

Analysis of the impact of foreign direct investment on some economic indicators in Algeria

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Abstract

This study aims to analyze foreign direct investment performance of Algeria and its impact on some economic indicators (Real GDP, Trade Balance and Unemployment Rate), by applying the correlation test during the period of 1996-2015.

The results showed that foreign direct investment have positive impact on Algerian economy through gross domestic product and trade balance. However, the FDI do not contributed in the absorption of unemployment.

Keywords: FDI; Economic indicators; Correlation test; Algeria.

JEL Classification : F21 ; B22 ; C40 ; O55.

ملخص

تهدف هذه الدراسة إلى تحليل أداء الاستثمار الأجنبي المباشر في الجزائر ومدى تأثيره على بعض المؤشرات الاقتصادية (الناتج المحلي الإجمالي الحقيقي، الميزان التجاري ومعدل البطالة) من خلال تطبيق اختبار الارتباط خلال الفترة 1996-2015.

أظهرت نتائج الدراسة أن للاستثمار الأجنبي المباشر تأثير إيجابي على الاقتصاد الجزائري من خلال الناتج المحلي الإجمالي والميزان التجاري، إلا أن الاستثمار الأجنبي المباشر لا يساهم في امتصاص البطالة.

كلمات مفتاحية: الاستثمار الأجنبي المباشر، المؤشرات الاقتصادية، اختبار الارتباط، الجزائر.

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1. INTRODUCTION

Foreign direct investment can make a positive contribution to a host economy. Foreign direct investment is one of the most important capital that has witnessed a great development due to the important and vital role it plays in the transfer of technology, and modern technologies, and contribute to the accumulation of capital, and raising the efficiency of human capital and improving skills and expertise.

Algeria, as one of many developing countries, has increasingly come to see FDI as not only a source of economic development, but also a tool for modernization, growth of income, employment, etc. This is reflected by the current economic reforms and policies to improve the conditions to attract more FDI and maximize its benefits in the domestic economy. Since this new initiative, Algeria has become much more liberal in its economic policies, aiming to attract more FDI and increase its economic growth, aiding to alleviate poverty (Salim, 2008, p. 80) .

1.1 Statement of problem

What is the potential impact of foreign direct investment on some Algerian economic indicators?

1.2 Research question

The analysis shall be guided by the following questions:

- What is the extent impact of FDI on economic growth in Algeria?
- What is the effect of FDI on trade balance in Algeria?
- Does the FDI reduce the level of the unemployment in Algeria?

1.3 study hypotheses

- There is a positive impact of FDI on economic growth in Algeria.
- There is a positive effect of FDI on trade balance in Algeria.
- The FDI contributes to the absorption of unemployment in Algeria.

1.4 Objectives of study

- To analyze the foreign direct investment trend and structure in Algeria.
- To examine the effect of foreign direct investment on Algerian

economic level.

1.5 Methodology

The study adopts two main methodological approach; the first approach includes the analysis of foreign direct investment trend and composition, and analysis some Algerian economic indicators. The second approach includes mathematical statistics methods based on the correlation test by using Eviews program regarding the period of 1996-2015 for investigating the extent impact of foreign direct investment on Algerian economy.

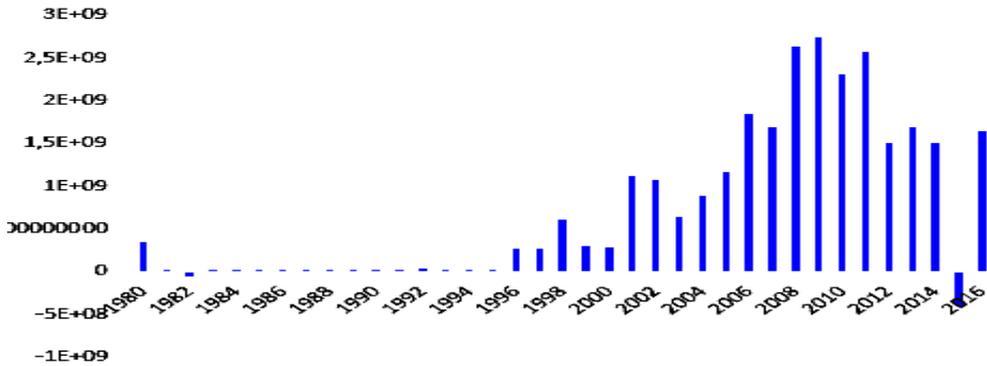
1.6 Literature review

- **Brahimi Houda et al (2013)**, examined the extend contribution of FDI on Algerian economy. They found that the FDI inflow did not contribute enough in Algerian economy, because of the weakness of FDI inflow and the concentration of most projects in the hydrocarbon sector (Houda, 2013, p. 694)
- **Kamel Si Mohamed et al (2015)** investigated the impact of FDI on Algerian economy by applying the bound testing ARDL and ECM-ARDL during the period of 1970-2014. The result showed that the political and macroeconomic stability are not enough to attract FDI to help non-hydrocarbon sectors drive economic growth (Mohamed, 2015, p. 1470)
- **Aida Barkauskaite and Violeta Narskeviciute (2016)** analyzed the impact of foreign direct investment on economic indicators of the Baltic countries by using the correlation test. They found that foreign direct investments have a positive impact on both of GDP and labour productivity growth in all Baltic countries, however foreign direct investment do not influence the unemployment in this countries (Barkauskaite, 2016, p. 61).

2. Overview of Algerian's foreign direct investment

2.1 FDI trend in Algeria

Algeria has sought to take many measures and adopt a series of reforms with the aim of improving its investment environment and attracting more foreign investment flows. The stages of the flow of foreign direct investment into Algeria can be divided into stages as follows:

Fig.1. FDI inflow to Algeria during the period of 1980-2016

Source: completed by the author based on:

- (The World Bank Indicators, 2018).

- UNACTAD (UNCTAD, 2017).

-First phase 1980-1995: this period has been characterized by almost complete absence of the inflow of foreign direct investment to Algeria; due to the complex situation in Algeria at all levels (economic, political and social aspects). Where Algeria's macro-economic situation worsened, in large part because oil prices declined steeply. This stage witnessed a worsening of the external debt crisis and the rise in external debt services, the deterioration of the security situation, political and economic instability and high risks have had a negative impact on attracting foreign investment (حسين، 2009، صفحة 59).

-Second phase 1996-2002: This stage was characterized by an improvement in the value of foreign investments following to Algeria, where it achieved an average of USD 3,42 billion, mostly concentrated in the hydrocarbons sector, while the other sectors did not witness any development in attracting foreign direct investment.

-Third phase 2001-2016: This period witnessed a remarkable improvement in the volume of foreign investments flowing into Algeria, which exceeded one billion dollars. Where in 2002 Algeria occupied the first rank in the Maghreb countries and the third rank in Africa in terms attracting foreign direct investment. This improvement was due to a number of factors including the reforms that affected the investment sectors,

especially after the issuance of the investment law of 2001 on the development of investment through:

- The introduction of the principle of freedom of investment;
- The adoption of international standards in attracting FDI;
- Creating an environment conducive to attract FDI;
- Encourage foreign investors by providing financial and tax incentives

(Caputo, 2004, pp. 1-7).

In 2007, foreign direct investment in Algeria declined by 7% to reach USD 1.7 billion, to increase again in 2009 to reach USD 2.74 billion dollars and this is the highest FDI inflow known by Algeria since its independence. During the period of 2010-2016, the foreign direct investment inflow recorded fluctuations between the slight increase and decline. Where in 2011, the FDI inflows increased by 11.77% compared to 2010, and Algeria topped the list of inter-Arab investment hosting countries for 2011, with flows amounting to USD5.4 billion, with a share of 78% of the total inter-Arab FDI inflow (The Arab Investment & Export Credit Guarantee Corporation Report T. A., 2011, p. 25). In 2012, foreign investments inflow to Algeria dropped to USD 1.5 billion i.e by 41.7%, and Algeria ranked at the fourth place among the Arabic countries with a share of 6.25 % (The Arab Investment & Export Credit Guarantee Corporation Report T. A., Investment Climate in Arab Countries: Dhaman Investment Attractiveness, 2012-2013, p. 83)

Between 2013 and 2014, FDI inflows to Algeria registered a slight increase averaged a growth rate of 0.81%, and that due to the measures taken by the Algerian government, especially under the finance law of 2014 which related to stimulate investment with foreign partners (ANDI D. R., 2015, p. 10). Against this, Algeria witnessed a notable negative decline in FDI inflows to USD- 4.03 billion in 2015. In 2016, after the sharp decline in the FDI inflow in 2015, it notably increased again to get USD 1.64 billion. Due to the improvement of investment policies on the one hand, where Algeria set a new investment law and provided incentives for taxation and facilities necessary for investment projects, and the improvement of oil production on the other hand.

2.2 FDI sectoral composition

FDI inflows into Algeria are concentrated in certain limited sectors. The hydrocarbon sector is dominated the largest share of these flows. Table 1 shows the sectoral distribution of foreign direct investment inflow in Algeria during the period of 2002-2016.

The number of Algerian FDI projects inward amounted to 822 projects. Estimations reveal that the overall investment cost of those projects, which employ some 119525 thousand workers, is close to 2216699 million DZD.

Table 1. FDI composition by sectors in the period of 2002-2016

Sector	No. of projects	% of total projects	Capital amount(million DZD)	% of total capital amount
Agriculture	14	1.70	4373	0.20
Construction	137	16.67	77661	3.50
Industry	495	60.22	1783922	80.48
Health	6	0.73	13572	0.61
Transportation	25	3.04	14820	0.67
Tourism	14	1.70	113772	5.13
Services	130	15.82	119139	5.37
Communication	1	0.12	89441	4.03
Total	822	100	2216699	100

Source : (ANDI, 2018).

Table 1 shows that the industrial sector topped the economic sectors in attracting foreign direct investment at all levels (in terms of number of projects, project cost, number of new jobs) by (60.22%, 80.48%, 59.23%) respectively.

The number of foreign projects invested in the industrial sector reached 495 projects, which represents 60.22% of the total investment projects. Most of the projects in this sector are concentrated in the fields of energy and oil, which is characterized by a large public, projects that need large amounts of money compared to the other sectors. The industrial projects in the non-hydrocarbons sector include food, chemicals, plastics,

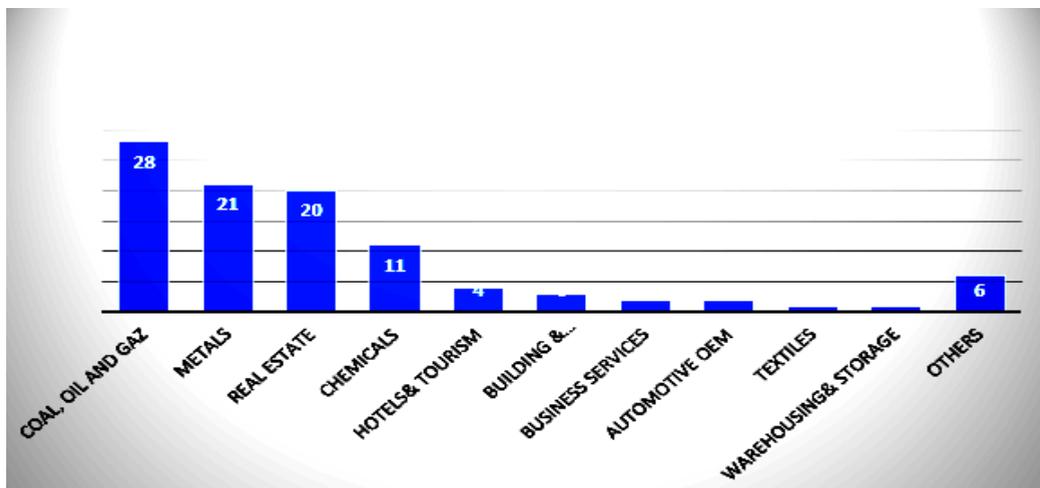
wood and paper, as well as textiles, leather, building materials and glass.

The construction sector occupied the second rank in terms of the number of foreign projects invested in Algeria, which amounted to 137 projects i.e 16.67% of the total projects with a cost of 77661 million DZD.

The services sector came at the third rank with 130 projects of total foreign investment projects, where their share represent 15.82% of the total projects, while the number of projects completed in the transport sector was negligible, with only 25 projects of total projects completed i.e 3.04%.

As for the other rest sectors, the proportion of investment did not exceed 2%.

Fig.2. Development of investment projects according to the most Important sectors in Algeria in 2003-2015



Source: (The Arab Investment & Export Credit Guarantee Corporation Report T. A., Investment Climate In Arab Countries: Dhaman Investment Attractiveness, 2017, p. 61)

From the above figure, we note that foreign investment incoming to Algeria are concentrated in the coal, oil and gas sector with a percentage of 28%, while 21 % are in minerals sector and 20% in the real estate sector, 11% in chemical sector.

2.3 FDI geographical distribution

Many Arab and Foreign countries have FDI projects established in Algeria, the following table shows the countries investing in Algeria during the period (2012-2016).

Table 2. FDI inflows by countries during the period of 2012-2016

<i>Regions invested</i>	<i>Cost (million dollars)</i>	<i>%</i>
<i>Asia Pacific</i>	6905.2	15.21
<i>Western Europe</i>	3659.9	24.2
<i>Middle East</i>	2466.2	16.1
<i>Emerging European Countries</i>	1613.6	10.6
<i>Africa</i>	557.1	3.6
<i>North America</i>	58.6	0.4
<i>Latin America and the Caribbean</i>	12.7	0.1

Source: (The Arab Investment & Export Credit Guarantee Corporation Report T. A., Investment Climate In Arab Countries: Dhaman Investment Attractiveness, 2017, p. 61)

From the above table we note that multiple countries invested in Algeria. It is obvious according to the table 2, that Algeria's FDI flows are centered on four continents, which are respectively the following: Asia Pacific, Western Europe, Middle East, and Emerging European Countries.

Asia countries are dominant in terms of project and capital with value of US\$ 6905.2 million i.e 45.2% of total costs projects invested in Algeria. China is one of the most important Asian countries investing in Algeria, where it ranked as the first foreign investor in Algeria with a largest cost of projects amounted to US\$ 3509 million, which represents 22.98% of the total costs. China State Construction Engineering Corporation Company is one of the biggest and important foreign companies invested in Algeria with a cost of US\$ 3300 million.

As the second major investor Algeria, Western Europe Countries with US\$ 3659.9 million i.e 24.2% of total costs, and this is due to the partnership agreement with the European Union, which has led to increased European investment. Spain is considered as most important Western Europe investor in Algeria with 8 projects with a value of US\$ 2247 million where it occupied the first rank, where the company Grupp Ortiz construction y servicios del mediterraneo occupied the third rank in terms of cost of investment projects estimated at US\$ 2209 million.

Germany, Switzerland, France and United Kingdom were on the list of the European countries investing in Algeria, in terms of investment cost of

the projects, with a share of 14.71%, 2.49%, 1.92%, 1.75% and 1.53% respectively.

The Middle East countries occupied the third rank with the value of US\$ 2466.2 million which representing 16.1% of total costs. Qatar is one of the most important Middle East countries invested in Algeria with two projects, with a value of US\$ 2150 million. Followed by Turkey, where the cost of investment flows estimated at around US\$ 1598 million i.e 10.46%.

The cost of projects flowing from Emerging European countries estimated at around US\$1613.6 million. As for the investments flows from Africa, North America and Latin America and the Caribbean it is limited and very insignificant where their shares to the total investment costs, represented only 3.6%, 0.4% and 0.1% respectively.

3. Analysis of some Algerian indicators

3.1 Economic growth

Between 1995 and 1996, the GDP growth rate averaged 4% mostly driven by the hydrocarbons sectors. Where the exports growth averaged 6.9%, followed by a sharp slowdown in 1997 to around 1%, because of the deterioration in the agricultural sector, as well as lower growth in the construction sector and public works and continued decline in the industrial sector level (Lemya, 2013, p. 477).

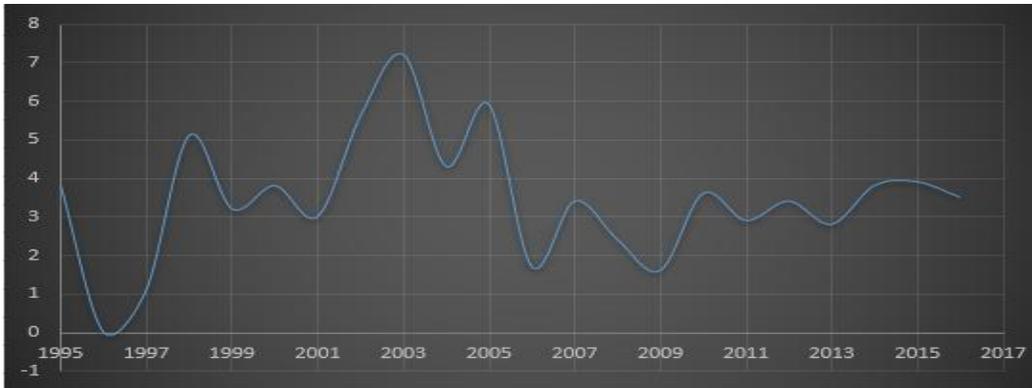
From 2000 to 2010, the Algerian's real GDP growth rate averaged 3.6%, driven by the performance of the oil and gas sector, as well as the contribution of the services, construction and public works sectors, and to a lesser extent the agricultural sector, which recorded a bumper cereal harvest in 2009. The vitality of the services and construction sectors stems mainly from the huge volume of public investments (Yousfi, 2013, p. 09)

Real GDP growth in 2015 was 3.9%, against 3.8% in 2014, driven mostly by agriculture, especially vegetable production, and by a noticeable rebound in oil and gas activity in q4 of 2015. Against a background of falling global oil prices since June 2014, this rebound followed nine consecutive years of decline (African Development Bank, 2018)

Real GDP growth in 2016 was 3.5% compared with 3.9% in 2015, following recovery in the hydrocarbons sector based on increases in

production, refining and liquefaction activities (Tarik Benbahmed, 2017, p. 2)

Fig.3. Real GDP Growth of Algeria, 1995-2016



Source: (The World Bank Indicators, 2018).

3.2 balance of trade

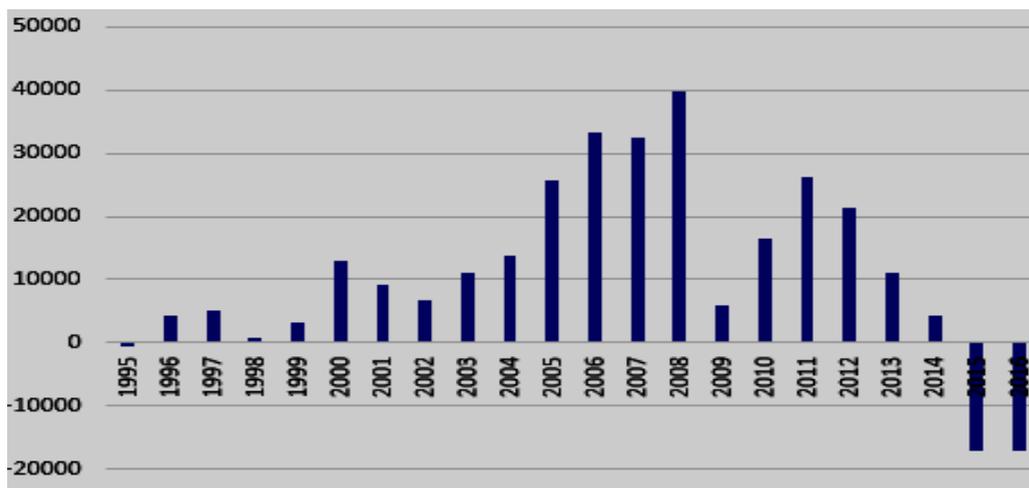
Fig.4. show the balance of trade in Algeria over the period of 1995-2016. After 1995, the balance of trade recorded a continuous surplus (except in 1998). Nevertheless the decline registered in the balance of trade had been quickly exceeded when the oil prices increased notably in 2000 (They achieved USD 35.5 dollars per barrel), which led to a significant surplus in the trade balance that reached about USD12858 million. Then, the trade balance decreased to USD 9192 million in 2001 and USD 6816 million in 2002 due to the volatility in the oil prices.

From 2003 until 2008, the balance of trade registered an increasing surplus reached USD 39819 million in 2008, except in 2007 where decreased by 1.88% compared to 2006 due the decrease in oil prices. In 2009, the balance of trade decreased to USD 5900 million that is a very considerable drop compared to 2008, due to the decrease in exports revenues. To increase again during 2010 and 2011 from USD 16580 million to USD 26242 million.

After 2011, the trade balance recorded a steep successive decreasing particularly in 2014, where decreased by 74.03% compared to 2010 and that mainly due to the recent oil crises.

In 2015, the balance of trade recorded a deficit reached about USD - 17 034 million, this trend can be explained by the decline in imports and exports recorded during the aforementioned period. In 2016, Algeria's trade deficit amounted to around USD17.06 billion, mainly due to the fall in the oil prices which led to the fall the oil export revenues.

Fig.4. Trade Balance in Algeria, during the period 1995-2016

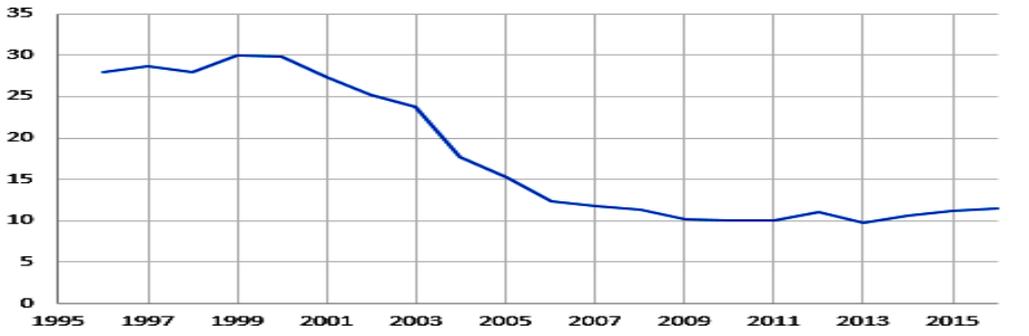


Source: calculated by the author based on the data of:

- (Rapport Du Centre National De L'Informatiques et Des Statistiques, 2010)
- (Direction Générale Des Douane, 2018)

3.3 Unemployment level

The Algerian total unemployment rates have decreased markedly since 2000, but it remain high (Fig.5.). Total unemployment declined from 25.49% in average in the period of 1990-1999 to 15.22% in average in the period of 2000-2016, and the mainly due to the economic recovery program, which the Algeria took it in recent years.

Fig.5. Real GDP Growth of Algeria, 1995-2016

Source: calculated by the author based on the data of:

- (ONS, 2018)
- (FMI, 2001, 2006, 2009, 2012, 2013)
- (The World Bank Indicators, 2018)

4. Results discussion

In order to investigate the impact of foreign direct investment on some Algerian economic indicators and the strong relationship between them, the correlation test is used.

A correlation coefficient measures the strength and direction of a linear association between two variables. It ranges from -1 to 1. The closer the absolute value is to 1, the stronger the relationship. A correlation of zero indicates that there is no linear relationship between the variables. The coefficient can be either negative or positive (Callaghan, 1996, p. 1).

4.1 Data set

The data used in this study are foreign direct investment (FDI), real GDP (GDP), Trade Balance (TB) and unemployment rate (L). The data set used in this study is obtained from different source, which include the World Development Indicators, national office of statistics, IMF country report. The data set is annually and covers the period 1996-2015.

4.2 Analysis of results

Applying the correlation testing procedure in order to examine the relationship between FDI and economic indicators, the calculated correlation coefficients show that GDP, trade balance and significantly correlate with FDI; the correlation coefficient in Algeria is more than 0.7,

which proves a strong positive correlation between the variables. This means in the turn that these variables move in the same direction. The results are shown in table 3.

Table 3. Results of correlation test between FDI and Economic Indicators in **Algeria**

Variables	Correlation coefficient	T statistic
GDP	0.77	5.31
TB	0.86	7.11
L	0.59	3.17

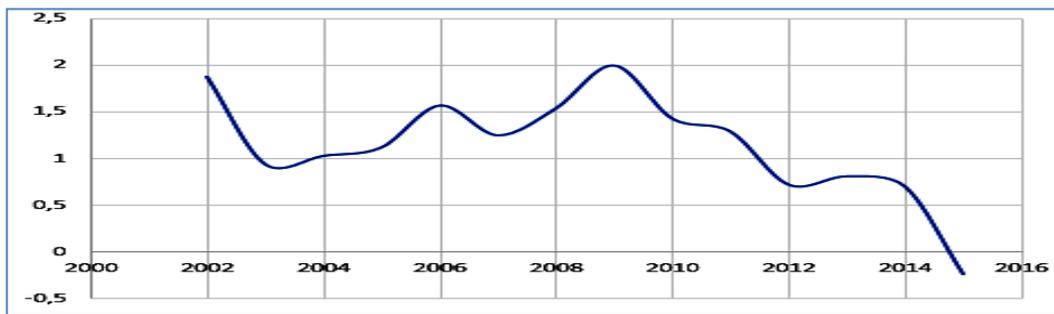
Source: Result imported from Eviews8.

GDP and FDI is 77% correlated, there are 86% correlations between FDI and trade balance, and all variables have 100% correlation among themselves.

The result of the relationship between FDI and Real GDP showed the positive impact of FDI on GDP, which indicates the **validity of the first hypothesis**.

Despite the evolution in the volume of foreign direct investment inflows to Algeria during the period 2002-2015, however the contribution of these investments to GDP remains weak, where the FDI flows realized the highest share as a ratio of GDP 2% in 2009 estimated at USD1.06 billion, to be the highest FDI inflow known by Algeria in this year. Due to the great investment opportunities, that Algeria government has provided during this year, as part of the development plans. (See Fig .6.).

Fig.6. FDI contribution to the economic growth



Source: (The World Bank Indicators, 2018)

During the period (2010-2015), the contribution of foreign direct investment (FDI) to GDP registered continuous declines, mainly due to the decline in FDI flows especially in the energy and mining sector between 2011 and 2012, because of the difficult political events witnessed by some Arabic countries.

As well as the failure to improve the conditions for attracting foreign, direct investment in various productive sectors, and the concentration of most of the projects in the hydrocarbon sector, beside to the weakness of the business climate, where the share of FDI in GDP recorded a negative value by 0.42% in 2015.

As for the relationship between FDI and balance of trade, the result of correlation showed that there is a strong positive relationship between the two variables, where the correlation coefficient was 0.86%. Where the tax measures contained in the investment laws and tax law aims to bring hard currency, diversify exports and create the competitiveness of Algerian goods in the markets. This result **is consistent** with the **second hypothesis**, that the FDI have a positive effect on trade balance.

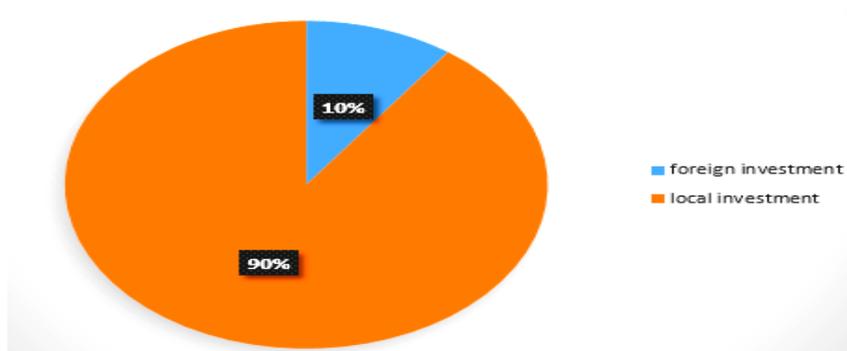
Thus, the positive effect of foreign direct investment on the balance of trade is reflected in the increase of the production and export of oil products, since most FDI projects are concentrated in the hydrocarbon sector, which dominates the Algerian economy by about 97% of total exports. As this sector requires substantial capitals in exploration on one hand, and the rising of financial risk factor associated with exploration on the other hand, Algeria has opened this important source for foreign (Doing Business, 2016, p. 37)

However the result of the correlation test between FDI and Unemployment rate and unemployment rate showed that there is a positive medium relationship between them, which means that FDI and unemployment rate move in the same direction (Since the coefficient is positive). Which means in turn that although the increasing in FDI inflows, the unemployment rate continued to increase. These results indicate the **invalidity of the third hypothesis**.

This result can explained by the concentration of most of the FDI

projects in the hydrocarbon sector, the FDI projects invested in Algeria did not contribute enough in the economy development.

Fig.7. Contribution of both FDI and local investment in job creation in Algeria during the period 2002-2016



Source: (ANDI, 2018).

According to the statistics set out in the figure.7, it can be note that during the period 2002-2016, the number of the Algerian workers being employed by foreign companies during this period was approximately 119525 workers. Which represents 10% of the total provided job opportunities by investment projects during the same period, versus 1018887 job opportunities provided by national projects, which represents 90% of the total job opportunities.

The foreign investment companies in the industrial sector attracted the largest number of the national labour force; since the industrial sector created alone 70793 job opportunities during this period of a total of 119525 job opportunities offered by the foreign companies among which represent 59.23%, where most industry activities related to hydrocarbon sector.

The companies investing in building, sector came in the second rank concerning the contribution in creating job in Algeria by offering only 23040-job opportunities i.e 19.28%. Despite that this sector is considered as labour-intensive sector, The weak contribution of this sector in creating jobs is due to the companies' reliance on the foreign labour brought from their parent countries, such as the Chinese companies activating in the building

and public works, which significantly relies on the Chinese (Houda, 2013, p. 693)

5. CONCLUSION

The objective of this study has been to analyze the Algerian foreign direct investment trend and composition and its impact on some economic indicators (Real GDP, Trade Balance and Unemployment Rate).

From the analysis of the FDI trend and composition, we conclude that most FDI inflows to Algeria are concentrated on hydrocarbon sector, and Algeria has not been able to attract large amounts of FDI away this sector. Therefore, the FDI projects invested in Algeria did not enough contributed in the economy development.

The analysis of the indicators relating to the impact of foreign direct investment on economic indicators (GDP, trade balance and unemployment rate) showed that FDI play a significant role in enhancing economic growth and increasing the Trade balance. However, the FDI does not contributed in the absorption of the unemployment in Algeria and that mainly due to the weakness of attracting FDI in other sectors than oil. Therefore, there is need to intensify the government's efforts to diversify the economy away from hydrocarbons.

Algeria still needs to create the good conditions to attract large amounts of foreign investments especially in non-hydrocarbon sectors. To achieve that Algeria must stimulate economic growth outside the oil sectors, which will encourage the diversification of FDI inflows to the country, which allow in turn benefiting from the positive effect of foreign direct investment.

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