The Impact of Foreign Direct Investment on Economic Growth in Algeria: An (ARDL) Bounds Testing Approach.

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Abstract :

This study   aims to measure   and analyse the impact of Foriegn   Direct Investment on the Economic Growth of Algeria, over the period (1980-2017),This study Examines The relationship Between variables,Throught Using Autoregressive Distributed lags (ARDL). The results revealed that the contribution of FDI is 0.03in shorts term and 0.07 in the long term, which is confirmed by the theoretical relationship between them, and with a positive impact and significantly .

The study alerted to apply a clear development policy and sectoral ambitious strategy and provide more attractive for foreign investment, export-oriented environment towards the sectors that have a competitive advantage.

key words : Economic growth ,FDI ,Algeria , ADF ,ARDL

JEL classification codes: C22,C51, F43.

Résumé.

Cette étude vise à mesurer et analyser l'impact de l'investissement direct Etranger sur la croissance économique en Algérie sur la période 1980-2012. et examine la relation entre les variables, en utilisant (ARDL). Les résultats ont révélé que la contribution des IDE de 0,03 à court terme et de 0,07 à long terme, ce qui est confirmé par la relation théorique, avec un impact positif et significatif.

L'étude a appelé à appliquer une politique de développement claire et stratégie sectorielle ambitieuse et à offrir un environnement plus attrayant des IDE, orienté vers l'exportation, dans les secteurs qui ont un avantage concurrentiel.

Mots clés: Croissance économique, IDE, Algérie, ADF,ARDL

Codes de classification JEL: C22, C51, F43.

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1. Introduction.

Foreign direct investment (FDI) has grown significantly in the past 20 years, whose growth has outpaced world production and the growth of international trade. Although most foreign direct investment is concentrated in developed countries, its flows have become increasingly important in developing countries. The developing world saw a significant increase in the share of foreign direct investment (FDI) from total net flows since 1980, more than 12 times World Bank (1999) and accounted for more than 60% of private capital flows to the developing world Carkovic (2005) World Bank (2006);This large influx has led economic policy makers in developing countries to focus their efforts to attract more foreign capital after realizing their impact on the economic performance of the host country, R.Solow (1956-1957) and the internal growth models R. BARRO (1990), and the development of new technologies, contribution to capital accumulation), R. Lucas (1988) P.Romer(1986).

Algeria is one of the developing countries that adopted a number of advantages and incentives for foreign investors after 1994; This is within the framework of restoring internal and external balance and labor. On the revitalization of economic activity through effective rules of 1993, amended and supplemented by Order 01-03 of 2001, which helped to create a new investment environment, Supported by investment support measures that led to a significant inflow of foreign direct investment at the beginning of the third millennium, encompassing the largest number of sectors having been concentrated in the oil sector, with regulatory frameworks (removal of legal barriers and regulatory obstacles to foreign capital flows) Institutional frameworks (CNI, APSI, ANDI), the calendar to promote an enabling environment for foreign investors, in addition to traditional measures including a wide range of tax concessions.

Study problem: FDI involves both positive and negative impacts on countries of origin and host countries. Given its importance in influencing the performance of the national economy, its relationship to economic growth will be assessed and its trends determined by answering the following questions:

What are the effects of FDI policies on growth in Algeria, and is there a correlation between these effects and the nature of the theoretical relationship between them?

- How much does foreign direct investment contribute to stimulating growth in Algeria?

Objectives of the study:

- Examining the interactive relationship between the development of foreign investment volumes and economic growth rates in Algeria, to determine the extent and degree of their impact on macroeconomic variables.

- Assess the potential effects of FDI on the stability of Algeria's growth rates.

Methodology of the study:

In view of the nature of the study, which is the test of the impact of foreign direct investment on the economic growth in Algeria, the descriptive and analytical method was used to review the scientific material derived from the various sources and scientific references that were based on the conceptualization of the concept of FDI and its relation to economic growth. To cover the axes of applied study.

2. Theoretical framework.

2.1. Empirical studies

Economic empirical literature includes several different studies to examine the impact of foreign direct investment on economic growth in host countries. These studies varied in terms of treatment methods and asymmetric results.

-Study of the International Monetary Fund(1994)

The study by Lee Eduardo Borensztein, Jose De Gregorio and Jong-Wh, based on FDI statistics of 69 countries during the period 1970-1989, based on the fact that the economy produces a single consumer commodity by technology A growth model with foreign direct investment (FDI) variables, human capital stock (H), and individual GDP (YQ) was used. The government consumption (X) with the use of unrelated regressions technique (SUR) is a system of regression equations that are not ostensibly related to one model Used to merge time series data for cross sections.

The study concluded that foreign direct investment is important for technology transfer, that it contributes more to growth than domestic investment, and that its contribution to large productivity is achieved when the host country has a specific quality of human capital stock and has complementary effects with domestic investment. (Eduardo Borensztein, 1994,p.7.)

-World Bank Study(2005)

The study was conducted by Kevin N. Lumbila on the impact of foreign direct investment on economic growth in Africa. The study sample included 47 countries during the period 1980-2000, using panel data analysis.

The results showed that corruption did not affect the situation of foreign direct investment, since in countries characterized by high corruption, FDI still had a positive impact on economic growth. (Kevin N. Lumbila, 2008,p.1.)

-Unctad study (Fabienne Fortanier , 2007)

The study covered 71 countries, of which 49 were developing countries, 15 in Africa and the Middle East, 11 in Asia, 9 in Eastern Europe and 14 in Latin America. The remaining 22 countries were developed countries with a total of 994 observations and 1989-2002.

It has been established that the effects of FDI growth vary by country of origin and that the impact of foreign investment on economic growth varies according to host country characteristics. (Fabienne Fortanier, August 2007,pp.41-71.)

-Panagiotis Pegkasstudy (2015)

The study was conducted during the period 2002-2012, using panel data, FMOLS and DOLS. The results revealed a long-term and positive correlation between the stock of foreign direct investment and economic growth. The value of the GDP elasticity Total for foreign direct investment ratios 0.054% and 0.147%. (Panagiotis Pegkas, 2015,pp.124-132.)

In addition to some applied studies as shown in Figure(1).

Fig 1. Empirical literature investigating relationship FDI
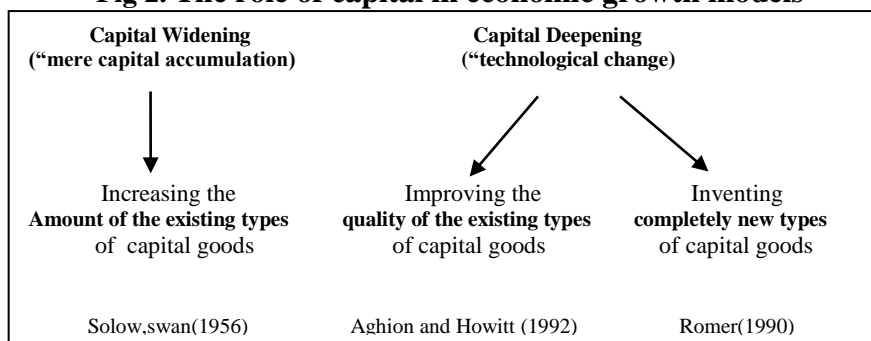
and Economic Growth nexus.
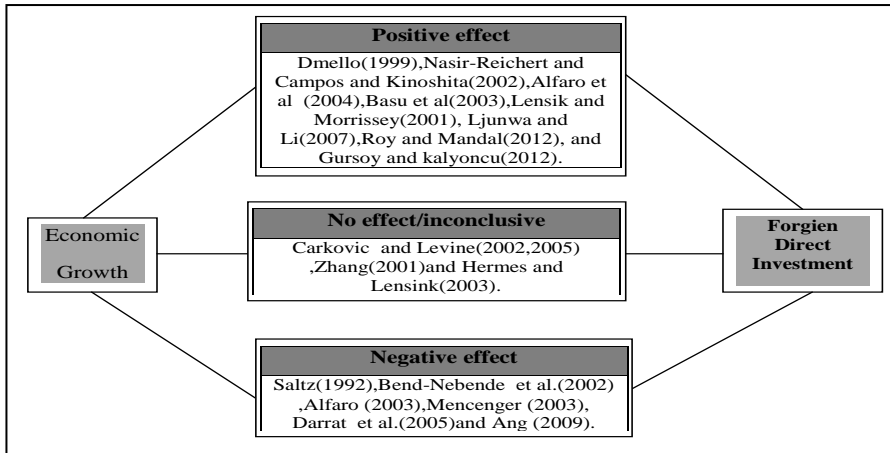
Source: Preeti Flora and Gaurav Agrawal**,** "Foreign Direct Investment (FDI) and Economic Growth Relationship Among Highest FDI Recipient Asian Economies: A Panel Data Analysis", **International Business Managements (2)**: 2014,p.128**.**

2.2. Direct effects:

The neo-classical growth models considered FDI as an add-on to capital accumulation in the host economy, facilitating the integration of new inputs and new types of intermediary goods into production, as the size of the physical capital of the host country increased its productive capacity and also increased per capita production growth. With the decline in capital yield, the impact of foreign investment on production is expected in the short term to be dependent on the transitional dynamics of capital to a steady growth path. Therefore, the solo models are capitalized as a source of long-term growth per capita. In this context, FDI directly affects growth through short-term capital inflows while its economy is in transition In particular (pravakar sahoo,2014,P.203), FDI is supposed to stimulate domestic savings and stimulate technological progress through innovation and the integration of advanced technologies into the production process, given the assumption of superior foreign-controlled productive capacity (because such capacity is inherent in economies where multiple companies (Vertically and horizontally diversified multinationals), high-tech and face-to-face knowledge in industrial economies institutions (Dickens (2003), Guloglu and Takin (2012), FDI is the direct source of foreign technology transfer

and productivity growth Bi jsterbosch and Kolasa (2009). It is also considered to have the cheapest and direct impact on most industrial productive capacity and efficiency Damijan et al(2005), (Mehic & Silajdzic, 2013,p.7).

Fig 2. The role of capital in economic growth models

Capital Widening ("mere capital accumulation)	Capital Deepening ("technological change)	
↓	↙	↘
Increasing the **Amount of the existing types** of capital goods	Improving the **quality of the existing types** of capital goods	Inventing **completely new types** of capital goods
Solow,swan(1956)	Aghion and Howitt (1992)	Romer(1990)

Source : Marco Neuhaus (2006), **The Impact of FDI on Economic Growth An Analysis for the Transition Countries of Central and Eastern Europe**, Verlag Heidelberg New York, p.48.

2.3. Indirect effects:

The models of neoclassicism considered that long-term growth could occur through labor force growth and technological advances. The emergence of internal growth models (Romer (1986, 1991); Barro and Martin (1995) emphasized that the FDI model could contribute to economic growth in the long term (Pegkas, 2015,p.124), depending on the volume of foreign direct investment (FDI) and side effects (spilovers) achieved in the host country. The role of knowledge or technology as an internal factor of productivity (Lucas 1988; Grossman and Helpman (1991), Romer (1994). The spread of technological effects of FDI to the host country is expected to have indirect effects on the domestic economy through competition, imitation, labor mobility and vertical linkages Competition - and labor skills - linkages.

The operations of multinational enterprises in the host country can lead to the proactive results of technology from foreign direct investment if local firms improve productivity through the tradition of technology used in multinational enterprises. This phenomenon is known to trace the tradition of a door or a demonstration or learning watch Gunter (2002), (Eduardo, Jose, & Wh-Jong, 1998,p.115) The technological gap between foreign

companies and domestic companies increased, and the spread spread. Multinational companies introduce new technologies, domestic enterprises are facing new procedures, skills, techniques, imitation or adoption of these. Improves production efficiency as a result Wang and Blomstrom (1992). Indeed, technical assistance and training of local staff, adopting more effective organizational and managerial practices that can improve the knowledge and managerial skills and productivity of local enterprises and the quality of local human capital (learning watch) (Olusanya & Samuel Olumuyiwa edition vol.9, 2013).

Fig 3. Channels from FDI to economic growth
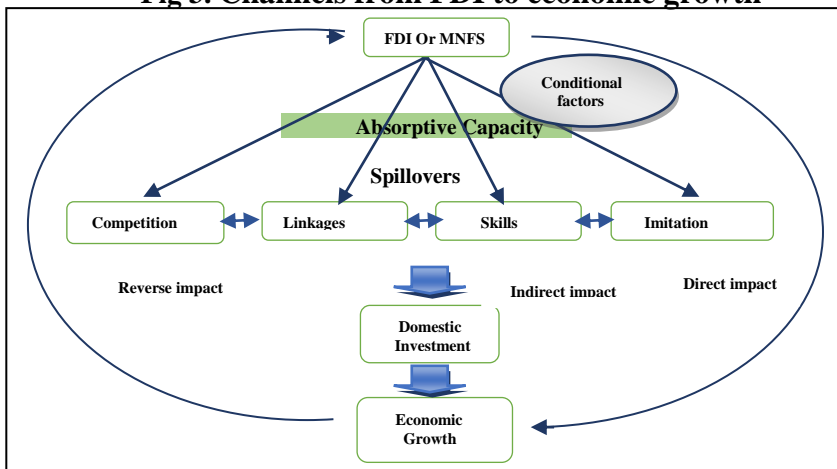
Source : Bhissum Nowbutsing (2009), **FDI, Domestic Investment and Economic Growth: A Theoretical Framework**, Dakar, p.1.

3. Foreign direct investment and economic growth in Algeria

Foreign direct investment has been mainly concentrated in the hydrocarbons sector since independence, due to the lack of financial resources, expertise and competencies in this field. It was considered the preferred sector for expanding foreign investments, especially after the 1971 decision.9.

This has led many foreign companies to invest in projects, discovery, production, transportation and refining. The period 1967-1980 was characterized by an increasing trend in the forms of

integrated technology imports and through contracts represented by key contracts, about 67% during the second quadratic plan, Algeria did not permit foreign companies to produce for their own account except under the production division contracts or other contracts related to the provision of services to Sonatrach. After 1994, Algeria adopted a number of advantages and incentives for foreign investors. This was in the context of restoring internal and external balance, On an effective basis, through the amended 1993 Act, supplemented by Order 01-03 of 2001.

The first decade of the 21st century was very positive for the Algerian economy. Over the past 10 years, the economy has recovered from the deep social and economic crisis of the 1990s.
After average growth rates of 2.2 and 5.1 per cent per year in the 1960s and 1970s, Algeria's growth over the last two decades was - 0.2% - on average, it was disappointing. Growth has collapsed over a decade since the mid-1980s, due to the adjustment of the low oil price of the unrest associated with slow and difficult transition from the market-oriented economy, as well as the political shift that was violently transformed during the 1990s. Poor long-term productive efficiency has also contributed to the collapse of growth. TFP grew negatively in the late 1970s to mid-1990s
This is due to the relatively large price distortions during the oriented economy period, the limited opening up of non-hydrocarbon trade and FDI. TFP growth dropped 50 percent from 4.2 percentage points (World Bank, 2003,p.3) A moderate growth rate of 5.5 percent was recorded for the period 2002-2010 and in Algeria it produced 18 percent growth in public expenditure, estimated at 5.5 percent.

Table 1. Summary of Authorized Investment Projects (2002-2017)

Investment type	Number of projects	%	One million Algerian dinars	%	Jobs	%
Domestic investment	62 334	98	11 780 833	82	1 098 011	89.15
Foreign Investment	901	1.42	2 519 831	17.62	133583	10.85

| **Total** | 63 235 | 100 | 14 300 664 | 100 | 1 231 594 | 100 |

http://www.andi.dz/index.php/ar/declaration-dinvestissement?id=395
(consulted on 25/01/2019).

Between 2000 and 2009, real GDP and non-oil GDP grew respectively in the annual average of 3.7% and 5.6%, while real GDP per capita increased by 22%, the unemployment rate fell from 29.5% to 10.2% . The reasons for this favorable success of the international macroeconomic environment were characterized by high oil prices, prudent macroeconomic policies that led to large financial surpluses and growing foreign exchange reserves. Despite the progress made, the economy is still dependent on the oil and gas sector (98% of exports), private investment is very small, and the weak business climate is a major obstacle to economic growth led by investment.

Table 2. Distribution of foreign investment projects by sector of activity (2002-2017)

Activity sector	Number of projects	%	The value of one million Algerian dinars	%
Agriculture	13	1.44%	5768	0.23%
Building	142	15.76%	82593	3.28%
Industry	558	61.93%	2050277	81.37%
the health	6	0.67%	13572	0.54%
Transportation	26	2.89%	18966	0.75%
tourism	19	2.11%	128234	5.09%
Services	136	15.09%	130980	5.20%
Telecommunication	1	11%	89441	3.55%
Total	901	100%	2519831	100%

http://www.andi.dz/index.php/ar/declaration-d-investissement?id=395
(consulted on 26/02/2019).

4. Methodology and data

Study model: derived from a model (Jamshid Damooei And Akbar Tavakoli,2006: 79-100)

$$GP = f(K, L, FDI, M, \mu) \dots \dots \dots \dots \dots \dots . (1)$$

GP: Gross output equals GDP plus imports..100=2005

FDI : Net inflows of inward FDI.

K:Domestic capital at constant prices.100=2005

M:Imports of goods and services are valued at constant prices .100=2005

L:The labor component is measured by the number of workers

μ : .Error limit.

The previous equation can be expressed as follows:

$$GP = AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{\alpha 4} \; e^{\mu} \dots \dots \dots \dots \dots . (2)$$

By dividing the two ends of equation L we get the function number

$$\frac{GP}{L} = \frac{AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{\alpha 4} \; e^{\mu}}{L} \dots \dots \dots \dots \dots . (3)$$

After making the following changes:

$$\frac{GP}{L} = AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{\alpha 4} \; L^{-1} e^{\mu} \dots \dots \dots \dots \dots . (4)$$

$$\frac{GP}{L} = AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{\alpha 4-1} \; e^{\mu} \dots \dots \dots \dots \dots . (5)$$

$$\frac{GP}{L} = AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{1-(\alpha_1+\alpha_2+\alpha_3)-1} \; e^{\mu} \dots \dots \dots \dots \dots . (6)$$

$$\frac{GP}{L} = AK^{\alpha 1} \; L \; FDI^{\alpha 2} \; M^{\alpha 3} L^{-\alpha_1-\alpha_2-\alpha_3} \; e^{\mu} \dots \dots \dots \dots \dots . (7)$$

The formula can be written as follows:

$$\frac{GP}{L} = A \left(\frac{K}{L}\right)^{\alpha 1} \left(\frac{FDI}{L}\right)^{\alpha 2} \left(\frac{M}{L}\right)^{\alpha 3} \varepsilon \dots \dots \dots \dots \dots . (8)$$

This mathematical formula helps to avoid the problem of multiple linear correlation, and goes beyond the problem of heterogeneity of variance, which, if present, results in biased results

$$\Delta Y_t = B_1 + B_2 t + \delta Y_{t-1} + \sum_{t=1}^{m} \alpha_t \Delta Y_{t-1} + \varepsilon_t \dots \dots \dots \dots \dots (9)$$

5. Empirical results and analysis:

Table 3. The résulte of unit root test (ADF, PP)

	(6)		(5)		(4)		Model	
Int. Order	Crit. Value 5 %	t.cal	Crit. Value 5 %	t.cal	Crit. Value 5 %	t.cal	Variable	
I(1)	-3.54	-*6.23	-2.94	-*6.093	-1.95	-*5.86	$Ln\left(\frac{GP}{L}\right)$	
I(1)	-3.55	-*6.38	-2.95	-*5.812	-1.95	-*5.89	$Ln\left(\frac{M}{L}\right)$	
I(1)	-3.56	-*6.38	-2.96	-*5.812	-1.95	-*5.89	$Ln\left(\frac{FDI}{L}\right)$	ADF 1st
I(1)	-3.54	-*6.19	-2.94	-*6.098	1.952	-*5.876	$Ln\left(\frac{K}{L}\right)$	diff
	(6)		(5)		(4)		Model	
Int. Order	Crit. Value 5 %	t.cal	Crit. Value 5 %	t.cal	Crit. Value 5 %	t.cal	Variable	
I (1)	-3.54	-*6.53	-2.94	-*6.10	-1.95	-*5.86	$Ln\left(\frac{GP}{L}\right)$	
I (1)	-3.56	-*6.45	-2.96	-*5.81	-1.95	-*6.23	$Ln\left(\frac{FDI}{L}\right)$	
I (1)	-3.54	-*6.45	-2.94	-*6.18	-1.95	-*5.90	$Ln\left(\frac{M}{L}\right)$	
I (1)	-3.54	-*6.47	-2.94	-*6.11	-1.95	-*5.87	$Ln\left(\frac{K}{L}\right)$	PP1st diff

Source: Prepared by the researcher (Eviews10),*prob1%.

The results of Table (3) show that there are integrated variables of of one rank, I (1). Thus, the self-correlation model is used for distributed delay periods (ARDL).

Correction Model (UECM):

$$\Delta Ln\left(\frac{GP}{L}\right)_t = \alpha_0 + \delta_{1\left(\frac{GP}{L}\right)} Ln\left(\frac{GP}{L}\right)_{t-1} + \delta_{2\left(\frac{FDI}{L}\right)} Ln\left(\frac{FDI}{L}\right)_{t-1} + \delta_{3\left(\frac{K}{L}\right)} Ln\left(\frac{K}{L}\right)_{t-1} + \delta_{4\left(\frac{M}{L}\right)} Ln\left(\frac{M}{L}\right)_{t-1}$$
$$+ \sum_{i=1}^{p}\beta_{1i}\Delta Ln\left(\frac{GP}{L}\right)_{t-1} + \sum_{i=0}^{q1}\beta_{2i}\Delta Ln\left(\frac{FDI}{L}\right)_{t-1} + \sum_{i=0}^{q2}\beta_{3i}\Delta Ln\left(\frac{K}{L}\right)_{t-1}$$
$$+ \sum_{i=0}^{q3}\beta_{4i}\Delta Ln\left(\frac{M}{L}\right)_{t-1} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (10)$$

$$\Delta Ln\left(\frac{FDI}{L}\right)_t = \alpha_0 + \delta_{1\left(\frac{FDI}{L}\right)} Ln\left(\frac{FDI}{L}\right)_{t-1} + \delta_{2\left(\frac{GP}{L}\right)} Ln\left(\frac{GP}{L}\right)_{t-1} + \delta_{3\left(\frac{K}{L}\right)} Ln\left(\frac{K}{L}\right)_{t-1} + \delta_{4\left(\frac{M}{L}\right)} Ln\left(\frac{M}{L}\right)_{t-1}$$
$$+ \sum_{i=1}^{p}\beta_{1i}\Delta Ln\left(\frac{FDI}{L}\right)_{t-1} + \sum_{i=0}^{q1}\beta_{2i}\Delta Ln\left(\frac{GP}{L}\right)_{t-1} + \sum_{i=0}^{q2}\beta_{3i}\Delta Ln\left(\frac{K}{L}\right)_{t-1}$$
$$+ \sum_{i=0}^{q3}\beta_{4i}\Delta Ln\left(\frac{M}{L}\right)_{t-1} + \theta T_t + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots (11)$$

$$\Delta Ln \left(\frac{K}{L}\right)_t = \alpha_0 + \delta_{1\left(\frac{K}{L}\right)} Ln \left(\frac{K}{L}\right)_{t-1} + \delta_{2\left(\frac{GP}{L}\right)} Ln \left(\frac{GP}{L}\right)_{t-1} + \delta_{3\left(\frac{FDI}{L}\right)} Ln \left(\frac{FDI}{L}\right)_{t-1} + \delta_{4\left(\frac{M}{L}\right)} Ln \left(\frac{M}{L}\right)_{t-1}$$
$$+ \sum_{l=1}^{p} \beta_{1l} \Delta Ln \left(\frac{K}{L}\right)_{t-1} + \sum_{l=0}^{q1} \beta_{2l} \Delta Ln \left(\frac{GP}{L}\right)_{t-1} + \sum_{l=0}^{q2} \beta_{3l} \Delta Ln \left(\frac{FDI}{L}\right)_{t-1}$$
$$+ \sum_{l=0}^{q3} \beta_{4l} \Delta Ln \left(\frac{M}{L}\right)_{t-1} + \varepsilon_{1t} \dots\dots\dots\dots\dots .(12)$$

$$\Delta Ln \left(\frac{M}{L}\right)_t = \alpha_0 + \delta_{1\left(\frac{M}{L}\right)} Ln \left(\frac{M}{L}\right)_{t-1} + \delta_{2\left(\frac{GP}{L}\right)} Ln \left(\frac{GP}{L}\right)_{t-1} + \delta_{3\left(\frac{FDI}{L}\right)} Ln \left(\frac{FDI}{L}\right)_{t-1} + \delta_{4\left(\frac{K}{L}\right)} Ln \left(\frac{K}{L}\right)_{t-1}$$
$$+ \sum_{l=1}^{p} \beta_{1l} \Delta Ln \left(\frac{M}{L}\right)_{t-1} + \sum_{l=0}^{q1} \beta_{2l} \Delta Ln \left(\frac{GP}{L}\right)_{t-1} + \sum_{l=0}^{q2} \beta_{3l} \Delta Ln \left(\frac{FDI}{L}\right)_{t-1}$$
$$+ \sum_{l=0}^{q3} \beta_{4l} \Delta Ln \left(\frac{K}{L}\right)_{t-1} + \varepsilon_{1t} \dots\dots\dots\dots\dots .(13)$$

-Lag Length Selection

Table4. Lag Length Selection

Lag	FPE	AIC	SC	HQ
0	0.000143	-6.017693	-5.822673	-5.963602
1	0.000154	-5.943577	-5.699802	-5.875964
2	0.000168	-5.864726	-5.572196	-5.783591
3	0.000182	-5.787064	-5.445779	-5.692406
4	0.000199	-5.707348	-5.317307	-5.599167
5	6.88e-05*	-6.779697*	-6.340902*	-6.657994*

* indicates lag order selected by the criterion.

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Table 4 reports the optimal lag length of five (5) out of a maximum of 5 lag lengths as selected.

-Bounds Test

The joint intégration test of the Relationship between the variables in equation (5) is then carried out according to the ARDL method by estimating the Following Unrestricted Error Correction Model (UECM):

Table 5. Cointegration test results

Equation model	F-statistic	Decision

$F_{\left(\frac{GP}{L}\right)}\left(\frac{GP}{L} / \frac{FDI}{L}, \frac{K}{L}, \frac{M}{L}\right)$	9,408	Cointegrated	
$F_{\left(\frac{FDI}{L}\right)}\left(\frac{FDI}{L} / \frac{GP}{L}, \frac{K}{L}, \frac{M}{L}\right)$	3,113	No cointegration	
$F_{\left(\frac{K}{L}\right)}\left(\frac{K}{L} / \frac{GP}{L}, \frac{FDI}{L}, \frac{M}{L}\right)$	5,560	Cointegrated	
$F_{\left(\frac{M}{L}\right)}\left(\frac{M}{L} / \frac{GP}{L}, \frac{FDI}{L}, \frac{k}{L}\right)$	15,036	Cointegrated	

K=3	%10		%5		%2.5		%1	
	I (0)	I(1)	I (0)	I(1)	I (0)	I(1)	I (0)	I (1)
	2.97	3.74	3.38	4.23	3.8	4.68	4.3	5.23

Source: Prepared by the researcher (Eviews10).

For the purpose of analysis, the following model was adopted
$F_{\left(\frac{GP}{L}\right)}\left(\frac{GP}{L} / \frac{FDI}{L}, \frac{K}{L}, \frac{M}{L}\right)$.

Table 6.ARDL(2, 4, 4, 4) $\mathbf{Ln}\left(\frac{GP}{L}\right)$

Variables	Long-run coefficients	Prob
$Ln\left(\frac{FDI}{L}\right)$	0.071	0.004
$Ln\left(\frac{M}{L}\right)$	1.031	0.025
$Ln\left(\frac{K}{L}\right)$	0.089-	0.786
trend	0.004	0.005

Source: Prepared by the researcher (Eviews10)

Table 7:ARDL(2, 4, 4, 4) $\mathbf{Ln}\left(\frac{GP}{L}\right)$

Variables	short-run coefficients	Prob
$DLn\left(\frac{FDI}{L}\right)$	0.038	0.001
$D\,Ln\left(\frac{M}{L}\right)$	0.175	0.122
$D\,Ln\left(\frac{K}{L}\right)$	0.883	0.000
ECT(-1)	-0.967	0.000

Source: Prepared by the researcher (Eviews10).

Table 8: Diagnostic test

Variables	coefficients	T	Prob
F	16047.45		0.000000

R^2	0.999969
AdjR	0.999907
Dw	1.979966

Diagnostic test

Normality (Jarque- Bera)	(LM)Test	ARCH TEST	Ramsey reset Test
5.868	F(2,7= 0.295	F(1,25)= 1.805	F(1,8)= 0.117
Prob (0.0531)	Prob (0.752)	Prob (0.191)	Prob (0.741)

Source: Prepared by the researcher (Eviews10).

The BG LM test score indicates that the two models are free of the serial correlation problem. The ARCH statistic indicates that the null hypothesis of homomosedasticity is not rejected in the estimated model. The JB test statistic indicates that the hypothesis that random errors are distributed naturally in the model is not rejected. The RESET test counts the validity of the dial form used in the user form.

Fig 3. Plot of CUSUM and CUSUM of squares test for GDP model
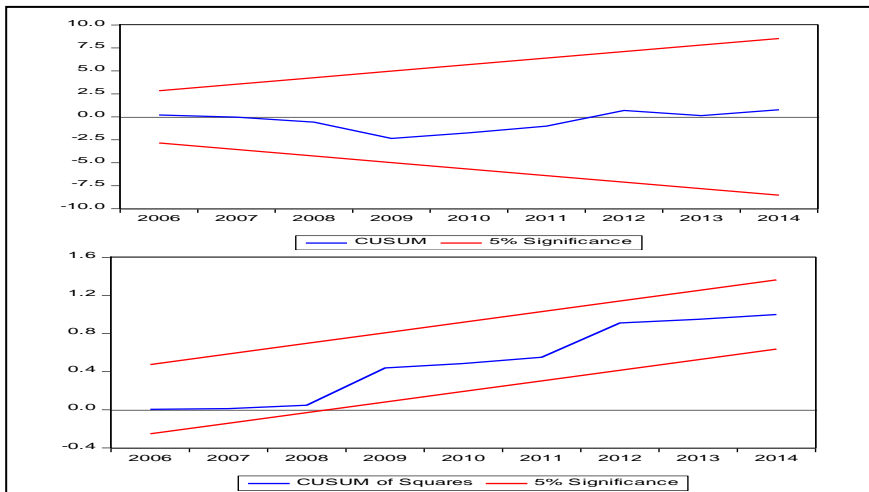
Source: Prepared by the researcher (Eviews10)

As the below figures show (see figure (3), all the plots of statistics CUSUM and CUSUMSQ are inside the critical bounds at 5% level of (the blue line is within two lines) mean that all the coefficients in the error correction model are constant, So ARDL model is stable which means that the coefficients of regression are changing systematically.

these transactions are unstable if the graph of the statistics of the two tests is moved Beyond critical limits at this level.

6. Conclusion

In this paper we examine the effect of foreign direct investment on Economic Growth in Algeria using modern econometric technique - bounds testing approach in ARDL. The study covers the period Between 1980 and 2017.

The empirical findings have clearly proved that Algeria's inward FDI and economic growth have a long run relationship. The previous literature, in general, found a positive effect of inward FDI on economic growth. the study, confirmed FDI appears as a positive influence on economic growth. For The reason the government of Algeria has encouraged Foreign Investors to enhance economic growth. The results revealed that the contribution of FDI is 0.03 in shorts term and 0.07 in the long term leads to increase in GDP.

The study alerted to apply a clear development policy and sectoral ambitious strategy and provide more attractive for foreign investment ,the government should continue its efforts to create promising economic and investment environment, the policymakers must facilitate the process to encourage investors to do their business. Finally, we can say that the Empirical evidence on the relationship between FDI and economic growth is still inconclusive.

Recommendations

In view of the study's findings and the obstacles facing economic growth, and the search for increased internal and external investments towards the vital sectors and their promotion, the study recommends the following:

- Developing scientific research activity related to the investment climate, and allocating an annual budget sufficient to promote scientific research and development in line with the rapid development in the developed world;

- Updating investment legislation and continuous development of modern systems and streamlining the procedures necessary to obtain licenses for various investment, such as upgrading the one-stop system;

- Diversification of investments with various international companies and non-direction towards one partner altogether (former France, China currently).

- Remove obstacles and diversify incentives and exemptions for the private sector and give him the necessary support for investment in the mining sector and associated industries;

- To apply the principle of transparency in economic statistics and information provided to investors and the private sector, while urging investors to contribute to sustainable development in remote areas by providing basic services of electricity, water and paved roads for areas to be promoted.

The study prospects

Like other studies and research, this study needs to be further expanded and deepened, especially with the ongoing global developments, in light of the increasing importance of foreign direct investment and the widening technological gap between developing and developed countries. This raises the question of how to reduce this gap.

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