The impact of the economic determinants on FDI inflows in developing countries

(Algeria as a model in the period 1990 - 2017)

أثر المحددات الاقتصادية على تدفقات الاستثمار الأجنبي المباشر الواردة إلى الدول النامية

(الجزائر نموذجا خلال الفترة 1990 – 2017)

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Abstract: : This study aims to analyze and measure the economic determinants' impact on the foreign direct investment in Algeria in the period of 1990-2017, and it aims also to estimate the quantitative impact using the autoregressive distributed lags ARDL model.The study came out that the affecting economic determinants in the case of Algeria 1990-2017 are: the degree of openness to the global world, the competitivity of the national economy, the faculty of national economy management and trade policy, whereas all of : the strength of national economy, and financial and monetary policy are not considered as influential determinants on the foreign direct investments.
Keywords: foreign direct investment; economic openness; economic policies; co integration test; Algeria.
Résumé : L'objectif de cette étude est d'analyser et de mesurer l'impact des déterminants économiques de l'IDE en Algérie au cours de la période 1990 - 2017 - le modèle d'auto-régression a été utilisé pour les écarts répartis dans le time-lapse. L'étude a conclu que les déterminants économiques affectant les entrées d'IED en Algérie au cours de la période 1990-2017 sont le degré d'ouverture au monde extérieur, la force concurrentielle de l'économie nationale, la capacité de gérer l'économie nationale et la politique commerciale alors qu'elle n'était pas Pour chacun d'eux : la solidité de la politique budgétaire et monétaire de l'économie nationale n'a eu aucun impact sur l'investissement étranger direct.
Mots-clés : Investissement étranger direct; degré d'ouverture économique; politiques économiques; co-intégration; Algérie.
ملخص: تهدف هذه الدراسة إلى تحليل و قياس أثر المحددات الاقتصادية للاستثمار الأجنبي المباشر في الجزائر خلال الفترة 1990 – 2017، ولتقدير الأثر الكمي تم استخدام نموذج الانحدار الذاتي للفجوات الزمنية الموزعة المتباطئة ARDL. خلصت الدراسة إلى أن المحددات الاقتصادية المؤثرة على تدفقات الاستثمار الأجنبي المباشر الواردة إلى الجزائر خلال الفترة 1990 – 2017 هي

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درجة الانفتاح على العالم الخارجي، القوة التنافسية للاقتصاد الوطني، القدرة على إدارة الاقتصاد الوطني و السياسة التجارية بينما لم يكن لكل من: قوة الاقتصاد الوطني السياسة المالية و السياسة النقدية لم يكن لها أي تأثير على الاستثمار الأجنبي المباشر.

الكلمات المفتاحية: الاستثمار الأجنبي المباشر؛ درجة الانفتاح الاقتصادي؛ سياسات اقتصادية؛ تكامل المشترك؛ الجزائر.

I- Introduction :

The foreign direct investments are considered as the major fuel of the international integration and one important indicator that represents integration at the level of global economy so its direct efficient impact on the economic development especially of the developing countries. Whether they are a significant financial source in these countries that generally suffer from shortages in domestic savings rates , or they are the most useful way to bring technology and modern techniques to these areas , these investments have an important role in creating and boosting employment and contribute to qualify the local human capital and to develop the economic export competitive capacities and achieve the competent use of the rare sources in the developing countries. The interest in foreign direct investments has been raised significantly by the developing counties since the early 1980s subsequently after the decrease of loans given to them and the rise of external debt crisis, so these countries went to remove the restrictions have been made on this investment. This made the global scene witness an international competition and conflict to attract direct investments especially with the retreat of State role in many countries and the new emerging trend of free markets that rely on attraction private investment as one basic mechanism to achieve economic reformation and growth.

Research Problematic: The trend of foreign direct investment to particular countries depends on factors and incentives given to attract such investment, and the most important indicators that play a principle role in creating a good investment climate are the economic indicators. These indicators include a set of economic indicators which indicate the level of the national economy performance, they are mainly: the degree of openness to the outside world, the strength of national economy, the faculty of national economy management, the nature of economic system adopted by the state and the total economic policies :**To what extent the economic determinants influence the FDI inflows in Algeria in the period 1990-2017?**

We can derive from the main question the following sub-questions:

1. What are the economic determinants or indicators for the FDI in developing countries?
2. What is the reality of FDI in Algeria during the study period?
3. what the impact of economic determinants on FDI inflows in Algeria from 1990-2017 ?

Research hypotheses:

Economic determinants play an influential role in creating a fertile ground to attract this type of investment. These determinants involve a set of economic indicators that represent the national economy performance, they are mainly: the degree of openness to the outside or global world, the national economy strength, the competitive power of the national economy, the nature of the economic system adopted by the government and the economic policies.

The economic determinants affect on the FDI inflows in Algeria in the period : 1990 to 2017 These determinants are : the degree of openness to the outside world, the strength of national economy, the faculty of national economy management, the nature of economic system adopted by the state the competitivity of the national economy and the total economic policies (financial, monetary, and trade policies)

The importance of research: The importance of this research derives from the importance of providing an appropriate investment ground to attract more FDI inflows to the developing countries therefore it comes the importance of knowing the main determinant factors of the investment decisions which are the economic determinants; this for drawing appropriate economic policies to help attracting this type of investment and to reduce obstacles facing it.

Research objectives: This research aims to come out with the following objectives:

- To stand on the extent and progress of foreign direct investment in Algeria.
- To measure the impact of economic determinants on the FDI inflows in Algeria.

Research methodology: To fulfill the research objectives, the descriptive analytical approach will be used in the first two sections. The third section will have the applied study to measure the quantitative impact of the economic determinants on the FDI inflows in Algeria during the period 1990 to 2017, using the autoregressive distributed lags ARDL model.

Literature review : The most important studies of the determinants of FDI flows to host countries, which have contributed to the identification of the main problem of this research is the:

- Erdal Demirhan , Mahmut Masca,2008, **Determinants of foreign direct investment flows to developing countries ; A cross – sectional analysis** ; the findings of this study that the most fundamental factors to create an attractive investment climate in developing countries are: a factor of economic openness to the outside world, infrastructure where infrastructure is an important element in attracting foreign direct investment flows, the lower inflation rates and tax rates increase the attractiveness of the investment climate. As for the low-wage workers was no longer sensitive to attract this type of investment to developing countries during the study period and is expected to be the Labor skills impact on relations on investment.
- Burak Camurdan , Ismail Cevis 2007**, The economic determinants of foreign direct investment in developing countries and transition economices :** It is found out that the previous period FDI which is directly related to the host

countries' economic resources is important as an economic determinant. Besides, it is also understood that the main determinants of FDI inflows are the inflation rate, the interest rate, the growth rate, and the trade (openness) rate and FDI inflows give power to the economies of host countries.

I.1. The economic determinants of foreign direct investment in developing countries

According to the core role that foreign direct investment plays in supporting the growth of developing countries' economies, and its adoption ability with global updates under the name of Globalization and multinational companies domination of the movement of services, goods and markets, it is also a means to empower the human capital competence within the technological change in these economies which made it an incentive for economic growth. For this reason, governments challenge and compete each other to attract more FDI inflows where many decision makers paid much attention to study and understand the factors and determinants that make their towns a suitable attractive environment for such investments.

Economic determinants also play an influential role in creating a fertile ground to attract this type of investment. These determinants involve a set of economic indicators that represent the national economy performance, they are mainly: the degree of openness to the outside or global world, the national economy strength, the competitive power of the national economy, the nature of the economic system adopted by the government and the economic policies.

I.1.1. The Degree of openness to the outside world

Foreign direct investment tends to open economies and it is far from the closed ones ensure the economic efficiency. (Mandour, 2010, p. 72) The concept of economic openness is related by one way or another to economic and trade freedom policy and applying restrictions on investment where are many views about making an overall concept or definition for it. However, the most comprehensive concept is the definition of International Monetary Fund: "Liberalization of the external sector that consists of the current trade transactions balance and capital transactions balance". This means all measures and economic policies that aim to organize trade movement and to encourage foreign and national capitals to contribute to funding economic projects and using modern technology in order to increase the national production. (Oudah, 2016, p. 56) Some of the economic indicators by which one can know the degree of economic openness are :

• **The ratio of exports to GDP**: The increase in the exports proportion of GDP to 25% and more is an indicator of economic openness and can be calculated according to the following equation: Exports (X) / Gross domestic product. (Oudah, 2016, p. 58)

• **Concentration in exports:** The high degree of concentration and the low number of exported goods means the association of quite a few countries and dependence on one crop or a few crops may expose the national economy of the state to violent shocks beyond its will and the consequent imposition of restrictions on movements of production elements. (Mohamed Mabrouk, 2014)

• **The imports ratio to GDP:** The state economy is considered open to the outside if imports accounted for more than 20% of GDP and can be calculated according to the following equation: Imports (Y) /Gross Domestic Product (GDP). (Oudah, 2016, p. 56)

•**Foreign trade to GDP:** The increase in this index ratio to 45% or more is an indicator of economic openness and can be calculated according to the following equation: Exports (X) + Imports (Y) / Gross Domestic Product (GDP). (Oudah, 2016, p. 58)

I.1.2. The competitivity of the national economy: The competitive power of the national economy is one of the main determinants for attracting foreign investments. The more competitive the national economy improves, the more foreign investment will be. This is due to the fact that increasing the competitive position means increasing the strength of the national economy and its ability to cope with any external conditions and absorption, as evidenced by the following indicators: Exports The higher the rate, the greater the competitiveness of the national economy. (Mohamed Mabrouk, 2014, p. 25)

I.1.3. The ability to manage the national economy: The transfer of these investments depends on the good management of the national economy and the ability to cope with changing economic conditions and the economic policies adopted by the economic administration to address these conditions (kaki, 2013, p. 15) and perhaps the most important indicators through which we can identify the national economy: (Mohamed Mabrouk, 2014, p. 26)

• **The size of foreign currency reserves:** This indicator is one of the most important guarantees needed to meet the emergency conditions that may face the national economy internally or externally.

• **Coverage rate of export earnings to imports:** the more efficient the management of the national economy and the greater the ability to attract foreign investment.

• **The importance of external debt:** which affects the payments balance and thus the ability to meet commitments and obligations; this would threaten the national economy because of the wealth drain and the national economy inability to cope with any external conditions.

I.1.4. The strength of the national economy and the probabilities of its growth: The stronger the national economy and its prospects for its growth in the future, the more able to attract more foreign investments and vice versa. Perhaps the most important indicators that can identify the strength of the national economy are:

• **Gross Domestic Product (GDP)**: GDP is one of the most significant determinants of foreign investment inflows to reflect the monetary value of all goods and services produced within a given country over a given period of time, usually one year. It is used as an indicator of the economy health and the rate of economic growth and high rates indicate the improvement of the economic situation of the country, which becomes a main destination for a large number of foreign projects. (Bamhammed, 2016)

• **Market size and growth potential**: Market size and accessibility to it are important determinants of FDI. The small-size market discourages investment unless it is close to raw materials or other large markets. (Al-Jubouri, 2016, p. 72) The measures used to measure the domestic market size are the average per capita GDP and the population. The increase of these rates means the increase of progress chances and improvement in the national economy and attracting foreign direct investment to satisfy the new desires that will be generated with every growth in these rates. (Ben Samina, 2013, p. 58)

• **Inflation rate:** The continuous changes in inflation indicate macroeconomic instability, which contributes to the creation of an investment climate that is unable to attract foreign investments. Therefore inflation rates have a direct impact on pricing policies, profit volume, capital movement and production costs which are concerns of investment companies. (Mohamed Mabrouk, 2014, p. 27)

• **Exchange rates**: The raised uncertainty about price trends, movements, the unpredictability of their changes and change timing make international investors close to additional risks of exchange rate risk, which are the inherent risks of international investments created by the sensitivity of international cash flows to exchange rate fluctuations that are determined by market factors. After the investment period ends, the investor transfers the value of his foreign investments to his motherland or to another foreign country. Therefore, in the case of a decline in the exchange rate of the foreign currency in which he invested his money, the investor may lose the value of profits achieved and perhaps may lose also a part of his first capital invested abroad, whereas in the case of high exchange rates of foreign currencies invested, the investor will benefit from higher exchange rates in addition to the raised value of profits achieved by the process of his investment abroad. (Gharbi & Nouitia, 2018, pp. 5,6)

I.1.5. Macroeconomic policies: The multiplicity of economic policies, such as wages, prices, exchange rate, interest rate and tax rate, affect the investment of foreign companies. The improvement of the investment climate requires the stability of macroeconomic policy, including the adoption of economic reform programs that seek reducing the fiscal and commercial deficit and to make fiscal and monetary policy and control of inflation stable. This is confirmed by the World Development Report 2005 according to the World Bank's survey of foreign companies on the investment climate in 48 countries where stability in government policies can increase investment flows by 30%. The report also notes that policy uncertainty and instability in Macroeconomics are 51% of concerns and most fears of foreign companies related to the investment climate. (Ben Samina, 2013, p. 33)

I.2. The impact of economic determinants on FDI flows in Algeria

I. 2. 1. The reality of foreign direct investment in Algeria

Algeria, like other developing countries, seeks to attract more foreign direct investment flows, especially when it has all the material and human and natural resources needed to attract this investment. Algeria has undertaken a series of economic and political reforms since the early 1990s to improve its investment climate and encourage investment in domestic and foreign sectors in all branches of the economic activity in addition to the incentives and financial and tax privileges granted. However, statistics and the global investment reports reflect the delay of Algeria in attracting foreign investment and the weakness of its investment climate compared to its counterparts in the Arab countries. The table 1 shows a comparison between the FDI size in Algeria, Egypt, Tunisia and Morocco.

Comparison between Algeria, Morocco and Egypt: Algeria is characterized by weak foreign investments, except for 2011, when inflows into Algeria exceeded inflows to Morocco. In comparison to foreign direct investment flows, Algeria overtook Tunisia to attract foreign investment during the years 2011-2013 and 2017. The rest years were characterized by low investment volume. In general, investments in Algeria are very weak compared to neighbor countries, although the latter does not have what Algeria possesses as natural and human resources and investment opportunities.

I. 2. 2. Evolution of the volume of foreign direct investment contained to Algeria 1990-2016

The figure 1. Shows that Foreign direct investment flows declined during the period 1990-2000, when they did not exceed $ 700 million, with the exception of 1998, which reached $ 606 million. This decline was due to the instability of the political situation in the country. After the year of 2000, the foreign investment size has grown significantly. Investment flows exceeded one billion dollars and in 2001 it was estimated by 1.1 billion dollars whereas in 2002 it was 1.01 billion dollars, especially after the improvement of the security situation and reforms implemented by the government in investment sphere.

One of these reforms was the 2001 Law which amended the investment law in the country, then the refreshment continued unless 2003, which was remarkably characterized by a decline in the size of investment received after the decline of oil prices, especially as it is the sector that accounts for more than 50% of the foreign investment projects in Algeria. Concerning the period of 2004-2010, there was a significant increase in the investment size estimated $ 2.6 billion in 2008 and $ 2.7 billion in 2009 and it was the maximum value reached during the study's years. Moreover and subsequently by of oil crisis in 2014, the volume of foreign direct investment fell intensively to $ 584 million.

The figure 2 shows that Foreign direct investment (FDI) in Algeria is concentrated in certain key economic sectors, namely hydrocarbons, telecommunications and public works, and financial and fiscal advantages and privileges directed to these sectors. Where the hydrocarbon sector needs advanced technology in the field of extraction and exploration as well as the experience of multinational companies in this field and is therefore the most attractive sectors for foreign direct investment.

II– Methods and Materials:

II .1. Determining the explanatory variables:

Gross Domestic Product (GDP): Many economists in their studies and research admitted its importance and impact on foreign direct investment (FDI). Also they confirm a strong positive correlation between the rate of foreign direct investment and GDP growth rate.

Inflation rate (INFLATION): Inflation is an affecting factor. Its rates directly affect the pricing policies, profit volume, capital movement and production costs. All these are the foreign companies concerns.

The ratio of exports to GDP: it is an indicator of the economic openness to the outside world and the competitive power of the external economy. Foreign investment tends to go to open economies, and the more competitive the national economy the more foreign investments. **Balance of the general budget (BD):** it is an indicator of the fiscal policy as the budget balance represents the shortage if it appears negative where the increase in the budget deficit of the state indicates the instability of macroeconomic conditions. This would be an expulsing factor to investment and vice versa.

The current foreign account balance (SEC): it is an indicator of the trade policy. It appears negative when a deficit is achieved, which means instability in the macro-economic conditions, that could negatively affect the inflows of foreign investment received. Hence, the trade policy like other economic policies contributes to attract foreign investment.

The reserves size of foreign exchange and gold (RES): it is an indicator of the good management of the national economy where the rise of these reserves indicates the good management of the national economy and its ability to meet the changing economic conditions and therefore is an important factor in the interpretation of foreign capital movement.

II. 2. the determination of the standard model:

FDI = f (GDP, INF, RES, X / GDP, BD, SEC)

FDI is a function of independent variables as the following equation:

$FDI\ t = B_0 - B_1INFt + B_2GDPt + B_3RESt - B_4\ (X / GDP)\ t + B_5BDt + B_6SECt + Ut$

FDI: FDI flows as the dependent variable.

Independent variables are:

INF: Inflation rate (monetary policy index).

GDP: Gross domestic product (a sign of the strength of the national economy and the market size).

RES: Reserves of foreign currency and gold (a sign of good governance of the national economy).

X / GDP: The proportion of exports of GDP (as an indicator of the economic openness and competitiveness of the external economy).

SEC: Current Foreign Account Balance (Trade Policy Index).

BD: Budget Balance (FIB).

Ut: Random variable (variables excluded from the form).

T: The annual time series for research.

B0 B1 B2 B3 B4 B5 B6: The model coefficients that are expected to be positive except for the inflation rate coefficient it is expected to be negative.

III- Results and discussion :

III. 1. Time series stability test or no unit root test: Time series stability is tested to avoid false regression and it has been used the ADF. The results are summarized in the table 2 , The results of the time series stability test indicate the existence of integrated variables of the first class (I1) and others stable at the level (I0) where all variables are integrated at first class except for the size of foreign exchange reserves and gold as the only stable variable at the level, so the ARDL model (Autoregressive Distributed Lag) is the most appropriate for this study.

III. 2. ARDL Bounds (Cross-Border) Test: A long-term mutual integration relationship between variables in the ARDL model is tested based on the Boundary Approach , The results in the table .3 indicate that the calculated F value is higher than the high critical values at a level of 5%: 10.88 > 3.28; so we reject the null hypothesis at a level of 5%. We accept the assumption that there is a common integration between the variables i.e. a long equilibrium relationship through the following:

III. 3. Estimation of long-term equilibrium relationship, estimation ARDL:

The long-term equilibrium is as follows

FDI=-0.060GDP+0.012RES+0.8228(X / GDP)

R2 = 93% D.W = 1.90 F = 0.0001

The R2 coefficient is 93% of the changes in FDI inflows that are explained by the independent variables under the study. The results show that the parameters of GDP, the volume of foreign currency reserves and gold and the proportion of exports out of the GDP is significant at 5%. The results also indicate that there is a negative impact of GDP on foreign direct investment flows which oppose predictions.

In addition to the positive impact of foreign exchange and gold reserves on foreign direct investment what goes with expectations, where an increase of 1% in these reserves leads to an increase of 0.012% of foreign direct investment size and it is the least impact compared to the ratio of exports out of GDP. 1% as an increase of this ratio leads to an increase of 0.83% of foreign direct investment size. The rest of variables have no significant effect on the volume of foreign direct investment. For self-correlation test of mistakes, the results in the table .4 may indicate that the parameter of the calculated value is not significant P = 0.9, and from this we conclude that there is a normal distribution of errors, i.e., the model is valid.

III. 4. Estimation of the ARDL-ECM: After making sure that there is mutual integration relationship between the variables, we will test this relationship in the short term. The Error correction model is an estimate of the relationship between variables in the short term. The findings are:

The results in the table .5 showed that the error corrector coefficient of CointEq (-1) is significant (0.0000) and negative (-1.0082) which confirms the validity of error correction model and which explains the strength of return to balance. The results also indicate the significance of the correction parameter for the short-term equilibrium deviations from the equilibrium relationship in the long term. Concerning the estimation of the relationship in the short term, the results show that the GDP coefficients and current account balance are significant at 5% where they show a strong positive effect of the current account balance on the foreign direct investment size. 1% as an increase in current account balance means an increase of 23.50% in foreign direct investment size. For the self-correlation test, the results in the table .6 may point that the parameter of the calculated value is not significant P = 0.9, and from this we conclude that there is a normal distribution of errors, i.e., the model is valid.

III. 5. Estimation of long-term parameters: Based on ARDL-ECM results in the table .6 .

III. 6. Testing the stability of long-term parameters (CUSUM^2 – CUSUM) : The results indicate that long-term coefficients are stable where the CUSUM2-CUSUM test chart is situated within critical limits at a significant level 5 (figure.3).

IV- Conclusion:

Findings:

The applied study attempted to measure the impact of economic determinants on foreign direct investment in Algeria during the period 1990-2017 using the methodology of joint integration in terms of border approach ARDL . The study concluded with:

FDI inflows in Algeria during the study period have witnessed a significant improvement, but remain far from the extent hoped comparing to the neighbor countries in the light of needed resources available in Algeria as well as the economic reforms, benefits and incentives granted in the field of investment.

The results came out of the relationship estimation between FDI and its economic determinants were as follows: 93% of changes in foreign direct investment flows are explained by the variables studied. The results also indicate a significant effect of GDP, foreign exchange and gold reserves, exports ratio of GDP on foreign direct investment flows, as a 1% increase in the volume of reserves of foreign currency and gold leads to an increase of 0.012 % of FDI volume and it is the least influential determinant compared to the ratio of exports proportion of GDP, as the increase of 1% of this ratio leads to increase of 0.83% in the foreign direct investment volume. The results indicate also a negative impact of GDP rates on FDI inflows. Inflation rates, the general budget balance and the current account balance did not have any significant effect on the FDI volume at the long term. When estimating the relationship at the short term, the results show that the GDP and current account balance coefficients are significant at 5% where the results indicate a strong positive effect of the current account balance one the FDI volume in a way that 1% increase in current account balance leads to an increase of 23.50% of foreign direct investment size. The other variables did not have any significant effect on the FDI volume. Based on the above results, the economic determinants affecting FDI flows in Algeria during the study period in the long and short term are: The positive effect of exports ratio out of GDP on FDI flows explains the fact that economic openness to the outside world and the increased competitiveness of the Algerian economy have contributed to the increase of foreign direct investment inflows during the study period, although it is a small contribution. Moreover, the positive effect of foreign exchange reserves and gold (RES) on foreign direct investment flows reflects that the good management of the Algerian economy has contributed to a relatively slight increase in FDI flows. While the negative effect of GDP equals the impact of the national economy strength and market size which was negative for foreign investment in Algeria during the study period what contradicts expectations. Macroeconomic policies played no role in attracting foreign direct investment in Algeria during the study period, of course, which is reflected by the absence of any significant effect of inflation rates, the general budget balance and current account balance on foreign direct investment. However, there is a significant strong positive effect of the trade policy index "current account balance" in foreign investment during the study period. It can be concluded that the economic determinants affecting FDI inflows in Algeria during the period 1990 to 2017 are: the degree of openness to the outside world, the competitive power of the national economy, the ability to manage the national economy and trade policy, while not considered: the national economy strength, fiscal and monetary policies which had no impact on foreign direct investment.

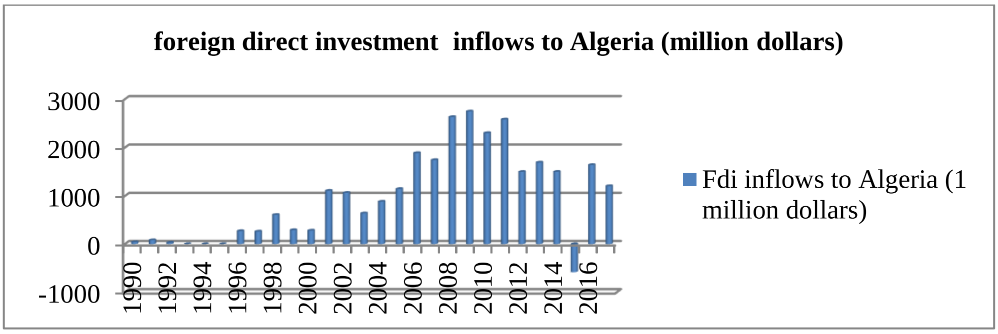
V- Appendices:

Table 1. Comparison between FDI flows in Algeria and the Arab countries

	Foreign direct investment flows (million dollars)						
	1990	**2000**	**2006**	**2011**	**2013**	**2015**	**2017**
Algeria	**40**	**280**	**1795**	**2571**	**1684**	**584-**	**1203**
Morocco	**734**	**1233**	**10043 1**	**483-**	**3298**	**3255**	**2651**
Egypt	**165**	**422**	**2449**	**2568**	**4256**	**6925**	**7392**
Tunisia	**89**	**779**	**3308**	**1148**	**1117**	**1003**	**880**

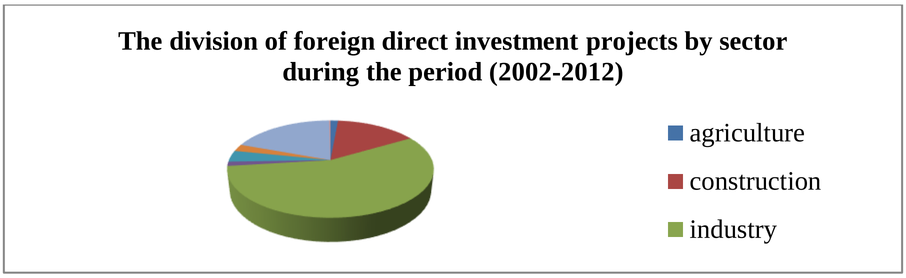
Source : Prepared by the researcher based on World Bank statistics.

Fig.1. Evolution of the volume of foreign direct investment inflows to Algeria 1990-2016



Source: Prepared by the researcher based on World Bank statistics.

Fig.2.The sectoral distribution of FDI in Algeria during the period 2002-2012



Source : Prepared by the researcher based on the national agency for investment www.andi.dz

Table .2 : Time series stability test or no unit root test

	LEVEL		1st DIFFERENCE	
	T statistic	Result	T statistic	Result
FDI	-2.66	Unstable	-7.81	Stable
GDP	-2.79	Unstable	-6.09	Stable
INF	-1.80	Unstable	-5.31	Stable
RES	-4.82	Stable	/	/
X/GDP	-0.90	Unstable	-4.33	Stable
SEC	-1.02	Unstable	-5.28	Stable
BD	-2.10	unstable	-5.38	stable

Source : Prepared by the researcher using Eviews .9

Table .3 : ARDL Bounds (Cross-Border) Test

Test Statistic	Value	K
F-Statistic	10.88586	6
		Critical Value Bounds
Significance	I0 Bound	I1 Bound
10%	1.99	2.94
5%	2.27	3.28
2.5%	2.55	3.61
1%	2.88	3.99

Source : Prepared by the researcher using Eviews .9

Table .4 : Breusch – Godfrey Serial Correlation LM Test

Breusch – Godfrey Serial Correlation LM Test:			
F-Statistic	0.011102	Prob.F(1.9)	0.9184
Obs*R-squared	0.027105	Prob.ChiSquare(1)	0.8692

Source : Prepared by the researcher using Eviews .9

Table .4 : Estimation of the ARDL-ECM

	Coefficient	Prob.
CointEq(-1)	-1.008209	0.0000
Cointeq = FDI – (-17.7495*INF – 0.0930*GDP + 0.0147*RES – 9.4144*SEC + 0.4534*SER01 – 0.0453*BD -298.2725)		

Source : Prepared by the researcher using Eviews .9

Table .5 : Breusch – Godfrey Serial Correlation LM Test

Breusch – Godfrey Serial Correlation LM Test			
F-Statistic	0.011102	Prob.F(1.9)	0.9184
Obs*R-squared	0.027105	Prob.Chi-Squre(1)	0.8692

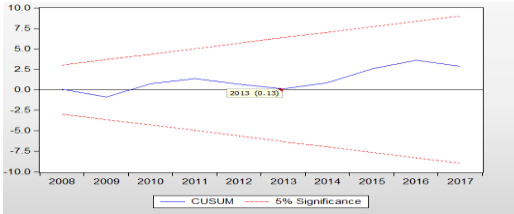
The Source : Prepared by the researcher using Eviews .9

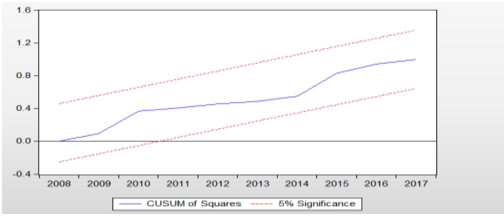
Table .6 : Estimation of long-term parameters

Long Run Coefficients		
Variable	Coefficient	Prob.
INF	-17.749848	0.4188
GDP	-0.092991	0.0030
RES	0.014741	0.0000
SEC	-9.414439	0.6524
SER01	0.453359	0.2280
BD	-0.045323	0.7764
C	-298.2724	0.7790

The Source : Prepared by the researcher using Eviews .9

Fig (6) : the stability of long-term parameters ($CUSUM^2$ – CUSUM)





The Source : Prepared by the researcher using Eviews .9

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