Determinants of Taxation in Algeria
- An Econometric Study for the Period (2004-2022) -

Ouarda FEKRACHE [1,*], Ahcen RAKI [2]

[1] PhD Student, ECOFIMA laboratory, Faculty of Economics, Commerce Sciences and Management Sciences, University of 20 Aout 1955, Skikda (Algeria) (O.fekrache@univ-skikda.dz)
[2] Lecturer, ECOFIMA laboratory, Faculty of Economics, Commerce Sciences and Management Sciences, University of 20 Aout 1955, Skikda (Algeria) (A.raki@univ-skikda.dz)

Summary: In this study, we analyze the impact of macroeconomic variables on direct tax revenues in Algeria, which are considered determinants of taxation, using data, we study empirically during the period 2004-2022.Each of the effects of six variables are GDP, public spending, unemployment rates, savings, investment and inflation rates using multiple regression rates method, Calculation of explanatory variables and dummy variable. In conclusion, the analysis confirmed in first model that the strongest correlation is between direct tax revenues and direct investments and unemployment rate, and there is a negative correlation between GDP and direct tax, this explains that the development in GDP is in sectors that do not produce direct tax base, which is the hydrocarbon sector, which means that Algeria is still in the stage of dependence on this sector. The study also found that taxes are influenced by economic factors to varying degrees.

Keywords: Tax; Determinants of Taxation; Macroeconomic Variables; Algeria.

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* Corresponding author.

I- Introduction :

In modern society, taxation plays a crucial role because it provides the financial means necessary for society to support its basic operations in general as it regulates and is subject to fiscal policy which is the approach of using government income and spending to influence the economy (keynes,2016). Tax policy, which is one of the components of fiscal policy, focuses on the revenue aspect, that is, how the state collects its revenues.

Economically, tax policy is scrutinized in both macro and microeconomic contexts. The macroeconomic view assesses how tax policy impacts the entire economy, taking into account factors like unemployment rates, economic growth, view explores the effects of tax on individuals, firms, and the market. (Pistone et all, 2019). Unless the economic growth rate is sufficient to offset the increase, taxation needs to rise. Hence, public debt and government expenditure contribute to determining the degree to which nations can utilize their tax capacity (Tanzi, 1987).

The links between macroeconomic factors and taxes within the context of economic equilibrium have also been the subject of numerous theories, including those by (Solow ,1956), (Cassis, 1965), and (Barro & Sala-I-Martin, 2003). The effect of taxes on economic growth has been exposed to several ideas. Internal growth theories run counter to neoclassical theory, which holds that variations in tax rates may affect growth (Romer 1986; Lucas, 1969; Rebello, 1991); (Laffer, 1978; Wanniski,1978) theories regarding the relationship between tax rates and the amount of government revenue; and Wagner's law (1835–1917) regarding public expenditure.

In Algeria, the fiscal deficit remains an ongoing challenge. There are different strategies for financing public expenditures, where direct tax revenues are considered. The most appropriate and viable solution to build an efficient, sustainable and viable tax system, given the negative effects of other methods such as money creation and debt, is finding it difficult to raise sufficient direct tax revenues to finance its public expenditures and has remained hostage to the hydrocarbon sector, It faces many issues, including creating an atmosphere to attract foreign investment as well as cutting public expenditures.

The focus is on analyzing the diverse factors that determine tax revenues. This prompts us to study the factors that determine tax capacity on one side, and those associated with tax effort on the other side. For this purpose, we use econometrics to analyze the relationship between direct tax revenues and elements of the macroeconomy in Algeria over the period from 2004 to 2022.

In light of this attempt, the paper contains a section dedicated to highlighting the many interactions between direct taxes and different macroeconomic elements and a section for the standard study to show the magnitude of the impact of macroeconomic elements by testing the hypothesis that there is a significant relationship between macroeconomic elements and the size of direct taxes.

Theoretical Framework study:

The taxes serve as the cornerstone of a contract between the people and the government (Besley, 2020). "Tax" refers to an obligatory, non-reimbursed payment made to the government. Taxes may be imposed on individuals, organizations, possessions, etc. A variety of taxes can be imposed, including sales taxes, value-added taxes, gift taxes, estate taxes, excise taxes, inheritance taxes, capital gains taxes, and property taxes (Heij, 2001).According to economic literature, taxes in Algeria consist of direct and indirect taxes, which are imposed directly on gross income, tax on corporate profits and single tax excessive(Law of Direct Taxes and Similar Fees), while indirect taxes are imposed on imports. The new model was adopted starting in 1992, driven by the socio-economic shifts in the country The objective of these reforms was to establish a system that is both effective and transparent, with the ultimate goal of gradually reducing the Algerian economy's reliance on revenues from hydrocarbons . These changes are crucial for the country's economic sustainability and resilience (Hadjmaoui & Benatek, 2021) the most important direct taxes are the tax on gross income (IRG), taxes on corporate profits(IBS), and the only tax imposed on projects with small incomes(IFU), and divided according to Algerian law in order to respond to Important adjustments in the economic reality (Senator,2019). Because the tax administration has seen many difficulties when carrying out various tax operations in their previous form before the reform (McLaren, 2003). Moreover, this new model has been adopted by many countries and proved to be.

On the other hand, Macroeconomics is a branch of economics that studies how markets, companies, consumers, and governments behave as a whole. Its concentration is on macroeconomic variables including inflation, price levels, and rates of economic growth, national income, and unemployment. Macroeconomists also create models to predict and assess economic performance and policy outcomes (Tsai, 2019).according (Andolfatto, 2008) the study of macroeconomic theory includes definitions of the following variables:

GDP: The GDP (gross domestic product) It describes the entire amount of finished goods and services produced in a nation over a given amount of time(Agu et al, 2022), measured in local currency, and Define value-added, It expresses economic growth, as well as represents the tax base. However, GDP in some economic theories is not an ideal measure and has limitations. For example, it can vary based on political definitions, and is released only quarterly(Ali et al,2018). Therefore, alternative economic indicators are used to predict the general state of the economy. Factors such as income, unemployment rate, inflation, interest rates and corporate profits (Fasolo et al, 2011).

Investisment: is a major determinant of national income and its fluctuations by raising level of employment, productive capacity, and economic competitiveness, it contributes significantly to economic growth. Numerous economic and non-economic factors influence investment activity in an economy (Abbas et al., 2022).

Saving: According (Jumena et al., 2022) revenue that is not spent is often considered saved. As a result, the quantity saved is greatly impacted by the income obtained and the amount of consumption incurred. In order to handle finances both personally and at home, savings are necessary. When the main source of income is unstable, savings can play a big role as a backup source of funding or investment creation which in turn increases income.

Spending or expenditures : The problem that creates public spending is the budget deficit, which results from an excess of government spending over revenue collection, is the issue that drives public spending(Tsai,2019).

Unemployment: is a crucial measure of economic health, reflecting the capacity (or lack thereof) of the workforce to secure profitable employment and contribute to total output. Elevated levels of unemployment signal significant economic distress.

Inflation: Inflation arises when the demand for goods and services exceeds the total production, meaning that production does not cover the aggregate demand, we are faced with two options; either increase taxes or print more money to pay off the public debt. If taxes are raised, companies will raise prices in goods and services. This, in turn, will lead to an increase in inflation, as we mentioned earlier, and therefore the inflation index is considered a great value in interpreting tax income(Aktar et al., 2022).

These variables affect taxes or are related to them within the framework of macroeconomic policies, as there are a large number of studies conducted to investigate the relationship between taxes and many macroeconomic variables. However, the results of these studies tend to give overall results for the variables combined. Some studies have shown that taxes have a relationship with GDP as well as investment, and other studies have shown that direct taxes have a relationship with savings, as well as taxes related to government spending. Among these studies, we find the study of (Andrejovska & Pulikuva, 2018)., The study investigated the correlation between various of macroeconomic variables, including the GDP, employment status, public debt, foreign direct investments, effective tax rate, and statutory tax rate, and the aggregate tax revenues of the 28 European Union member states. The pooling model, the fixed effects model, and the random effects model were the three regression analysis models used in the study. The primary hypothesis under investigation was whether the GDP has the greatest influence on tax revenue. The results showed that tax revenues and employment rate have the largest link, followed by GDP and foreign direct investment. Other study of(Andrejovská & Glova, 2023) examines the impact of economic determinants on corporate tax revenues in 27 EU Member States from 2004-2020. The panel regression model with fixed effects and the Arellano adjustment was used. The results reject the hypothesis that the nominal tax rate is a decisive determinant of tax revenue, indicating that policies should focus on effective tax rates. Also we find study of (Sen Gupta, 2007) This research builds upon existing empirical studies by examining the critical factors affecting tax revenue performance in developing countries. Using a comprehensive dataset and addressing previously

overlooked econometric issues, the study reveals that several structural elements significantly impact an economy's revenue performance. These elements include per capita GDP, the share of agriculture in GDP, trade liberalization, and foreign aid Additionally, corruption, political stability, and the mix of direct and indirect taxes play influential roles. The study introduces a revenue performance index and finds that while some Sub-Saharan African nations exceed their revenue potential, certain Latin American economies fall short of theirs. And (Alamirew Mebratu et al., 2020). Sought to use panel data and a variety of stochastic frontier analysis techniques (such as random effects, fixed effects, half-normal, exponential-normal, and truncated-normal analyses) to empirically investigate the factors influencing tax revenue effort in Sub-Saharan African countries for the years 2000 to 2018. The estimation results show that openness, the proportion of the agriculture sector, external debt, the proportion of the construction sector, population growth, age dependency, corruption, and GDP per capita are all positively and significantly correlated with tax effort. On the other hand, the percentage of the service sector, official development assistance, foreign direct investment, population density, literacy, and official exchange rates. Overall, the choice of analysis technique underscores the impact of both supply-side and demand-side factors on tax revenue effort.

There are also studies that share this study, which are related to the Algerian economy, including : the study of (Hadjmaoui & Benatek, 2018) about tax capacity and Tax Effort of Algeria from 1981 to 2014 . The study adopts an analytical approach to economic literature, distinguishing between taxable capacity and tax effort through regression analysis, focusing on potential determinants of taxes. Taxable capacity is the maximum tax revenue that can be collected, and the potential tax effort is the maximum revenue that can be collected in this country based on its characteristics. It is an index of the ratio between the share of actual tax collection in GDP and the predicted taxable capacity. "High tax effort" is the case when a tax effort index is above 1, implying that the country effectively utilizes its tax base to increase tax revenues. "Low tax effort" is the case when a tax effort index is below 1, indicating that the country may have a relatively large scope or potential to increase tax revenues. The theory has built two models, the first model concluded that there is a negative relationship between he results of the first model indicate a strong negative relationship, which is statistically significant, between the share of agriculture and income tax. This negative relationship is due to the strengthening of the agricultural sector either through tax exemptions or subsidies granted by the government, or both. The results of the second model indicate a strong positive relationship, which is statistically significant, between the share of oil exports and tax revenue. This result is largely consistent with the structure of the Algerian economy and its strong link to the composition of oil revenues. The same model also suggests a positive relationship between the degree of economic openness and tax revenue.

Anther study of (Hadjmaoui & Benatek, 2021) about Algeria's Non-Hydrocarbon Tax and Certain Macroeconomic Variables' Relationship. This study is to investigate how Algeria's non-hydrocarbon tax revenue was affected by the real effective exchange rate (REER), inflation, economic growth, and financial development between 1999 and 2018. The models' short- and long-term dynamics were ascertained using the Autoregressive Distributed Lagged (ARDL) model. The empirical data indicates that changes in economic growth do not substantially affect the revenue collected from non-hydrocarbon taxes. It also emphasizes how important the REER is to the money generated by non-hydrocarbon taxes. The short-term impact of inflation on the non-hydrocarbon tax is substantial, whereas the REER has a minor positive effect.

This study discusses the dynamic relationship of some different variables: direct tax revenues, GDP, public spandings , investment and savings, unemployment rate, and inflation, And to confirm the validity of the hypothesis that there is a positive relationship between economic variables and direct taxes in Algeria during the study period. The importance of the study comes from the importance of taxes, especially direct because Algeria puts on them a lot of hopes to build a developmental and sustainable economy, especially since petroleum collection is often exposed to external crises that have negatively reflected on economic performance.

II– Methods and Materials:

II.1. Sources of data:

Algeria seeks to increase direct tax revenues and sell to the single sector through the application of a tax policy based on tax reforms that include the quality of taxes as well as improving the performance of the administration. However, according to the economic literature, this policy influenced by multifaceted economic variables of each country, which we are trying to illustrate through this study.

The study uses secondary data from the Central Bank of Algeria, the General Directorate of statistic ONS(office national of statistic) , laws of finance, the World Bank, using annual data 2004 to 2022 of Algeria. The following table shows the sources of the data.

Table (1): Description and Sources of Variables Used in the study

Variables	Symbole	Sources of data
Direct tax(million Dinars)	DTAX	Laws of finance (2004-2022)
Gross domestic product(billion Dollars)	GDP	Bank of world
Investment rate	INVR	Bank of Algeria raports (2004-2022),ONS (office national of statistic)
Saving(million Dinars)	SAV	Bank of Algeria(raports 2004-2022)
Sepnding(million Dinars)	SPEND	Bank of Algeria(raports 2004-2022)
Unemployment rate	UN	ONS (office national of statistic)
Inflation rate	INF	Bank of Algeria raports (2004-2022) & Bank of world

Source: Own elaboration.

II.2. Model and Data Description:

This study attempted to execute the nexus of taxation with several macroeconomic variables in Algeria using the annual dataset from 2004 to 2022. The effects of macroeconomic variables on the total fluctuations Direct taxes follow the multiple regression method The considered model in this case, which expresses the relationship between direct taxes and GDP, investment, savings, spending, unemployment rate, and inflation, is described by the following formula: DTAX = f (GDP, investment, savings, spending, unemployment rate, inflation) , which takes the form of the following equation:

$$Y = α + βx1 + γx2 + ζx3 + δx4 + ηx5 + ιx6 + ε$$

Multiple regression modeling was used to model the correlation between the response variable and two or more predictor variables(or independents variables) to the number of n independents variables, which in this case is appropriate to know the effect of independent variables on the dependent variable (Marill, 2004) The multiple regression model is correct and useful, When creating the model, it is necessary to validate it on all four assumptions: Linearity between variables, Independence of residuals, Normality of the distribution of the residuals, Homoscedasticity, an assumption of equal variance of the errors (Ali et al., 2018).

In most economic theories, the impact of taxes on the macroeconomic balance is studied, both short and long term (Raczkowski, 2017; Vladimirov & Neicheva, 2008 Rebelo, 1991; Mayer, 1974). But in this study we take the impact of economic variables on direct taxes as it provides us with solutions to penalize.

-Dependent variable It is the variable that represents direct tax revenues, and as it is known, direct taxes are imposed on income, and in Algeria they include tax on gross income, taxes on corporate profits and the only tax. symbolized by the symbol DTAX

–Independent variables are the $x_1, x_2, x_3, x_4, x_5, x_6$ in order

- Gross domestic product expressed in fixed capital formation measures, and is expected to have a positive impact on direct taxes as the tax base symbolized by the symbol GDP.

- Investment rate: According to the overall economic literature, investment has a major role in achieving economic growth(Chaplyuk et al,2022) or increases the gross domestic product and thus increases the tax base of direct taxes, and therefore it is expected that there will be a positive relationship between the growth rate of investment with direct taxes. Symbolized by the symbol INVR

- Saving Building a sustainable financial base is considered a primary goal, which is achieved through saving in order to confront oil price shocks(IMF,2023). It also guarantees the assumption of permanent income (Lu,2022) increases the proportion of investment that creates income, and allows the government to obtain internal financing instead of financial borrowing. Symbolized by the symbol SAV.

– Spending : The main objective of imposing taxes is to cover public expenditures within the framework of the balance of the general budget of the state, and according to the economic literature, a balanced budget policy must impose that the proportions of government spending be balanced with tax revenues, which pushes to achieve a kind of balance in the Laver curve(Guo et Zhang, 2022) ,symbolized by the symbol SPEND.

- Unemployment rate according to research, taxes eventually cause relatively convincing rises in unemployment by squeezing earnings. Growing tax burdens may have had a major role in the increase in unemployment in several nation (OECD, 1995). However, in this study, the impact of unemployment on direct taxes is studied, as high unemployment at an initial stage leads to fiscal policy to reduce taxes as a result of social pressure so it is expected that the unemployment rate will have a negative impact on direct taxes, therefore it is expected that the unemployment rate will have a negative impact on direct taxes. Symbolized by the symbol UN.

- Inflation The monetary policy of any country aims to achieve economic stability, which includes stabilizing inflation at its lowest levels, and this is achieved through price stability (Mishkin,2000), and taxes are negatively affected by inflation and this negative effect of inflation on real fiscal revenues is called the effect of Tanzi-Oliveira (Tanzi, 1978; Olivera, 1967). Denoted by INF.

α–constant

B, γ, δ, ζ ,η , ι – coeficients

ε - is the error term.

The equation aims to explain the variables that determine the value of direct taxes and affect them for this reason we add a variable on the right side DTAX and on the opposite side independent variables . The following is a definition of the equation:

$$DTAX = α + β\,GDP + γ\,INVR + δ\,SAV + ζSPEND + η\,UN + ι\,INF + ε \quad ……1$$

To reduce heteroscedasticity and ease interpretation, this study converted data points into natural logarithms. Moreover, in the case of converting negative into natural logarithm, this study converted GDP growth into following the formula as follows (Busse and Hefeker, 2007):

$$y = \ln(x + \sqrt{x^2 + 1})$$

This study examined the relationship of direct tax (DTAX) with macroeconomics along with fiscal and monetary variables such as GDP growth rate (GDPGR), government spending (SPEND), investment (INVR), savings (SAV), unemployment (UN), and inflation (INF) in Algeria. To draw more attention, this study displayed the graphical representation of variables in a time plot (figure01). To extend the effect of taxation to the macro level, the government reemphasized taxation in 2007. To include the importance of this policy, this study encountered the dummy variable (D07) (1 as 2007 and onwards, 0 as otherwise). The overall analysis was endeavored and concluded using Eviews 10.0.

Figure(1) : graphical representation of variables in Algeria during the period 2004–2022.
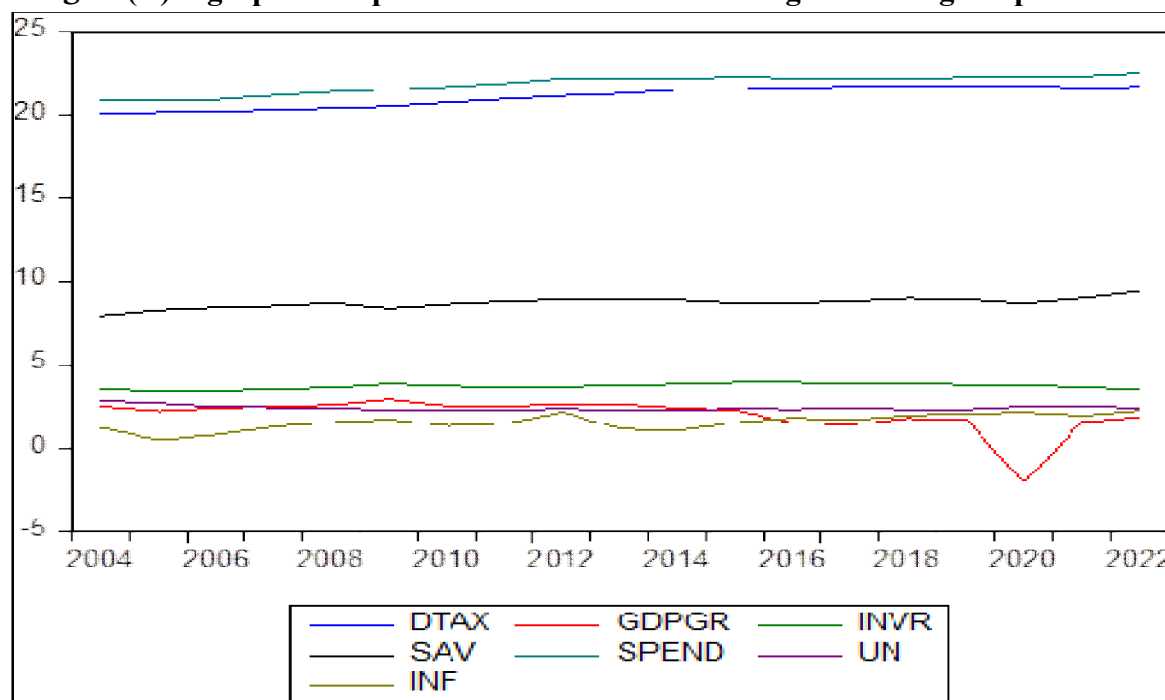
The Source: Compiled by the authors based on Eviews 10.0

III- Results and discussion :

III.1. Discribtives statistics:

Table (2). Basic statistics of study variables

	DTAX	GDPGR	INVR	SAV	SPEND	UN	INF
Mean	21.147	2.019	3.700	8.760	21.903	2.439	1.590
Median	21.328	2.424	3.723	8.755	22.246	2.416	1.581
Maximum	21.837	2.958	3.926	9.429	22.566	2.874	2.272
Minimum	20.093	-2.070	3.411	7.984	20.906	2.282	0.489
SD	0.650	1.085	0.161	0.313	0.558	0.154	0.491
Skewness	-0.398	-2.973	-0.260	-0.447	-0.778	1.452	-0.485
Kurtosis	1.530	11.911	1.846	3.855	2.083	4.759	2.537
Jarque-Bera	2.214	90.848*	1.268	1.212	2.580	9.124	0.915
Observations	19	19	19	19	19	19	19

*(N.B.: DTAX- Direct Tax, GDPGR- GDP growth rate, INVR-Investment growth rate, SAV- Savings, SPEND-Government spending, UN-Unemployment rate and, INF- inflation rate respectively. The asterisk * indicates the level of significance on 1%).*

In the basic statistics, the basic statistics of seven study variables were executed. The result is illustrated in(Table 01). To address this, mean, median, maximum, and minimum were executed to provide information about the central tendency. The average value of the direct tax, GDP growth rate, investment, savings, government spending, unemployment, and inflation were 21.147, 2.019, 3.7, 8.76, 21.903, 2.439, and 1.59 respectively. Due to the pandemic of COVID-19, the GDP growth rate exhibited negative and that's the reason for the negative value on minimum value. Moreover, to explain variability, standard deviation (SD) was executed, and except, for GDP growth rate or economic growth rate, all variables execute shorter discrepancy due to falling standard deviation (SD) beneath one. For more clarification about the shape and the form of variables, skewness and kurtosis were given. All variables were negatively skewed except unemployment (UN). On the other hand, unemployment (UN) and economic growth (GDPGR) executed more peakedness having greater than three kurtosis. To elucidate the shape of the distribution, the Jarque-Bera statistic was also employed and except for economic growth (GDPGR), each failed to reject the null hypothesis of normal distribution (Jarque & Bera,1987).

III.2. Correlation:

In order to help understand the economic behavior of the variables among them, we use the study of correlation, the difference in economic quantities often tend to empathize so that the movements in one of them tend to be accompanied by corresponding movements in other movements, In the words of (Connor, 1932) For this we use the following correlation matrix.

Table (3). Correlation matrix of studyvariables

	DTAX	GDPGR	INVR	SAV	SPEND	UN	INF
DTAX	1						
GDPGR	-0.719***	1					
INVR	0.615***	-0.215	1				
SAV	0.681***	-0.271	0.138	1			
SPEND	0.927***	-0.505	0.55**	0.824***	1		
UN	-0.347	-0.135	-0.558**	-0.487**	-0.47**	1	
INF	0.687***	-0.503**	0.277	0.646**	0.721***	-0.223	1

(N.B.: DTAX- Direct Tax, GDPGR- GDP growth rate, INVR-Investment growth rate, SAV- Savings, SPEND- Government spending, UN-Unemployment rate and, INF- inflation rate respectively. Asterisks define statistical significance in such as ***, **, and * referring to 1%, 5%, and 10% levels of significance respectively)

To know whether the variables were free from multicollinearity or strong association or not, this study executed Pearson's product-moment correlation (result given in Table 02). As taxation was an outcome variable, it was strongly but negatively correlated with economic growth (GDPGR) but positively but strongly associated with government spending (SPEND) on a 1% level of significance. Moreover, there was a moderately imperative but significant association observed with taxation and investment (INVR), savings (SAV), and inflation (INF) on a 1% level of significance. As it comes positive with a higher value, so, the nexus of two variables is quite strong (Gogtay & Thatte, 2017).

III.3. Estimation:

Table 4: Regression estimates and model dynamics of studyvariables

Variable	Model 01			Model 02		
	Coefficient	Std. Error	t-Statistic	Coefficient	Std. Error	t-Statistic
GDPGR	-0.101**	0.035	-2.876	-0.104***	0.030	-3.461
INVR	1.420***	0.485	2.927	1.656***	0.423	3.913
SAV	0.840**	0.345	2.438	0.946***	0.296	3.200
SPEND	0.647**	0.227	2.850	0.622***	0.193	3.226
UN	1.114**	0.386	2.891	0.701*	0.370	1.895
INF	-0.144	0.093	-1.541	-0.039	0.091	-0.428
D07				-0.390**	0.164	-2.385
Constant	-7.931**	2.762	-2.871	-8.009***	2.343	-3.419
Model diagnostics						
F-statistic	75.903			91.301		
R^2	0.974			0.983		
R_{adj}^2	0.961			0.972		
D-W statistic	1.796			2.273		
Serial Correlation	0.105			0.918		
Heteroscedasticity	0.763			1.026		
Normality	0.867			0.609		

(N.B.: DTAX- Direct Tax is the dependent variable and the remaining independent variables are, GDPGR- GDP growth rate, INVR-Investment growth rate, SAV- Savings, SPEND- Government spending, UN-Unemployment rate and, INF- inflation rate respectively. Asterisks define statistical

significance in such as ***, **, and * referring to 1%, 5%, and 10% levels of significance respectively)

In multivariate analysis, two multiple regression analyses were shown. In the first one, all explanatory variables were counted whereas a dummy variable (D07) for reshaping the taxation of government was considered. In the first model, investment from the government sector (INVR) and unemployment rate (UN) bolstered taxation more than the other variables resulting in the effect of these being quite stronger as compared to government savings (SAV) and spending (SPEND) respectively. In other words, for a one-unit increase in investment (INVR), direct tax (DTAX) will increase by 142% on a 1% level of significance disregarding the effect of other variables. Similarly, for unemployment, if it boosts by one unit, taxation will increase by 1.11 units on a 1% level of significance. On the other hand, economic growth culminates in taxation resulting in as tax increases, economic growth will decrease meagerly in a 5% level of significance. the reason behind this negative association was due to COVID-19, the economy on the national level was hampered recently as tax policies, especially on corporate and individual income distress economic growth (VELAJ, 2022). The structure and investment in the regime of shifting taxation are critical to achieving economic growth, and curtailing the tax rate is a possible reason behind encouraging employees to work, save, and invest. However, if it is not financed by instantaneous outlay cuts, they will likely result in an increased general budget deficit, which in the long-term will reduce national savings and increase interest rates (Gale and Samwick,2017). Government savings (SAV) and spending (SPEND) will also prolife rate taxation as the beta coefficient came significantly with a positive amount. Of the two models and after the introduction of the Dammy variable, and as shown in equation number 01 to represent the relationship Between direct taxes and economic variables or determinants, the regression equation becomes as follows:

$$DTAX = -8.009 - 0.104GDP + 1.656\, INVR + 0.946SAV + 0.622SPEND + 0.701UN - 0.039\, INF - 0.390D07 + \varepsilon$$

III.4. Discussion:

The analysis of the data obtained from the World Bank, the Central Bank of Algeria, as well as the specialized national office of statistic, as well as the analysis of the relations between the economic variables of Algeria during the period from 2004 to 2022, gives us different levels of analysis of the economic situation of Algeria at an initial stage, providing explanations of raw data and economic policies in Algeria, and then interpreting the results through the application of economic theories.

GDP is widely accepted as the primary indicator of macroeconomic performance. It represents the overall size of an economy, and changes in GDP reflect the overall health of the economy(world bank, 2022). The GDP consists of four components: consumption, investment, government expenditure, and net exports(Agu et al,2022).In Algeria The relation between the rate of economic growth and direct tax is negative and gives indications that economic growth takes place in sectors that do not impose direct taxes or in the hydrocarbon sector. The results also indicate that Algeria has experienced slow economic growth over the years of study, and the tax-to-GDP ratio indicates that there is more scope to increase revenues through direct taxes through the creation of new tax rules as well as increased investment in projects that increase GDP. The results also indicate that Algeria has witnessed slow economic growth over the years of study, and the tax-to-GDP ratio indicates that there is more scope to increase revenues through direct taxes through the establishment of new tax rules as well as increased investment in projects that improve the economic situation.

GDP rate is also growing at a slow pace and the Corona period witnessed a decline in economic activity(Bank of Algeria,2022), which affected the economy in general and macroeconomic variables. And the results came in each model it is the same results in the study of (Alamirew Mebratu et al., 2020).the study of (Rahman and Siddiquee, 2022)in the short run.The adverse results of the study (Andrejovska & Pulikuva ,2018), (Sen Gupta, 2007). However, Economic theories depend on the study of relationships between macroeconomic variables by assuming the economy is an open economy, or the free market, so the study of these theories on the

economy is considered incomplete considering that the Algerian economy is an economy subject to full control by the state.

The empirical results of the positive relationship between direct taxes and investment are also presented in the manner of the numerous studies of the interrelationship between taxes and especially foreign investment(FDI).

there are a strong positive relation between investment rate and direct tax the Keynesian economic theory may be suitable in this case, which imposes that growth in investment spending leads to an increase in growth in taxes, which is logical because increasing investment leads to an increase in income, which is the base of direct taxes, but a of result of numerous circumstances in 2020, such as COVID 19, Algeria saw negative FDI and negative GDP growth(Chaplyuk,et al,2022). The national economy recorded a strong recession of 5.1% in 2020 due to The pandemic, began to recover in 2021 due to the hydrocarbon sector(Bank of Algeria,2023).

Fiscal policies also aim to achieve a balance between the two pillars of public debt and the savings pillar, with the latter being within the limits of 40% of the gross domestic product. (IMF,2023). from (Table 3), we notice a negative relation between saving and GDP, and at about 27% only, meaning a weak relationship, which means that saving does not contribute to the total GDP, meaning that saving is not directed to investment that increases GDP. However, there is a positive relationship between savings and direct taxes, which is a logical matter. As the incomes generated by individuals and forming a levying base for direct taxes increase, so do taxes increase with them, and the surpluses are directed to saving without being invested effectively. This is shown by the correlation between the investment and saving rate of only 0.138, which is a weak ratio.

A study of the stability of the relationship between expenditures or spendings and direct tax revenues shows that there is a positive relationship between where in both models an increase in spendings by more than 60% leads to an increase in direct taxes by 1%(table04), which means two levels of analysis. Imposing budget stability is achieved with other means of financing, including petroleum revenues and indirect taxes, which poses a risk of dependence on the hydrocarbon sector. On the other hand, the state expands its direct tax base with the increase in spendings and not vice versa, it was assumed that the tax increase would be in the first stage prior to the increase in spendings in order to ensure the stability of financing.

The study also indicates a negative relationship between spending and the rate of economic growth (table 03), or the so-called spending shock. Which means that the spending carried out by the state does not lead to an increase in economic growth, which is an expense for management such as wages and grants. This does not mean the abolition of state spending in this area, as it is necessary to implement policies and laws((Cingolani, 2018), In this context, the study came contrary to what (Keynes,1936) said, who decides that increased government spending leads to an increase in GDP, and agrees with the neoclassical approach, which believes the opposite that increasing public expenditures cannot increase aesthetic GDP (Jelilov et al., 2016) Referring to the economic literature of Wanger and Musgiven, who provide justifications for increasing public spending, Wagner who gave justification for increasing public spending in order to increase GDP, which increases with investment. The results of the study indicate that there is indeed a positive relationship between spending and investment, as well as between spending and GDP, but on the other hand, there is a negative relationship between GDP and investment, meaning that the tax cycle in Algeria passes from collection to spending in investment sectors that do not contribute increasing GDP, but only expenditures of an administrative nature, as mentioned above. This study is consistent with the results of the. The interactions between how the government spends and taxes and how the economy grows are complex and varied, which creates a constant debate about how effective fiscal policy is for growth, especially in developing countries (Rahman & Siddiquee, 2022).

Therefore, it can be concluded with this theory that unemployment has negative and statistically significant relationships through (Table. 03),which determines the correlation coefficient between independent variables. Generally the experimental results show Strong positive relationship between unemployment and direct taxes from(Table 04).

that inflation is negative Impact(table 04) on the development of direct tax during the years of study Reducing inflation leads to an increase in taxes, which is logical. One of the goals of fiscal

policy according to economic theories is to eliminate inflation by absorbing the cash surplus (Lucotte, 2015) whether through fixed or distorted taxes. (Friedman, 1957) confirm that the money supply must be carried out at a constant rate at a level equal to GDP to reach optimal inflation rates, according to which they range within zero and absolute value of interest. However, in this case, we find a negative relationship between the gross domestic product and inflation(table 03), as well as the inflation rate being greater than the economic growth rate, which justifies the lack of economic stability. Also, in this case, inflation can be justified by increasing public expenditures or increasing the wage bill, as social improvements have affected personal income We find that Algeria tried to improve the guaranteed minimum wage for a national from 10,000 Algerian dinars to 20,000 dinars, or 140 dollars per month (countryeconomy.com, 2024), and although this percentage remains weak, it is considered   additional costs that were not accompanied by a significant increase in the GDP, this causes inflation, and the results of table 03 shows a strong correlation between inflation and public spending of more than 70%. It is the opposite of a study(Hadjmaoui & Benatek, 2021) which brought the positive impact of inflation.

Through this study regarding the evolution of direct tax revenues. Where was the Dummy variable 07 introduced. Algeria stressed the importance of direct taxes in 2007, the year of a global crisis. As a result, Algeria's revenues declined as a result of the recession in the hydrocarbon sector(Bank of Algeria, 2008) prompting Algeria to reaffirm the tax sector in order to achieve economic growth.

IV- Conclusion:

Taxation is the most important means of fiscal policy for any country, especially Algeria, However, their implementation requires a set of conditions, including taking into account macroeconomic variables. This article estimated the effects of macroeconomic variables on direct taxes. Our findings indicate that an increase in investments raises tax revenues directly.

Algeria must implement measures such as broadening the tax base, simplifying tax rates and laws, reducing the number of taxes, encouraging voluntary compliance and investment, paying close attention to digitization in order to improve its tax revenues.

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