



# Analytical Study of the Relationship of the Labor Market to the Problem of Unemployment in Algeria

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## Abstract

In recent years, the Algerian labor market has undergone drastic changes as a result of supply and demand shocks caused by a drop in unemployment rates from 17.7% in 2003 to 11.7% in 2018 according to (ONS) data. However, this decline was more quantitative than qualitative, Under the age of 30, with a ratio of 60% among the new job seekers.

In this paper, we will attempt to analyze the trends of the labor market and its ability to absorb youth unemployment through the field study carried out at the Tlemcen State level in 2017 to study the causal relationship between social and economic variables related to the development of labor resources, Linear approach based on the Statistic program.

**Keywords:** Unemployment, Labour Market, Demographic Growth, Informal Employment

## Introduction

Algeria, like other countries in the world, has experienced a great rise in unemployment rates recently, due to the turmoil experienced by the labor market due to the continuous influx of new job seekers on the one hand and the failure of most development strategies especially during the black decade, Where unemployment rates have doubled to

more than 20% of the active class (ONS), prompting the Algerian government to launch a series of reforms as a strategy to curb the expansion of unemployment.

However, despite unemployment rates falling to 11% in Algeria according to (ONS) statistics in 2018, youth unemployment remained within 60%, which makes us question in this context the effectiveness of the employment policies adopted, which has not been able to absorb the excess labor within urban areas in Algeria. Thus, the problem of employment has become one of the constraints on the development of the Algerian economy, especially when it comes to the unemployment of young people whose average age did not exceed the third decade. This unemployment, which sometimes leads to a decline and an increase in the labor market, The increasing demand estimated at twice the rate of growth of the labor market (Musette, 1991), which increases the suffering of young people and university graduates, not to mention the extension of urban unemployment, which increased by 60.7% (Fourcade, 2005) Which contributed to the emergence of unpaid activities and the growth of informal practices, from 22% in 1996 to more than 40% in 2018 (Ons, 2018).

In this regard, it should be noted that the increase in the unemployment rate in Algeria coincided with the increase in demographic growth. The National Bureau of Statistics The population of Algeria increased from 18.7 million in 1980(PNUD, 2005)

to more than 42.2 million in January 2018. This demographic growth had Has had a significant impact on the rise in unemployment rates and the labor market despite the assertion that the unemployment rate declined with the beginning of 2001 and confirmed this decline with the course of recent years, The data of the National Bureau of Statistics in Algeria on employment and unemployment confirmed this decline by four points between 2001 and 2004, and by three points between 2004-2005 and this rate did not change between 2005-2018.

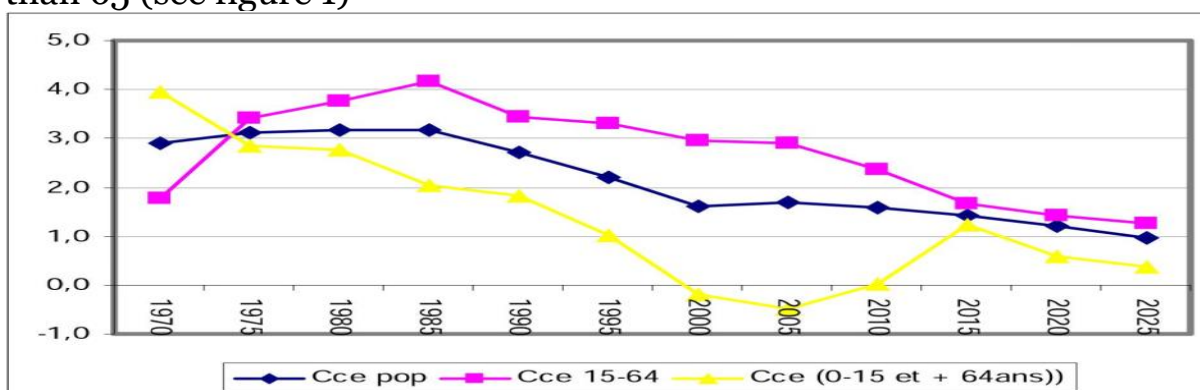
In this study, we will attempt to analyze the interrelationship between the labor market and the problem of unemployment in Algeria by analyzing the following problem: How did the labor market contribute to the absorption of unemployment in Algeria?

## 1/- Analysis Of The Development OF The Labor Market In Algeria

In the late 1980s and early 1990s, the Algerian government pursued a series of reforms and strategies to lift the country out of the crisis. However the results of these reforms remained weak due to fluctuating growth rates, worsening external debt volumes and a decline in the vital role of the public sector (world bank, 1995), the growth rates achieved were insufficient to support and revive the labor market Which has not been able to maintain the jobs it provides and to disrupt the supply and demand for labor, as well as the migration of rural labor to the cities for employment, the features of the urban informal sector Where informal work accounts for more than a quarter of the active population, and may be up to half as indicated by statistics (Belarbi , 2020).

### A/- Increasing the active category and its impact on the labor market in Algeria:

The rapid growth of Algeria's population, from 10.4 million in 1962 to more than 42.2 million in 2018, has had a significant impact on the labor market and the active population, which has an average life expectancy of more than 15 years per year on the labor market, which has grown at an accelerated rate annually With about 250,000 new students per year against the growth rates of those under the age of 15 and older than 65 (see figure 1)

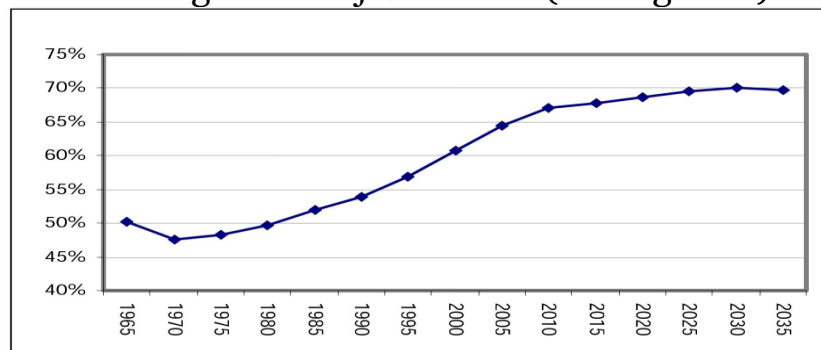


Source: world Population Prospect, Nations Unies 2002. The 2012 Revision.

Figure (1): Growth of active groups by average age

All these factors contributed to the breadth of active category which reached 12 463000 individual year 2018 fragmented between male and female b 10028000 and 2435 000 respectively, as the Algerian labour market alone during these periods of unemployment growing and quality in the mid-hills groups as a result of an increase in total working hand Increasing active 8762326 late in 2003 (Ons , 2003).into 12463000 September 2018, any appropriate transmission of 27, 8% to over 40% during the same period, this reflecting the total employment increased during the same period, moving pop of 6684056 factors which amounted to 21.2% of operating rate Any individual 11001000 36, 8% employment rate and proportion remained the exclusive domain of men share (60.1%for males and female13.2%).

All these factors contributed to the breadth of active category amounting thus increasing the active category by almost constant average 45% between 2005-2018 because of population growth rates which have started coming into the job market (see Figure 2).



**Figure (2): the proportion of working age category of the total active Category**

Thus, it is clear from this curve that the constant and increasing influx of the geometric form has created differences between supply and demand for labor. The average demand for labor is estimated at 240,000 requests per year (Agénor et al. 2004), mostly for youth under 30 years (60%) in 2018 (ONS). This is in addition to the disparity in urban and rural activity rates between 2007-2018 by 60% and 40% for the unemployed in urban areas, and it remains male unemployment more than female.

### **B/- Increasing the influx of university graduates to the labor market :**

The labor market in Algeria has been affected by the high rate of university graduates and certificate holders in the labor market, which has contributed to the labor market turmoil and the qualifying category (Belarbi & Lemerini, 2015). The unemployment rate rises with the high level of education among the graduates, which reflects one of the paradoxes of the economy the National. While the rate of participation for the group over 15 years during the last three decades was limited to 40%, the same rate for 2018, where it was 41.7% distributed between males and females by 66.7% and 16.4% respectively (see table 1).

**Table 1: Evolution of the participation rate for the group over 15 years according to the sequence of years.**

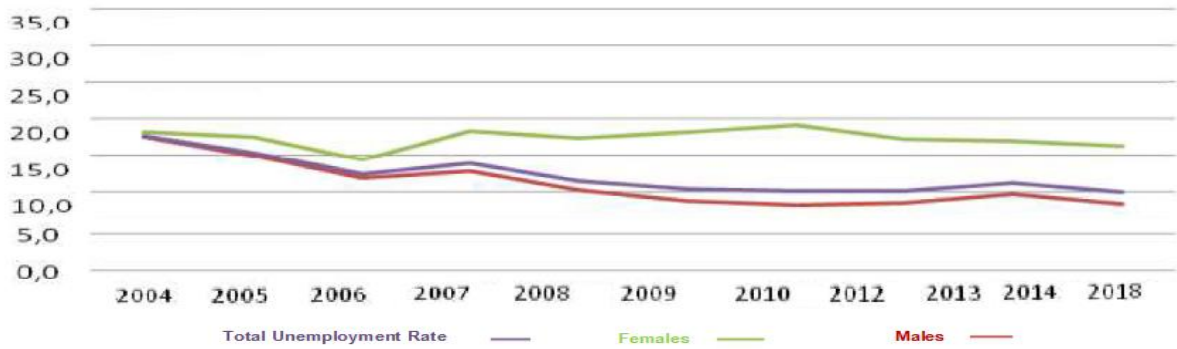
<b>Total</b>	<b>Female</b>	<b>Male</b>	<b>Years</b>
<b>42,11</b>	<b>3,85</b>	<b>81,51</b>	<b>1977</b>
<b>47,04</b>	<b>5,43</b>	<b>85,08</b>	<b>1987</b>
<b>48,81</b>	<b>8,70</b>	<b>80,07</b>	<b>1998</b>
<b>42,10</b>	<b>14,90</b>	<b>80,1</b>	<b>2004</b>
<b>41,50</b>	<b>16,3</b>	<b>66,3</b>	<b>2014</b>
<b>41,70</b>	<b>16,4</b>	<b>66,7</b>	<b>2018</b>

**Source: National Office of Statistics 2018.**

It is clear from this table that despite the upward trend in the female participation curve resulting from the Algerian government's great efforts to improve their level of education, which doubled from 1966 to 2018, from 36.9% to 59%, it facilitated their integration (ONS, 2018). With all this transformation, however, their participation rate compared to males remains fluctuating and uneven.

### **C/- The high unemployment rate in the labor market in Algeria:**

The successive crises that hit the national economy have had a negative impact on the Algerian labor market and have made it impossible to absorb unemployment (see Figure 3), particularly those related to youth under 30 years of age. This percentage exceeds two years' Labor market according to the National Bureau of Statistics data in 2014.



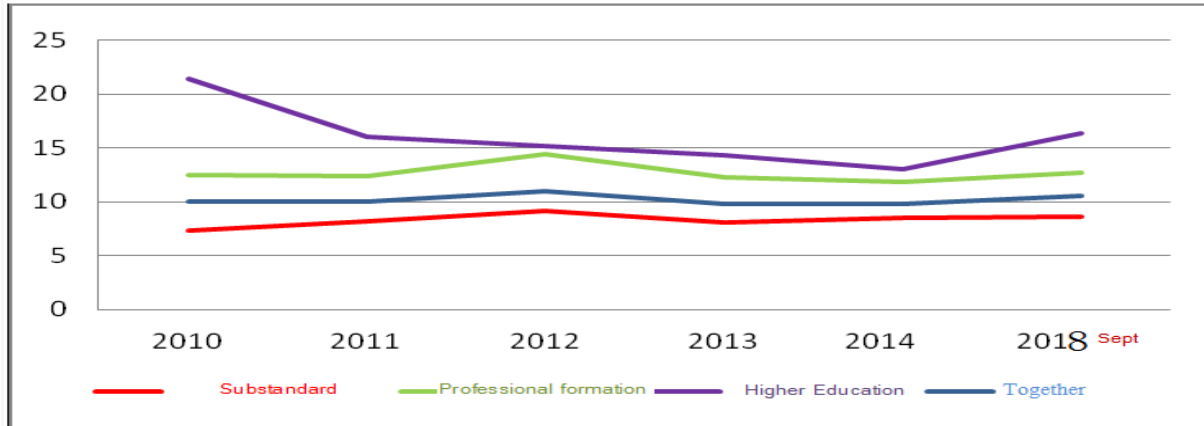
Source: National Office of Statistics 2018.

**Figure (3): Evolution of the unemployment rate between 2004-2018**

The curve indicates an increase in unemployment by 194,000 new jobs per year (ONS, 2003). The new job seekers account for 73% of the male population. The government is forced to adopt strategies such as the National Employment Support Agency (ANSEJ), the National Fund Unemployment insurance (CNAC) the employment patterns of employment (ANEM) and the integration of youth and other employment programs to remedy the situation began to decline in 2001 with three points between 2004 and 2005 (Belarbi,2020), the same rate between 2005-2018 to 12% between the Which is distributed among males and females by 9.9% and 19.4%, respectively.

Despite the decline in unemployment, it remained the exclusive preserve of young people at a rate of 29.1% for the age group (16-24) and 27.8% (25-39). The unemployment rate in 2018 was 1462 000, a total of 668 000 of them Does not have any certificate at the rate of 45.7%, and 27.9% of the population of unemployed are university graduates, and 26.4% of the graduates of vocational training centers, and despite the efforts of the State to reduce unemployment in Algeria, but the latter does not Is still restricted to holders of certificates (20), which increased their suffering return of pensioners to the labor market who are re-employed in the form of contracts because of their expertise and competence in the field (see figure 4).





Source: National Office of Statistics 2018.

**Figure (4) : the evolution of unemployment rates according to the affidavit and qualified scientific research 2010-2018**

**2/- Analytical study of the relationship of the labor market with the increase in the unemployment rate in the state of Tlemcen :**

The aim of the field study at the level of the urban fabric of Tlemcen was to study a sample of 410 individuals by using the questionnaire method to identify the correlation of the variables affecting the labor market based on the analysis of results based on the spss program accompanied by the proposal of mathematical model based on statistical data using Linear regression method to explain the relationship between unemployment and other macro variables for the period 1980-2018.

**A- Analysis of results obtained:**

**-Gender, age and educational level:**

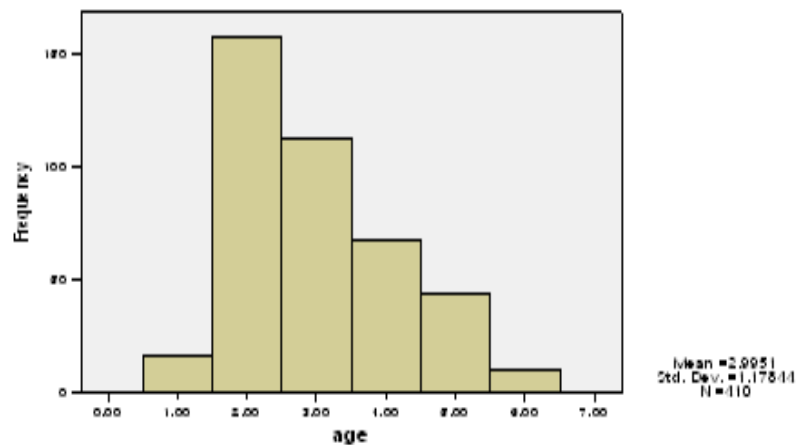
**Table 2: Division of unemployed by gender**

		Frequency	Percent	Valid percent	Cumulative Percent
Valid	Males	206	50,2	50,2	50.2
	Females	204	49,8	49,8	100.00

Total	410	100,0	100,0
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**Source: spss program output.**

According to the data, the unemployment rate is equal between the sexes, by 50.2% for males compared to 49.8% for females, which is equivalent to 204 females, which translates to women's participation in the labor market.



**Figure(5): by age**

The results of the field study confirm that unemployment in Algeria remains confined to the youth groups under 30 years of age by 65.9% and 82.5% for those with a median age of less than 40 years



**Table 3: by level of education**

		Frequency	Percent	Valid %	Cumulative %
Valid	Illiterate	16	3,9	3,9	3,9
	Primary level	12	2,9	2,9	6,8
	Average level	57	13,9	13,9	20,8
	Secondary level	101	24,6	24,7	45,5
	University level	222	54,1	54,3	99,8
	6,00	1	,2	,2	100,0
	Total	409	99,8	100,0	
Missing	System	1	,2		
	Total	410	100,0		

**Source: Spss program output.**

The unemployment rate is estimated at 54.1% at the university level, while in the secondary level it is 24.6%, or about half of the respondents. The other secondary and primary level groups are equal to 13.9% and 2.9% respectively.

**B-Job opportunities available:**

**Table4:Employment**

		Frequency	Percent	Valid %	Cumulative %
Valid	yes	213	52,0	52,3	52,3
	NO	192	46,8	47,2	99,5
	5,00	2	,5	,5	100,0
	Total	407	99,3	100,0	
Missing	System	3	,7		
	Total	410	100,0		

**opportunities**

According to the field survey, 213 individuals had previously held a job position, while 65.7% confirmed that the practice was through the opportunities granted by the agencies and agencies responsible for dealing with unemployment, such as the ANGEM, the National Employment Agency (ANEM) the National Agency for Youth Employment Support (ANSEJ) also has 28.3% as well as the rest of the agencies. It should also be noted in this context that a large proportion of respondents who could not benefit from official services in the face of unemployment have joined the informal sector by 27% A significant proportion in the field of operation.

**Table 5 :Job opportunities in various devices**

		Frequency	Percent	Valid %	Cumulative %
Valid	ANSEJ	65	15,9	28,3	28,3
	ANGEM	15	3,7	6,5	34,8
	ANEM	71	17,3	30,9	65,7
	CNAC	16	3,9	7,0	72,6
	Autres	63	15,4	27,4	100,0
	Total	230	56,1	100,0	
Missing	System	180	43,9		
	Total	410	100,0		

Source: output of the spss.  
c-duration of unemployment:

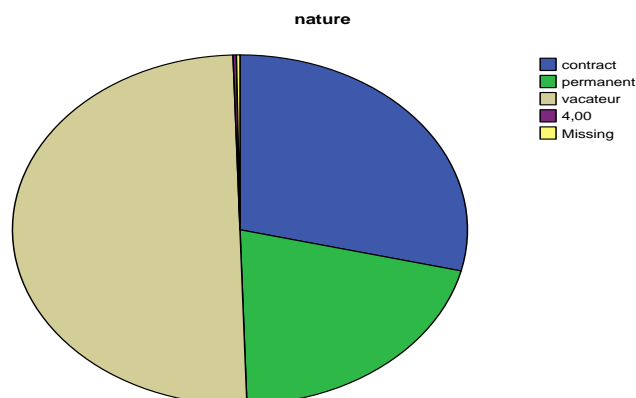
**Table 6: The duration of unemployment.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1	58	14,1	26,0	26,0
	2-3	57	13,9	25,6	51,6
	+4	108	26,3	48,4	100,0
	Total	223	54,4	100,0	
Missing	System	187	45,6		
	Total	410	100,0		

Source: program spss output.

As for the other 180 unemployed groups, their unemployment has been more than four years old. This is very logical in the absence of employment opportunities and age. Informal practices begin to form in order to obtain the necessary life requirements.

**C-the nature of the work:**



**Figure (6): The nature of the work**

The results of the study show that the activity of individuals who had previously worked through strategies and mechanisms to deal with unemployment was temporary by 50%. Also, the positions of employment are contractual at the rate of 30% and are rarely permanent, which are large and logical. Are linked to the size of the financial packages they receive, and these policies in providing job opportunities for unemployed youth are unable to accommodate all the unemployed, so that their fate will fluctuate between the lack of stability on the one hand and the informal practice on the other hand, the conclusion of the employment contract opens the horizons for working in the informal sector.

**-The sector of practice:**

**Table 7: The sector of practice:**

		<b>Frequen cy</b>	<b>Perce nt</b>	<b>Valid %</b>	<b>Cumulati ve %</b>
<b>Valid</b>	trade	78	19,0	19,1	19,1
	Services	256	62,4	62,6	81,7
	Building	24	5,9	5,9	87,5
	Farming	37	9,0	9,0	96,6
	Making	14	3,4	3,4	100,0
	<b>Total</b>	409	99,8	100,0	
<b>Missing</b>	<b>System</b>	<b>1</b>	<b>,20</b>		
	<b>Total</b>	<b>410</b>	<b>100,0</b>		

The table shows that, whether in the formal or informal sectors, both the trade and services sectors remain at the forefront of bringing in employment by 80%, while the rest of the sectors are in agriculture, construction and public works, The following: 9%, 5.9%, 3.4%, respectively.

**3/- The statistical approach to the field study of the state of Tlemcen:**

It is clear that the field study conducted at the level of the urban sector of Tlemcen came in order to identify in a manner consistent with the various approaches to real cases to determine their degree of consistency with the reality of the labor market and its ability to support learners and interested parties, including decision makers, To study the nature of the relationship between the macroeconomic variables of unemployment based on the various variables that have a positive or negative impact on unemployment, and those on the labor market similar to the gross domestic product and the increasing population, trying to show that the development of unemployment in our country was not coincidental or random, but is subject to a set of codified facts may (Such as the sharp rise in unemployment and its persistence during the second half of the 1990s) and others may not be (such as the phenomenon of asymmetry between the rise in rates and the decline in the severity of the role of unemployment ...), The study will not be completed without attention to the structural structure of unemployment in a way that contributes to the interpretation of high survival among young people. Therefore, we will try to draw a comprehensive model of the basic variables explaining the phenomenon in a way that allows to answer the problem of our study.

### **A/-Statistical Analysis of Unemployment:**

Using the linear regression method based on Statistica, which is the best of economic, statistical and standard criteria, it was found that the most suitable formula that produces the best results is the linear formula. The variables referred to previously were used as follows:

- **Unemployment rate Y, population size  $X_1$ , size of public expenditure  $X_2$ .**
- **Inflation rate  $X_3$ , GDP  $X_4$ , oil prices  $X_5$ .**

On this basis, the unemployment rate is the dependent variable in the regression function, and the other variables are the explanatory variables of the phenomenon of unemployment as envisaged by the following function:

$$Y = f ( x_1 + x_2 + x_3 + x_4 + x_5 )$$

Thus, the mathematical form of the model is according to the following formula:

$$Y = a_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + a_4 X_4 + a_5 X_5 + (\epsilon_i)$$

Where  $(\epsilon_i)$  is the random variable that expresses the residuals, has an arithmetic mean of zero and a constant variation.

#### **A- Results of model estimation:**

The linear regression method was used in order to finally reach the explanatory variables and the effect of each variable on the unemployment rate during the period 1980-2009. Thus, the estimated regression equation obtained by using the above statistical program is the following:

$$Y = 0.0015 + 1.96 X_1 - 0.12 X_2 - 0.01 X_3 - 1.9 X_4 - 0.04 X_5$$

$$R^2 = 0.85621559 \text{ (Selection Factor)}$$

$$R = 0.92531919 \text{ (correlation coefficient)}$$

The following tables show the summary of the results of the standard model of the most important variables affecting the unemployment rate 1980-2018.

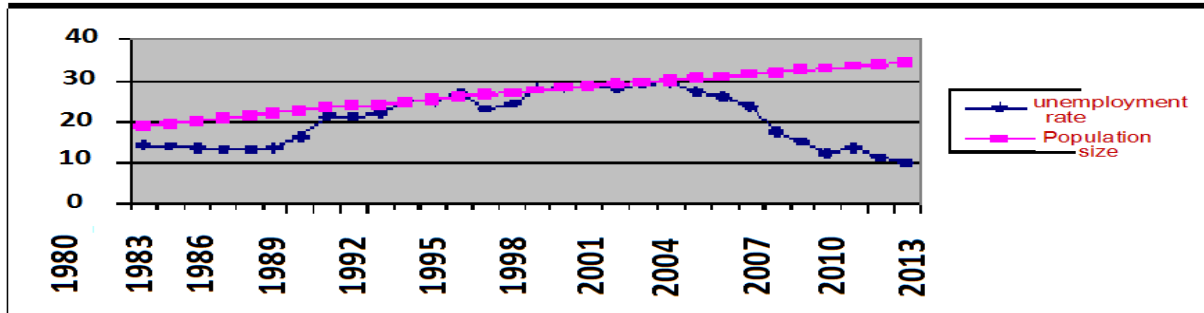
#### **B - Explain the most important results obtained:**

Depending on the equation obtained by the multiple linear regression model, we will attempt to study the relationship between the unemployment rate (dependent variable) and the independent variables that affect the unemployment rate.

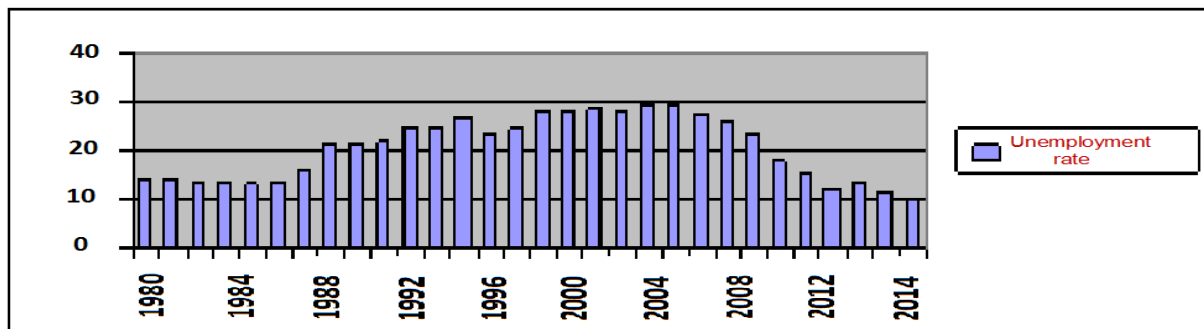
##### **-Population size ( $x_1$ ):**

- The coefficient of determination between unemployment rate and population size is 94% =  $R_2$

The estimated regression obtained shows that there is a positive / positive relationship between the unemployment rate and the population size. The greatest evidence is that there is a positive sign in the estimated regression equation. This result is consistent with expectations and the logic of economic theory. The increase in population size helps increase Demand for employment, while the growth rate of the working age population has moved from 4.2% for the period 1980-1985 to 2.9% for the period 2000-2004. This category generally represented about 67% to 70% of the total population.



**Figure (7): Population size and unemployment rate during the period 1980-2013.**



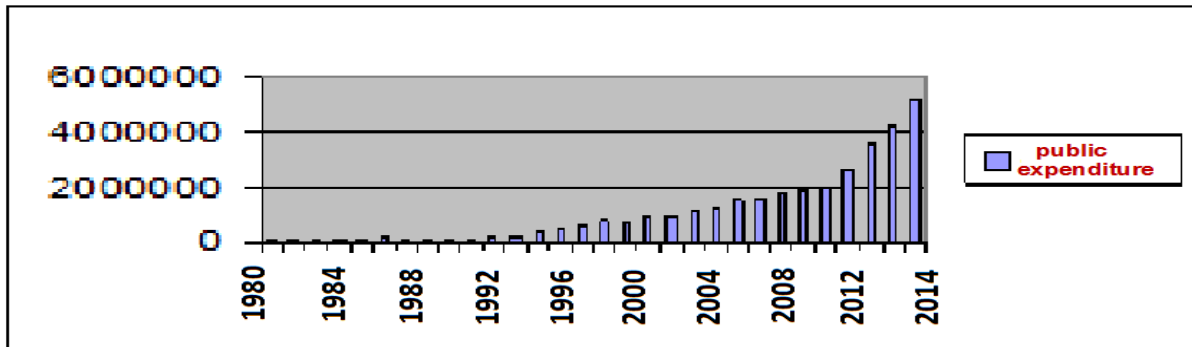
**Figure (8): the unemployment rate during the period 1980-2014.**

The results show that the increase in the size of the population by one million leads to an increase in the unemployment rate by 1.96, which confirms the positive relationship between the unemployment rate and the size of the population. Thus, the result is consistent with economic theories and previous **-variable overhead (x<sub>2</sub>)**:

**-The coefficient of determination between the unemployment rate and the size of public expenditure is 93% = R<sup>2</sup>**

It is clear to us that there is an inverse relation between the unemployment rate as shown by the negative sign in the equation. This result is consistent with the reality of the Algerian economy and the previous projections. The increase in public expenditure by 1 million Algerian dinars leads to a reduction of the unemployment rate by 0.12 According to the equation obtained from the data provided by the National Bureau of Statistics. The following figure shows the evolution of public expenditure during the period 1980-2009.



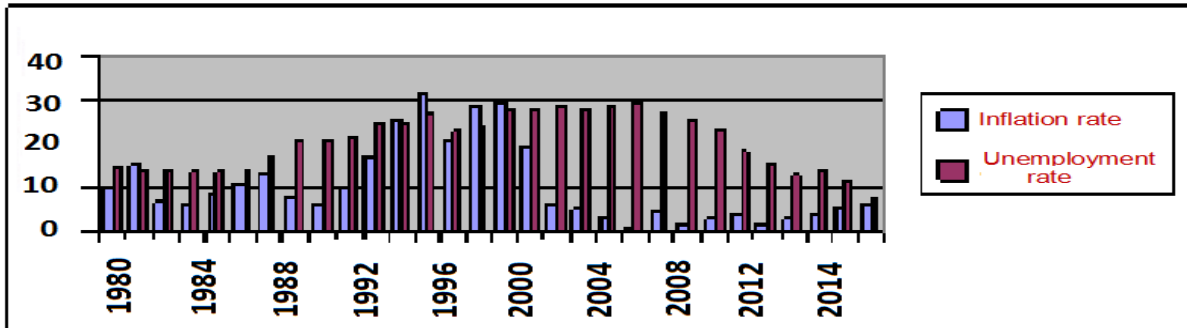


**Figure (9): Evolution of public expenditure in Algeria between 1980-2014**

### 3- Inflation rate ( $x_3$ ) :

**- The coefficient of determination between unemployment rate and inflation rate is 42% =  $R^2$**

The estimated regression equation shows an inverse relationship between unemployment and inflation. This is confirmed by the negative sign in favor of traditional thought, which sees inflation as leading to a decline in unemployment according to the Phelps curve. By increasing the demand for labor and thus increase the rate of employment, but the modern thought sees the opposite in the interpretation of the relationship between the unemployment rate and inflation, this is known as the phenomenon of inflationary, Both the size of unemployment and its rate increase with inflation. The obtained regression equation obtained by the National Bureau of Statistics shows that there is a correlation between the unemployment rate and the inflation rate. The increase in the inflation rate by 1% leads to a decrease of about 1% in the unemployment rate, The following table illustrates the evolution of the rate of inflation and unemployment rate in Algeria during the period 1980-2014.

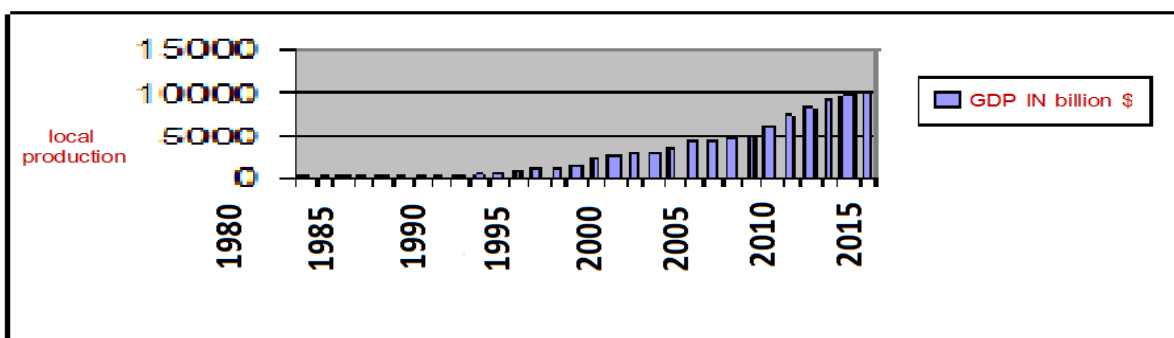


**Figure (10): Evolution of unemployment rate and inflation rate between.**

**- Domestic output ( $x_4$ )**

- The coefficient of determination between the unemployment rate and GDP is 98% =  $R^2$

Economic theories confirm that there is an inverse relation between GDP and the unemployment rate. This is proved by the estimated regression equation obtained by the negative sign that the increase of GDP by 1 billion dinars leads to a decrease in the rate of unemployment by 1.9 and thus it can be considered that the inverse relationship obtained Between them the unemployment rate and domestic output conform to previous expectations.

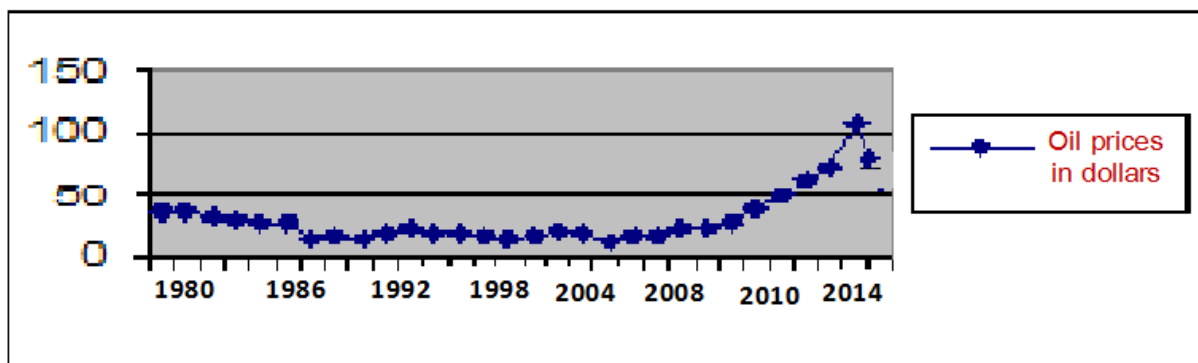


**Figure (11): Algeria's GDP growth between 1980-2015**

**- Petroleum prices ( $x_5$ ):**

- The coefficient of determination between the unemployment rate and oil prices is 87% =  $R^2$

The negative sign in the estimated regression equation suggests that there is an inverse relationship between the unemployment rate and oil prices. The higher the unemployment rate, the higher the unemployment rate, especially in the countries whose revenues are derived from oil and through the results obtained, it shows that the higher the oil price, 0.04 This result corresponds to previous expectations.



**Figure (12): Evolution of oil prices in Algeria from 1980-2014.**

#### 4/-Explanation:

What can be deduced is that the results of the model are consistent with the economic logic of economic theories by the evidence of the high explanatory capacity of this model, which is estimated at 85% of the unemployment rate in Algeria due to the explanatory variables mentioned above and the rest due to other factors. The closer the coefficient of selection than the one the quality of the model High addition to the correlation coefficient which is equal to 92% Thus, it is possible to say that there is a strong correlation between the dependent variable (the unemployment rate) and the explanatory independent variables (population size and expenditure, inflation rate, GDP and oil prices).

It is clear that the rate of unemployment is significantly affected by the size of the population, GDP, public expenditure and oil prices. The coefficient of multiple identification for each of the explanatory variables mentioned above exceeds 90%. The inflation rate, which equals 42%, affects the dependent variable but less than precedent, It should be pointed out that other factors led to the doubling of the unemployment rate during the study period (1980-2018), such as the 1986 oil crisis and

the structural adjustment program which resulted in negative results, which led to the aggravation of unemployment, with 45% of the workers losing their jobs and 10% 11.4% due to the closure of institutions, 10.1% as a result of the dissolution of institutions and the rest as a result of involuntary mobility, in addition to the rise of the integration of job seekers for the first time, the largest proportion of unemployed.

## Conclusion

In this study, we conclude that unemployment in Algeria, even if it has declined, remains high among young people and those with diplomas, especially in the presence of temporary positions concentrated in the services sector, which absorbs the largest proportion of the labor force. Its growth rate remained poor at only 4%, making its contribution to job creation weak. It should also be noted that the statistical approach alone is not sufficient to know the reasons that cause the development of unemployment, especially those related to youth, which makes them in our country tend to direct trend with economic growth, without reference to the economic analysis of the phenomenon based on the situational approach based on research bases in the relationship between Economic growth and unemployment, as well as the evidence-based structure of the effects of shocks on the development of unemployment in Algeria, And the extent to which the labor market responds to the economic policy adopted in relation to the effect of unemployment and other variables that we have mentioned. It is often noted that unemployment in Algeria is affected more by external shocks than by monetary policy or general budget policy.

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