The Role of petroleum and regular tax revenues in Financing the Algerian public budget

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Abstract:

This study aims to evaluate the contribution of petroleum and regular taxes revenues to financing the public budget in Algeria from 2010 to 2021, The theoretical foundations of each petroleum tax and regular tax and their role in increasing public revenues; and financing the general budget were addressed, using the statistical analysis program " Standard Eviews 12 " for applying statistical and econometric methods to build the model.

The study concluded that there is a long-term balance between the public revenues and both petroleum and regular taxes revenues. In other words, theses taxes have positively affected the public revenues and the State's budget, despite some negative impacts due to fluctuations in petroleum prices and problems related to sources of public revenues.

Keywords: petroleum profit tax, tax revenues, public revenues, public budget, Algeria.

1. INTRODUCTION

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The State performs its mandated roles that comprehend public spending for the benefit of its citizens. This function requires a constant search for new sources of financing and the preservation of existing ones, to finance the public budget, bridge any potential deficit that may appear in the public treasury, and work to achieve economic development and social welfare. The petroleum and regular taxes revenues, which are considered the main source of the state's revenue structure, cover expenses, satisfy needs and desires, and influence economic activity. The state employs them as well to manage and redistribute the income to members of the community, and to finance economic activities.

Those objectives of funding the State Treasury, influencing economic activity through increasing public revenues, and financing the public budget depend largely on the effectiveness of petroleum and regular taxes revenues, which are considered one of the main sources of financing the general budget in many countries including Algerian light of the world's enormous economic transformations, which have significantly affected all aspects of economic, financial, and social life; Algeria has undertaken reforms affecting both ordinary and petroleum taxes, to activate the sources of funding for the public budget and increase revenues from 1992 to the present day, which is mentioned in the financial laws promulgated each year. Petroleum and regular taxes revenues are: one of the key sources of the public budget, a State's tool used for the redistribution of wealth, and a means of economic regulation and a mechanism for resource collection.

1-1 The problem:

Based on the foregoing, the study attempts to answer the following problem:

What has been the impact of petroleum and regular taxes revenues on Algeria's public revenues and budget from 2010 to 2021?

This main problem includes sub-questions:

- What impact did petroleum and regular taxes revenues have on public revenues and the State's budget as a whole?
- What is the status of petroleum and regular taxes revenues in Algeria's public revenue structure?

- How could the State activate public revenues by relying on regular and petroleum taxation in order to perform its functions properly?

1-2- Hypotheses:

- Many countries, such as Algeria, rely on petroleum and regular taxes revenues as a primary source of budget funding.

- Petroleum tax revenues occupy an important place in the revenue structure of the Algerian economy, which contributes, in addition to regular tax revenue, to financing the public budget.

- Petroleum tax revenues are affected by fluctuations in oil prices, which directly impact the proceeds of public revenues, in addition to the effect of regular tax revenues as a whole.

1-3- The importance of research:

This study is important as petroleum and regular tax revenues are to the structure of public revenues in Algeria, The State mobilizes national financial resources through the public budget and redistributes them equitably to all segments of society through public expenditure, which achieves a number of economic and social objectives. This can only be done through public financial resources mobilized primarily from both regular and petroleum tax collections. The most prominent challenges facing the State are exploring new sources of financing or even the sustainability of current sources.

1-4- Study methodology and tools:

In order to understand the various aspects of the subject, achieve the purposes of the study, and answer the problem of the research; we will rely on the use of the descriptive approach to clarify the concepts related to the subject, which are: petroleum tax revenue, regular tax revenue, as well as public revenues; and the analytical approach to analyze statistics of petroleum and regular tax revenues and their impact on public revenues in Algeria during the period 2010-2021.

1-5- Research Objectives:

The State relies on the public budget to spend for the interest of its people and society as a whole and fulfill the roles and functions entrusted to it. However, this budget needs to be funded by a sustained structure of

public revenues, which Petroleum and regular taxes, in the Algerian case, are among the main sources. This study aims to achieve the following objectives:

- Identifying the role and status of petroleum and regular taxes revenues in the structure of public revenues in Algeria during the study period.
- Indicate the proceeds of the petroleum and regular taxes revenues and their impact on public revenues during the study period.
- Evaluation of the petroleum and regular taxes revenues in Algeria and the identification of imbalances and deficiencies.
- Provide suggestions and recommendations.

2- The theoretical framework of petroleum and regular taxes revenues:

Petroleum tax revenue occupies an essential place in the revenue structure of the public resources of many countries that produce and export petroleum energy. The proceeds of these financial resources are mobilized in the public budget to fulfill the State's functions and mandated tasks of covering public expenditures and achieving the economic and social objectives of society members.

1-2- The concept of petroleum taxation: Article 83 of 05-07 the petroleum taxation Actof April 28th, 2005, No. 50, p24. states: " Exploration activities and/or exploitation of hydrocarbons are defined by the provisions of this Act as follows:

- A non-deductible cadastral fee is paid annually to the public treasury.
- Monthly payment to the National Agency for the Valuation of Hydrocarbon Resources as specified in Articles 25 and 26 of this Act.
- A fee on petroleum income is paid monthly to the public treasury.
- A supplementary tax on output is paid annually to the public treasury.
- A real estate tax on other properties, except for exploitation properties, as specified in general tax collection, in addition to the rights and fees stipulated in Articles 83 to 90 of this Act.

Thus, petroleum tax revenues are the proceeds of oil taxes that can be adapted as the exchange for the State's authorization to exploit the subsoil of State-owned land (Laila Al-Issawi, 2003, p. 138).

2-2- Characteristics of petroleum taxation: The International Monetary Fund identified the characteristics of oil taxation as follows (IMF Report, 2012, pp. 12, 13):

2-2-1-The possibility of large rentier returns: These rentier returns represent an attractive tax base, the exploit right is accorded on the basis of efficiency and fairness, as is often the case with foreigners.

2-2-2- Widespread uncertainty: the main difficulty is not the high prices of commodities or their variability, but the degree of uncertainty that arises with regard to geology, input costs, and political risk (ranging from confiscation to changes in future public financial systems, including those that may result from climate and environmental policies)

2-2-3- Information asymmetry: the private sector investors who conduct exploration and development are likely to be more familiar, for example, with the technical and commercial aspects of a project than host Governments, while these governments will be more aware of their future plans regarding public finances.

2-2-4- High sunk costs and time consistency problems: Strategic industry projects usually involve very large expenditures incurred by investors in advance and cannot be recovered when the project is completed. Therefore, the balance of negotiating power shifts significantly from the investor to the host government once those costs are incurred. Even governments with the best intentions offer attractive public financial terms before the beginning of the project, then the tax base becomes significantly less flexible: they reset the system to achieve their interests. The investors' awareness of this can limit investments (the "disrupting investment" problem) which is detrimental to both sides.

2-2-5- The wide investment of multinational companies in many countriesimplies complex tax issues and matters associated with the sharing of benefits from national resources (multinational companies may be more experienced than the majority of developing country administrations).

2-3- Factors affecting petroleum tax revenues:

The most important of these are:

2-3-1- The price of crude oil: The price is one of the main effective factors in oil demand in general: a decrease in price leads to an increase or expansion of demand, and the opposite is completely right. (Muhammad Ahmed Al-Douri, 1983, p. 153).

2-3-2- Global crude oil demand:

Oil demand means the size of quantitative and qualitative human need for the oil commodity, such as crude or oil products, at a specific price and within a limited period, with the aim of satisfying, or fulfilling those human needs: consumption purposes such as gasoline or kerosene, or white oil for lighting and heating...etc. production purposes like petroleum products used in the petrochemical industry (Muhammad Ahmed Al-Douri, 1983, p. 147).

2-3-3- The level of economic and social development, the degree of industrial progress, and mechanical expansion:

Since energy sources, especially oil, on which depends the process of economic development, represent a central component of the production process; oil plays a major role in the development of the global economy and reflects the level of economic progress that the world has reached. If we notice the size of dependence on oil and its derivatives used to mobilize a huge number of vehicles and machinery operating in many fields (land, sea, and air transport), it will become clear to us that the increasing global demand for oil goes along with the increasing degree of economic development. So, the economic growth is accompanied by an increase in oil consumption, which means an increase in the oil demand. It is a direct, interrelated relationship, as each factor affects the other (Hammadi Naima, 2008-2009, p. 70).

2-4- Regular tax revenues: they are represented in various taxes and fees, excluding all ordinary state revenues (earnings and revenues of state property, various proceeds of the budget, and regular revenues) in addition to other revenues. Therefore, the various elements of regular tax revenues, according to the successive financial laws in Algeria, are addressed as follows:

2-4-1- Gross income tax: Article I (01) of the Direct Tax and Similar Charges Act stipulates that this tax is imposed on the taxpayer's net gross income. (Except for some incomes that are deducted from the source other

than wages and salaries, which are submitted to a relative rate). The annual net income, as determined by the Article 85 of the Finance Act 2022, is subject to tax on gross income according to the table below:

Table No. (1) shows the tax on gross income

Amount of taxable income (DZD)	Tax rate (%)
It does not exceed 240,000	0 %
From 240,001 to 480,000	23 %
From 480,001 to 960,000	27 %
From 960,001 to 1,920000	30 %
From 1,920,001 to 3,840,000	33 %
More than 3,840,000	35 %

Source : Finance Law of 2022 published in the Official Journal No.100, on Thursday, December 30th, 2021.

2-4-2- Tax on corporate profits: According to Article 38 of the Finance Law of 1991 and as stipulated in Article 135 of the Direct Taxes and Similar Fees Law of 2021, an annual tax is established on the total profits or incomes earned by companies and other moral persons referred to in article 136.

Corporates that are concerned by the Corporate Profits Tax are:

a) Companies of whatever form and purpose except:

- shareholding and personnel companies in the sense of commercial law, unless they choose to be subject to tax on corporate profits, in which case the choice request must be attached to the declaration stipulated in Article 151, and this choice is irreversible for the lifetime of the company.

- Civil companies that were not formed as a stock company, with the exception of companies that chose to be subject to tax on corporate profits, in which case the selection request must be accompanied by the declaration stipulated in the law in Article 151, and this choice also is irreversible.

- Collective investment agencies for movable values that are formed and approved according to the forms and conditions stipulated in the legislation and regulation in force.

b) Public industrial and commercial corporations and institutions:

- Companies that perform operations and make products mentioned in Article 12.
- Cooperative companies and their federations, with the exception of the companies referred to in Article 138.

2-4-3-Value-added tax: Under the 90/39 Act of 31/12/1990 on the Finance Law of 1991, the value-added tax and the tax on banking and insurance operations were established and it entered into force after completing its chapters related to determining percentages, the system of exemptions, and special regulations in accordance with the Act No. 91/25 of 18/12/1991 on the Finance Law of 1992. The first article of the value-added tax Act for the year 2021 specifies the operations subject to the value-added tax as follows (GUIDE PR DE LA TVA 2021):

a) Sales and real estate operations and all services that are not subject to special fees, which are either industrial, commercial, or artisanal in nature, and done in Algeria either on a regular or exceptional basis.
   This Tax also applies to all legal persons who establish taxable businesses.

b) Import operations.

2-4-4- The internal tax on consumption is determined as follows:

- Application area: beer, cigarettes, cigars, smoking tobacco, snuff, chewing tobacco, and matches.
- Basis for calculating the tax: The fee is calculated based on volume (hectoliters) for beer, and based on weight (kilograms) for tobacco products.

Thus, public revenuesare the group of income that the government receives through its treasury. It is necessary to meet public expenditures and is usually in the form of cash. Accordingly, public revenues are all resources that the state obtains in its sovereign capacity, whether in return for the services that it provides to individuals (fees), taxes, and state property revenues (divided into public and private), as well as public loans.

Natural sources (financial revenues for the export of crude oil) are also an important and essential source of public revenue in rentier countries, it constitutes a high proportion of public budget revenues (Ben Alzawi Abd-Al-Razzaq, 2019, p. 13).

3- Applied study:

3-1- Study data: All data relating to the size of public revenues and both petroleum and regular tax revenues for the years from 2010 to 2021 were collected:

Table No. (02) represents the size of public revenues, petroleum tax revenues, and regular tax revenues by the unit of billion Algerian dinars (B.DZD)

Years	Public revenues	Petroleum tax revenues	Regular revenues
2010	3081.5	1835.8	1068.5
2011	2992.4	1472.4	1324.5
2012	3455.65	1561.6	1595.75
2013	3820	1615.9	1831.4
2014	4218.18	1577.73	2267.45
2015	4684.65	1722.94	2465.71
2016	4747.43	1682.55	2722.68
2017	5635.51	2200.12	2845.37
2018	6714.65	2776.21	3033.02
2019	6507.9	2714.46	3041.41
2020	6289.72	2200.32	3046.86
2021	5328.18	1919.23	2651.7

**Source: the website of Algeria's official Journal www.joradp.dz**

3-2- Description of the model:

After collecting the data shown in the above table, we built the multiple linear regression model as follows:

$$y_i = \beta_1 + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i}\ldots\ldots\ldots\ldots\ldots+ \varepsilon_i$$

In order to verify the hypothesis with the linear relationship, we draw the spread form between the dependent variable "Y_i public revenue" and the two independent variables: "Petroleum tax revenues X_{1i}", and "Regular revenues X_{2i}.

Figure No. (01) represents the spread form between variables
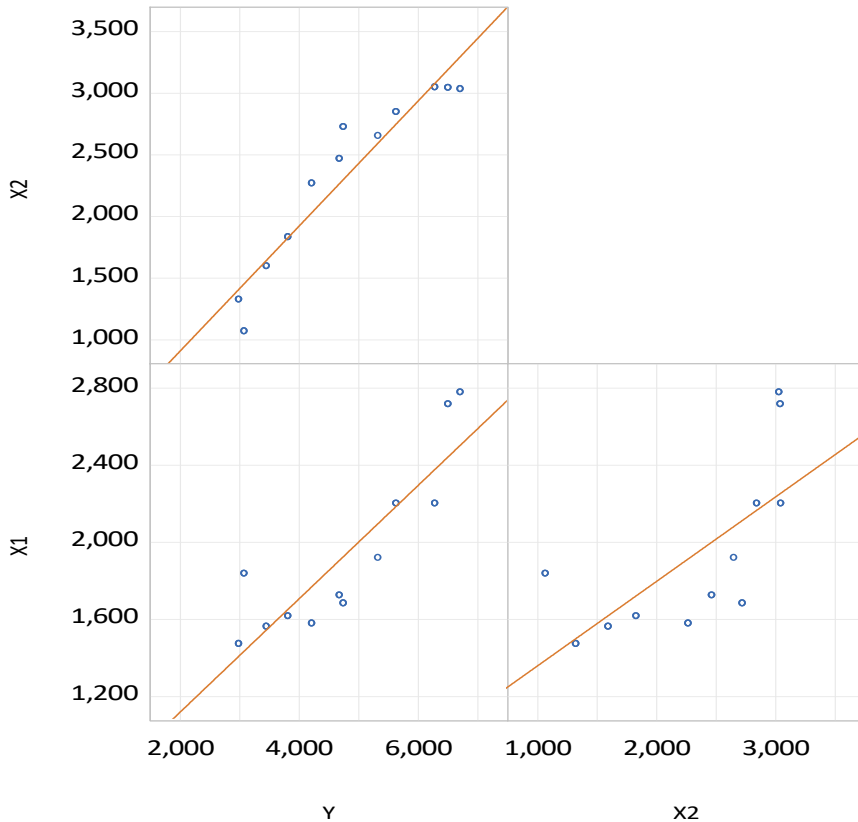
Source: Eviews 12 outputs

It is apparent from the spread form between Y_i, X_{1i}, and X_{2i} that most of the points are located on a regression line, which indicates a linear relationship between the dependent variable Y_i and the two independent variables X_{1i} and X_{2i}.

3-3- model estimating: the "Eviews 12" estimate the regression equation between the size of public revenues, Y_i, and the two independent variables: petroleum tax revenue X_{1i} and regular tax revenue X_{2i}:

Table No. (03) shows the results of the estimating model by "Eviews 12"

DependentVariable: Y
Method: Least Squares
Date: 11/24/22   Time: 21:39
Sample: 2010 2021
Includedobservations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-483.5785	197.4050	-2.449677	0.0368
X1	1.236122	0.137996	8.957676	0.0000
X2	1.236907	0.086823	14.24633	0.0000
R-squared	0.990027	Meandependent var		4789.648
Adjusted R-squared	0.987811	S.D. dependent var		1318.427
S.E. of regression	145.5595	Akaike info criterion		13.01136
Sumsquaredresid	190688.0	Schwarz criterion		13.13259
Log likelihood	-75.06819	Hannan-Quinn criter.		12.96648
F-statistic	446.7261	Durbin-Watson stat		1.502675
Prob(F-statistic)	0.000000			

Source: Eviews 12 outputs

We can deduce the regression equation using the results of the estimation as follows:

$Yi =- 483.57 +1.236122\ X_{1i} + 1.236907\ X_{2i}$
Se $_{(\beta)} = (197.4050)\ (0.137996)\ (0.086823)$
$t = (-2.449677\quad (8.957676)\ (14.24633)$
$R^2= 0.990027\quad DW=1.502675\quad F=446.7261$

3-4 Interpretation of the regression equation:

The regression constant is equal to β_1 = -483.5785, which is the total revenue when both the variables of petroleum tax revenues and regular tax revenues are nil.

The tendency of the first independent variable of petroleum revenues β_2 = 1.236122 reflects the change in total revenues. In other words, the change in total revenues is a result of the change in petroleum tax revenues by one billion Algerian dinars with constant regular tax revenues. When petroleum tax revenues increase by one billion dinars, the total revenues increase by 1.236122 billion dinars.

The tendency of the second independent variable of the regular tax revenues β_3 = 1.236907, reflects the change in total revenues resulting from the change of the regular tax revenues by one billion Algerian dinars and stable petroleum tax revenues. The increase in regular tax revenues by one billion dinars will increase the total revenue by 1.236907 billion dinars.

3-5- Test of partial and total statistical significance of multiple regression parameters with good fit:

For the sake of partial statistical significance, we perform the "Student" test for the regression parameters, which correspond to their probabilistic values. According to the estimation outputs, the values of the "Student", and t-Statistic are, respectively:

Tc = -2.449677, TX1i = 8.957676, TX2i = 14.24633

Using the probability value (Prob), we find that:

Prob(c) = 0.0368   Prob(x_{1i}) = 0.000   Prob(x_{2i}) = 0.000

Thus, these directly estimated probability values are consistent with Student's statistical values:

Prob(c) = 0.0368 ≤ 5%

Prob(x_{1i}) = 0.000 ≤5%

Prob(x_{2i}) = 0.000 ≤ 5%

Therefore, the estimated parameters are all significant from a statistics point of view.

- To verify the overall statistical significance, we use the probability value Prob(F-statistic) =0.0000≤ 5%, so it can be said that the source model is suitable for prediction.

- The quality of reconciliation is represented in the corrected or modified coefficient of determination because this model is a multi-linear where$\bar{R}2=0.99$which is very strong. So, the two independent variables for each petroleum tax revenue and regular tax revenue explain the dependent variable of total revenue Yi by 99%. What concern the remaining percentage of 01%, it cannot be explained and may be due to other independent factors that affect total revenues in Algeria.

3-6 Estimating the confidence interval for the parameters of the multiple regression equation based on the estimation equation:

The program gives us three confidence intervals 0.90, 0.95, 0.99, so we choose the confidence interval 0.95, and we get the results shown below:

Table No. (04) shows the estimation of the confidence interval for the parameters of the multiple regression equation

Coefficient Confidence Intervals
Date : 12/03/22   Time : 20 :56
Sample : 2010 2021
Included observations : 12

Variable	Coefficient	90% CI Low	High	95% CI Low	High	99% CI Low	High
C	-483.5785	-845.4442	-121.7128	-930.1397	-37.01731	-1125.112	157.9554
X1	1.236122	0.983160	1.489083	0.923953	1.548290	0.787658	1.684585
X2	1.236907	1.077751	1.396063	1.040500	1.433314	0.954747	1.519067

Source: Eviews 12 outputs

- The 95% confidence interval for the constant parameter β1 is [-930.1397, -37.01731] meaning that it is within the range: $-930.1397 \leq \beta_1 \leq -37.01731$. This area also does not include zero (0). We, therefore, reject the zero H_0 hypothesis that $H_0:\beta_1= 0$ which means that the constant's parameter is statistically significant.

- The 95% confidence interval for the parameter of the independent variable, which is petroleum tax revenue β_2, is [0.923953, 1.548290] meaning that it is within the range $0.923953 \leq \beta_2 \leq 1.548290$. we reject therefore the null hypothesis H_0 that states: $H_0{:}\beta_2{=}0$. It means that the petroleum tax revenue parameter is statistically significant.
- The estimate of the confidence interval for the parameter of the independent variable that represents regular tax revenue β_3 is[1.040500, 1.433314] where $1.040500 \leq \beta_3 \leq 1.433314$.It means that we are 95% convinced that the confidence interval contains the value of the unknown parameter, as the previous period does not include zero (0). The beginning and end of the confidence interval are positive; therefore, it can be said that $\beta_3 \neq 0$: we reject the null hypothesis H_0, and accept the alternative hypothesis H_1, which means that the β_3 parameter is statistically significant.

3-7- Estimating Variance and Covariance of small squares: we begin with the outputs of the estimation; we get the following:

Table No. (5) Estimation of variance and covariance of small squares

Coefficient Covariance Matrix			
	C	X_1	X_2
C	38968.74	-17.56137	-1.348717
X_1	-17.56137	0.019043	-0.008337
X_2	-1.348717	-0.008337	0.007538

Source: Eviews 12 outputs

Also, through the estimated results of the public revenue equation, we have found in the Std.Error column of the estimated standard error concerning the variables X_{1i}, X_{2i}, and the constant C:

$Se_{(B3)} = \sigma_{X2} = 0.086823$

$Se_{(B2)} = \sigma_{X1} = 0.137996$

$Se_{(B1)} = \sigma_{C} = 197.4050$

Hence, the variance of the coefficients estimated for the two independent variables X_1, X_2 and the constant C are:

$VAR(\beta_1) = (\sigma_c)^2 = (197.4050)^2 = 38968.74$

$VAR(\beta_2) = (\sigma_{X1})^2 = (0.137996)^2 = 0.019043$

$VAR(\beta_3) = (\sigma_{X2})^2 = (0.086823)^2 = 0.007538$

The common differences between the variables are as follows:

Cov (x_2,c) = -1.348717

Cov=(x_1, x_2) = -0.008337

Cov=(x_1,c) = -17.56137

4 -Conclusion

From the preceding, we can conclude:

✓ The petroleum tax revenues share represents the most significant percentage of the Algerian State's budget revenue. These revenues are determined based on the barrel price of oil, which is governed by the foreign international market known for its instability due to several factors such as politics. Therefore, the fate of an entire people remains attached to this price. These procedures are not based on scientific methods and foundations.

✓ Regular tax revenues share come second after the petroleum tax revenues share of the State's budget revenue. it led to an imbalance in the structure of the tax system, given that most of the decisions and procedures related to taxes come to address specific problems and lose their effectiveness once these problems are resolved.

✓ The Algerian State has undergone several reforms. These reforms are part of a global economic development plan that aims to establish a fair and effective tax system. However, they have not reached their inspired objectives and remain elusive, in light of current economic changes, due to the inadequate security conditions experienced for a whole decade. During this period, the economic Algerian system experienced a total destruction of public property which led to complete absorption of the public treasury funds and applying random and incompatible decisions for this urgent economic pattern.

✓ The use of tax models applied in some countries whose economic, social, and political data differ from the Algerian environment, which explains the huge number of tax adjustments and reforms.

✓ The lack of rationalization of the spending policy led some taxpayers to evade tax deductions and be convinced that tax evasion is legal. So, strict procedures and measures must be taken to rationalize spending policy to achieve the public interest.

✓ The lack of local tax systems that may have more control over local tax deductions and over the category of tax evaders.

✓ The weakness of the Algerian Tax administration and its failure to keep pace with the changes that occur, both at the level of material means and at the level of human capabilities, affected negatively its performance and those of the fiscal system as a whole.

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