# The Nexus between Taxes and Jordanian Economic Growth

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*Abstract:* - By using quarterly time data for variables: real GDP, income tax on individuals and companies, and general sales tax, to examine the relationship between these five variables during the period 2007-2023 and the unit root test showed the stationarity of the data and found a common integration between them, and the negative and significant value of the correction coefficient in the error correction model showed a long-term relationship between these variables, and this long-term relationship revealed that the impact of the values of customs tax, corporate income tax, general sales tax, and individual income tax was Positive on GDP and statistically significant, we conclude that it stimulates economic growth in Jordan.

*Key-Words:* - GDP, Economic Growth, Income tax, General Sales tax, Indirect Tax, Bounds test, Jordan.

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## 1 Introduction

Taxes are mandatory fees imposed by the government on individuals and companies on their income and property. The funds raised are used to help the government achieve its economic and social goals, such as job creation, stabilization of prices, and promotion of growth. It is not a direct exchange of goods or services, but a means of transferring resources from the private sector to the public sector, encouraging a balance in population development, and promoting employment and capital development, [1].

The government decides how much tax citizens and groups have to pay based on state laws. The amount of money the government plans to spend on projects and programs determines the size of the budget and thus affects taxes, government spending, economic activity, how people spend money, saving and investment habits, and the overall growth of the economy. Therefore, the research problem is determined by the following question: What is the impact of taxes of all kinds on the growth of the Jordanian economy.

To answer this question above, this study aims to show the impact of taxes on the growth of the Jordanian economy, and the specific objectives include the following:

(1) Studying the impact of personal income tax on the Jordanian economy.
(2) Studying the impact of the general sales tax on the Jordanian economy.
(3) Ensure the effectiveness of corporate income tax on the Jordanian economy.
(2) Studying the impact of customs duties on the Jordanian economy.

In line with the above objectives, the following null hypotheses have been formulated:

$H_{01}$: There is no statistically significant relationship between personal income tax and GDP.
$H_{02}$: There is no statistically significant relationship between general sales tax and GDP.
$H_{03}$: There is no statistically significant relationship between corporate income tax and GDP.
$H_{04}$: There is no statistically significant relationship between customs duties and GDP.

To achieve the above objectives, this article has been divided into five parts: The first is the

introduction. The second section discusses the concepts behind taxation, their relationship to economic growth, and a literature review. Section III deals with research methods. Section IV focuses on data presentation, analysis, and discussion of the results of this study. section V provides a summary of the research, conclusions, and recommendations.

# 2 Review the Theoretical Framework Literature

## 2.1 Theoretical Framework

This study discusses three theories about taxation: the theory of the cost of service, the theory of utility, and the social and political theories of taxation. Under the cost-of-service theory, the government bears the costs of providing certain services to citizens based on a collective assessment of the beneficiaries of that service, as this theory assumes the similarity of tax to price. As a result, if a person is not a beneficiary of a particular service, he or she does not have to pay tax on it. Criticisms have been applied to this theory, as it imposes restrictions on the scope of services. Governmental. The ultimate goal of the government is to provide social welfare to the poor, and by applying this theory, the state may not provide social services such as health care, education, etc., and therefore it will be difficult to determine the individual cost of each service provided by the state. Since this theory violates the definition and principles of taxation, the basis of taxation presented by the theory can be misleading, [2].

The limitations of the cost-of-service theory prompted its modernization, and this modernization led to the emergence of the theory of benefits received from taxes. Under this theory, citizens should bear taxes commensurate with the benefits they derive from government services. The theory assumes a reciprocal relationship between taxpayers and the government, with the government granting some benefits to taxpayers by providing social goods that these citizens can use. The inability to measure the benefits that an individual gets from those government services is a major barrier that makes this theory unworkable, [3].

The social and political theory of taxes indicates that social and political objectives rather than personal interest should be the main consideration in selecting the nature of a levy. It postulates a levy structure that will solve society's problems as opposed to catering to individual needs alone, [4]. This research is therefore based on this theory.

## 2.2 Experimental Studies

There are several empirical works that have been conducted to investigate the influence of tax on economic growth which include the impact of tax revenue and the Nigerian economy as cited in [1] of this document. However, the current study investigates the relationship between oil profits tax and the economic growth of the Nigerian economy and also the regression impact of corporate income tax and non-oil revenues collections on the Nigerian economy. The study primarily employed the use of multiple regression models ordinary least squares method to determine the relationship between independent and dependent variables. The results indicated that the relationship between the oil profit tax, the non-oil revenue, and economic growth was statistically significant but the relationship between corporate income tax and economic growth was not statistically significant. Therefore, the government should work to provide social facilities in the country, develop a workable tax administration overhaul to reduce tax evasion issues and thereby strengthen the tax base; create job opportunities across the country, and promote entrepreneurial activities and innovation in the country, using the tax they generate.

[5], a study done to investigate the connection between taxation and economic growth in Nigeria between 1980 and 2019, using Granger's technique for data analysis as well as theoretical framework such as the internal growth model followed by the Vector Error Correction Model (VECM). The results showed that value-added tax and personal income tax have a positive impact on economic growth, but there is a decrease in growth because of corporate income tax and oil income tax. The results of the study revealed how Nigeria's economic growth was affected by corporate income tax, value-added tax, and oil profits tax. Given these findings, there is a need to lower the corporate income tax rate in order not to discourage investors from putting their money in Nigeria, as is the case currently, to reduce the decline in corporate productivity and enhance other sectors of the economy.

The study [6] aimed to clarify the reality and development of tax revenues and determine the determining factors in Jordan, through the analysis of a set of economic and non-economic factors: represented by real GDP, consumer price index, foreign direct investment, economic openness and corruption, changes in tax laws, to reach the goal, during the period 1995-2019, and based on the results of diagnostic standard tests. The results of the study showed that both prices and GDP are

major determinants of tax revenues in Jordan and that corruption hurts tax revenues, while the results indicated that there is no clear impact of amendments to tax laws and legislation on tax revenues, and if any, it is very weak.

Based on these results, the study recommended the need to maintain the stability of price levels to prevent fluctuation of tax revenues and work to stimulate economic growth and fight corruption because of its impact on Increased tax revenues.

According to [7], the empirical long- and short-term relationship between general sales tax and economic growth in Jordan during the period 1980 to 2018 was studied, using the self-regressive distributed lag (ARDL) approach of co-integration to determine the relationship between short- and long-term variables. The results showed a complementary relationship between sales tax and economic growth, as the impact was positive on economic growth in the short term, but it showed a negative relationship in the long term. Hence, this study concluded that it is necessary to amend the tax system to make it more beneficial to Jordan's economic growth, [8], [9] and [10].

# 3 Model Specification

The relationship between tax revenues and economic growth in Jordan was expressed as follows:

$$GDP = F (CRD, C1T, GST, PIT) \quad (1)$$

It is expressed in a linear form as follows.

$$GDP = \alpha_0 + \alpha_1 CRD + \alpha_2 CIT + \alpha_3 GST + \alpha_4 PIT + \varepsilon \quad (2)$$

where:
GDP = Gross Domestic Product
CRD = Customs Tax
CIT = Corporate Income Tax
GST = General Sales Tax on Goods and Services
PIT = Personal Income Tax
α1- α4 = regression parameters
ε = random error

# 4 Standard Methodology and Equivalency Estimation

In order to test the long-term correlations between GDP, CRD, C1T, GST, and PIT, a three-step technique will be used: Each variable undergoes Dickey-Fuller Unit Root Testing in the first phase.

After estimating the autoregressive distributed lag (ARDL) model, we perform the cointegration constrained test if the variables are integrated in a different order, but there is no second-order integral variable provided they are integral. For the purpose of confirming the equilibrium relationships, we have evaluated the ARDL error correction model (ECM).

## 4.1 Stationarity Test

Time series are static if their mean (mean), variance, and covariance are constant over time, and therefore the traditional regression model is estimated for a relationship between static variables, and it cannot be applied to non-static data, where non-static data in economic applications show a spurious regression problem or a spurious correlation problem. If we do not reach a solution to the problem of non-dormant variables after taking the first difference, we can use the error correction model methodology, which is designed for the first difference of variables, and it removes the trend from variables and has an important role in solving the potential pseudo-correlation problem.

To estimate non-false equations, the non-rest of the variables is tested before estimating them, if they are static, we will get an appropriate regression, and we can use the dickey-fuller test where the hypotheses of the variables are tested and the question of variables is answered, do they have a unit root or not?

Accordingly, the time series stationarity was tested using the Dickey-Fuller ADF test to test the stationarity of the time series included in the described model at the level and at the first difference and we presented the results of the analysis in Table 1, and all-time series of variables were static at the first difference except CRD was static at the level.

Table 1. Unit root test results for variables

| Variable | *ADF* | |
|---|---|---|
| | *Level* | *1st difference* |
| GDP | -0.964848 | -3.378863** |
| CRD | -4.428365*** | - |
| CIT | 0.246900 | -9.866721*** |
| GST | -0.891204 | -14.49631*** |
| PIT | 0.157850 | -11.73389*** |

*Note: ***Significant at 1%, ** at 5% morale, * at 10% morale.*

## 4.2 Counteraction Test

If you find a long-term equilibrium relationship between the variables, we say that they are integrated, and if the variables are integral, you can avoid estimating a false regression even though the dependent variable and one of the independent

variables are at least non-static. Where a, the variables are static I(0) and I(1), and to show that the dependent variable and the independent variables are integrated, bounds tests will be performed. If we reject the null hypothesis of co-integration, even if some independent variables are non-static, we conclude that the independent variables are integral, the estimation of ordinary least squares is not false, and the equation is estimated by the values of its original variables at the level and is integrated from the degree I(0).

Table 2. Cointegration Test

| F-Bounds Test | | Null Hypothesis: No levels of relationship | | |
|---|---|---|---|---|
| Test Statistic | Value | Signif. | I(0) | I(1) |
| F-statistic | 30.76930 | 10% | 2.2 | 3.09 |
| k | 4 | 5% | 2.56 | 3.49 |
| | | 2.5% | 2.88 | 3.87 |
| | | 1% | 3.29 | 4.37 |

Table 2 shows the results of the integral-boundary test, and the null hypothesis is rejected, thus concluding that the variables are integral, the estimation of ordinary least squares is not false, and then the non-static variables are integral, the equation is estimated at its original values, and it is integral of degree zero I(0).

### 4.3 Error Correction Form Results in ARDL

To validate an ARDL model that includes integral variables, we estimated the ARDL (4, 0, 3, 0, 1) error correction model. Table 3 presents the results of the error correction model.

Table 3. Regression error correction

| ARDL Error Correction Regression<br>Dependent Variable: DLOG(RGDP)<br>Selected Model: ARDL(4, 0, 3, 0, 1) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| DLOG(RGDP(-1)) | -0.683687 | 0.046257 | -14.78032 | 0.0000 |
| DLOG(RGDP(-2)) | -0.796985 | 0.044316 | -17.98432 | 0.0000 |
| DLOG(RGDP(-3)) | -0.780939 | 0.049048 | -15.92186 | 0.0000 |
| DLOG(CIT) | 0.007193 | 0.003588 | 2.004771 | 0.0509 |
| DLOG(CIT(-1)) | -0.019974 | 0.004308 | -4.636779 | 0.0000 |
| DLOG(CIT(-2)) | -0.007450 | 0.003639 | -2.046994 | 0.0464 |
| DLOG(CRD) | 0.009798 | 0.013178 | 0.743472 | 0.4610 |
| CointEq(-1)* | -0.299568 | 0.020939 | -14.30674 | 0.0000 |
| R-squared | 0.978914 | | | |
| Durbin-Watson stat | 0.977798 | | | |
| * p-value incompatible with t-bounds distribution. | | | | |

To confirm the long-term relationship between the four variables CRD, C1T, GST, and PIT with GDP as a dependent variable, the error correction limit coefficient value must be in the equation Negative and significant (Table 3).

Table 4 shows the results of the long-term relationships between the variables: customs tax, corporate income tax, general sales tax, and individual income tax transactions were positive on GDP and statistically significant at 5%. In other words, increasing any of them has a positive impact on economic growth (Table 4).

Table 4. Equation of levels with GDP as a dependent variable

| Dependent Variable: DLOG(RGDP) | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LOG(PIT) | 0.061252 | 0.030495 | 2.008608 | 0.0505 |
| LOG(CIT) | 0.133664 | 0.039277 | 3.403103 | 0.0014 |
| LOG(GST) | 0.097874 | 0.039234 | 2.494598 | 0.0163 |
| LOG(CRD) | 0.141014 | 0.057984 | 2.431921 | 0.0190 |
| **C** | **6.764949** | **0.313337** | **21.59002** | **0.0000** |

As for the nihilistic hypothesis that "there is no statistically significant effect at a significant level less than 5% ($\alpha < 0.05$) customs taxes, corporate income tax, general sales tax and individual income tax on GDP "we cannot accept them at a significant level less than 5% for the t statistic", and therefore we say "there is a statistically significant effect at a significant level less than 5% ($\alpha < 0.05$) Customs taxes, corporate income tax, general sales tax and individual income tax on GDP."

## 5 Conclusion

Quarterly time data for customs taxes, corporate income tax, general sales tax, individual income tax, and GDP from 2008 to 2023 were analyzed to study the relationships between them. Unit root tests were applied and the AutoRegressive Distributed Lag (ARDL) model was used with boundary testing for cointegration. The results confirmed that customs taxes, corporate income tax, general sales tax, per capita income tax, and GDP are integrated when GDP is considered a Dependent variable. In addition, the negative and statistically significant value of the error correction model coefficient within the ARDL model showed the validity of the long-term relationship between these variables and GDP as a dependent variable.

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**Conflict of Interest**

The authors have no conflicts of interest to declare.