product GDP in Algeria and the rate of foreign direct investment flow, as a rise in per capita GDP by 1% will contribute to raising the rate of foreign direct investment flow by 0.33%, this result is fully compatible with the content of the economic theory, as economic growth and its high rates are among the positive determinants of foreign direct investment flow in any country, as it reflects the Algerian economy.
4. We also found, through the results of the estimation, that there is a positive and significant effect of the exchange rate variable in Algeria on the variable of foreign direct investment flow, as the rise in the exchange rate by 1% contributes to raising in the rate of foreign direct investment flow by 0.044% and this result is inconsistent with the content of the economic theory, as foreign investors always prefer to localize their industries in countries where exchange rates are low and that enables them to control the competitiveness of their products in international markets, especially when they are export-oriented industries, but this result and according to the Algerian economic reality is very acceptable so that the experts and researchers in the field of economics always insist on narrowing the gap between the nominal and real exchange rates, this hole or gap is considered as an obstacle to growth, which is a positive determinant of foreign direct investment flow.
5. The value of the parameter estimated for the intercept indicates that when the values of independent variables are non-existent, the rate of foreign direct investment flow in Algeria is 1.25%, as this value was significant at the level of 5%.

VI. CONCLUSION:

Through this study, we were exposed to measuring the impact of the Euro-Mediterranean Partnership Agreement on the flow of foreign direct investment in Algeria during the period 1980-2018, and in the context of achieving the study goals, we relied on the most important statistical methods in estimating based on the autoregressive distributed lag **ARDL** methodology and **Bounds test** to reveal the rays of co-integration in the long run between the study variables, where we found a balanced relationship between the model variables in the long run and with significant indication, as the study concluded to a set of results that we summarize as follows:

- We concluded that the indicator most used to explain the effectiveness of the Euro-Mediterranean Partnership Agreement is the Open Trade Index **OPEN**, which is expressed in terms of the sum of foreign trade to **GDP**.
- The study led to a long-run balanced relationship between the variable of trade openness and the index of foreign direct investment flow in Algeria, but this relationship is inverse, If we compare this result with many theoretical and even applied studies that preceded us to show this relationship in developing countries, we find it approves and confirms for that, especially since the '***Roderick***' study confirms that the flow of foreign investments in developing countries is not dependent on the conclusion of many international trade agreements as it is focused on the substantive and technical aspect in the method of negotiating these partnerships, which positively affect the flow of foreign investments in developing countries.

Based on the findings, we can include a set of suggestions as follows:

- The necessity to reassess the Euro-Algerian partnership agreement, especially since the national economy suffers from many imbalances that make it completely unable to benefit from the advantages of the agreement.
- The flow of foreign direct investment is subject to improving the attractiveness of the investment climate locally, and therefore we suggest the need for the Algerian authorities to pay attention to clearing the economic environment from bureaucracy, bribery and corruption, which has become the first obstacle to the flow of foreign investment.

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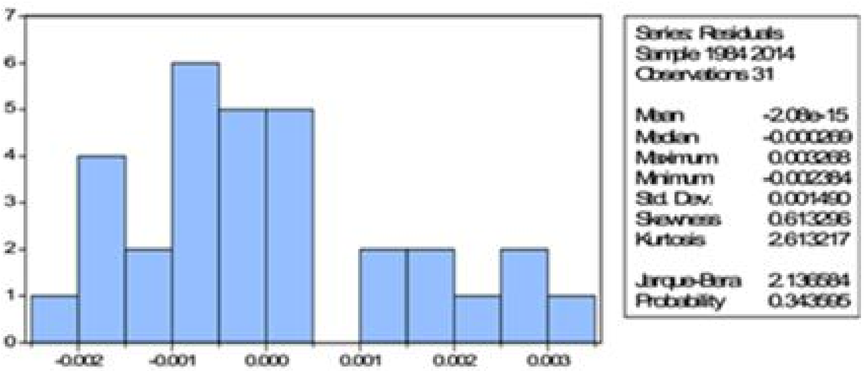
VIII. Appendices:

Appendix No 01: Results of JARQUE-BERA test.



Source: Prepared by researchers based on Eviews 9 outputs.

Appendix No 02: standard study variables and data sources during the period 1980-2018.

variable	Data collection sources
foreign direct investment FDI	UNCTAD: https://unctad.org/SearchCenter/Pages/Results.aspx National Investment Development Agency: http://www.andi.dz/index.php/ar/
Trade openness index OPEN	UNCTAD data base https://unctad.org/SearchCenter/Pages/results.aspx.
Per capita gross domestic product GDP_{pc}	UNCTAD data base https://unctad.org/SearchCenter/Pages/results.aspx. https://data.worldbank.org
exchange rate EXR	Statistics from the reports of the Algerian Central Bank: https://www.bank-of-algeria.dz Statistics on the National Bureau of Statistics: http://www.ons.dz
Inflation rate INF	UNCTAD data base https://unctad.org/SearchCenter/Pages/results.aspx

Source: Prepared by researchers.