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Determinants of Tax Revenues in the Arab Countries

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Abstract

This study aimed to examine the impact of determinants of tax revenues represented by (GDP per capita, value added of the industrial sector, and value added of the agricultural sector) on the tax revenues of the Arab countries represented by (Jordan, Egypt, and Lebanon) for the period of time (2000-2020). The study used the analysis of time series and cross-sectional data using the autoregressive distributed lag model (ARDL) to test the hypotheses of the study.

The results of the analysis of the autoregressive distributed lag model, showed that GDP per capita, value added of the industrial sector, and value added of the agricultural sector have a positive and significant impact on the tax revenues of the Arab countries (Jordan, Egypt, and Lebanon) in the long run. Therefore, the per capita GDP, the value added of the industrial sector, and the value added of the agricultural sector are good determinants of tax revenues in the Arab countries. The study reached a number of recommendations, the most important of which is to work to reduce taxes on economic sectors such as the industrial and agricultural sectors, which stimulates an increase in production and employment, and increases the tax base, thus increasing tax revenues.

Keywords: Tax Revenues, Determinants, Value Added to The Industrial Sector.

Introduction

Tax revenues are an important issue that concerns to develop and developing countries alike, as they are the main source of funds to the state treasury to cover its current and capital expenditures. In order achieve these revenues; taxes imposed in a lawful and legal manner to ensure that public revenues are preserved.

Tax revenues are divided into direct taxes and indirect taxes and the difference between them can be clarified, as indirect taxes are considered value-added tax, which is imposed on transactions after subtracting the value of purchases, and it must be clarified that value-added tax constitutes two-thirds of public revenues. Indirect taxes also branch out excise tax and sales tax, and direct taxes include income tax, real estate property tax, and personal property tax. Which considered one of the main pillars in providing the state treasury with

the necessary financial resources to meet its current and capital expenditures (Shamia & Al Khatib, 2007).

There are many motives for addressing the determinants of tax revenues, including: Arab countries, especially those poor in natural resources, face continuous fluctuations in their tax revenues, and this is due to many factors, including economic, political and social factors.

The importance of this study derives from the importance of tax revenues so that it is the main source of income for countries. Especially those poor in natural resources, so that countries rely on them in their various consumption and investment expenditures. On the other hand, the importance of this study derived also, from its quest to reach results and recommendations that may benefit political and economic decision-makers, researchers and those interested in this field.

There are many determinants that affect tax revenues in Arab and non-Arab countries, including real GDP per capita (CPI), value added of the industrial sector (VAIND, value added of the agricultural sector(VAAG).

For the foregoing, this study came examine the impact of determinants / tax revenues in the Arab countries represented by the Arab Republic of Egypt, the Lebanese Republic and the Hashemite Kingdom of Jordan for the period (2000-2020).

Literature Review

Taxes considered one of the most important revenues that most countries depend on for their resources to cover government-operating expenses and finance public investment and economic projects. To serve the economic policy in the state as it is an indispensable financial resource. In order to face the financial and economic crises that the state may be exposed to, as financial revenues are considered the lifeblood that makes states with all their institutions able to carry out their multiple work and provided to all segments of society (Al-Amr, 2002).

Feudal economies have known this form of revenue since the middle Ages, when tax deductions closely linked to the political apparatus. For example, farmers and peasants who owned small units could not object to these deductions regardless of the amount of their business revenues. The resistance of tax collectors who deliberately use force and taxes paid in kind, and the matter evolved as it finally accepted in cash. However, the phased economic development and the emergence of commercial capitalism and then industrial capitalism led to an increase in the importance of taxes and expanded their scope so that they imposed on all economic activities after they were limited to Agricultural production only (Ahmed, 2012).

A number of definitions has defined tax for example, Elbatrik (2002) defined it as a cash deduction imposed by the Authority on individuals permanently and without consideration in order to cover public burden. Aziz et al (2013) defined tax as a monetary withholding that the state imposes on people according to their ability to pay, and not according to their benefit from the services, it provides. Therefore, it turns out that there is no relationship between what the individual pays from the taxes of public services and the amount of taxes that he receives.

Empirical Evidence

The Study of Minh, et al (2022) aimed to analyze the determinants of tax revenues in Southeast Asia based on a balanced data set from eight countries, and this study used the least squares method to analyze the data. Industrial to GDP have a positive impact on tax revenues, and the study recommended that Southeast Asian countries develop better policies

in international trade, attract foreign direct investment, and accelerate the process of economic restructuring.

Mekdelawit, Bizuneh (2022) examined the factors that affect tax revenues in Ethiopia from 1996-2020. The study used the distributed automatic regression model, and the study concluded that inflation has a positive effect on the tax, while the agricultural sector has a negative impact on tax revenues, and the presence of an effect Positive long-term political stability and inflation on tax collection, while corruption has a negative impact on tax revenues. The study recommended strengthening political stability and expanding tax bases to include more services-oriented businesses, and reduce dependence on agricultural sectors.

Tsaurai (2021) analyzing the determinants of tax revenues in high-income countries and exploring the impact of the interaction between foreign direct investment and financial development on tax revenues in middle-income countries. Human capital and population growth on tax revenues, while the exchange rate and trade openness have a negative impact on tax revenues.

Tujo (2021) investigated the factors affecting tax revenues in Ethiopia for the period (2000-2019). The study used the autoregressive distributed regression model. Concluded that inflation has a negative impact on the tax, while the agricultural sector and the industrial sector have a positive impact on tax revenues. The study recommended improving tax efforts with a focus on the industrial sector.

Gustofan (2021) examined the determinants of tax revenues in six countries in Southeast Asia during the period 2008-2019. This study adopted a regression model to analyze its data. The study concluded that per capita GDP and trade openness have a positive impact on tax revenues; in contrast to inflation, it has a negative impact on tax performance.

Chaudhry and Munir (2010) examined the determinants of tax revenue in Pakistan, and used the regression model to analyze the data. The results showed an increase in dependence on the agricultural sector and foreign aid, and that the Pakistani economy can generate a high tax rate to the gross domestic product. The study recommended expanding the tax base and controlling inequality Income, tax evasion and tax exemptions.

Al-qudah (2021) examined the determinants of tax revenues in Jordan during the period 1990-2019, and used the autoregressive distributed lag model (ARDL) to analyze the data in the long and short term. Foreign aid has a negative impact on tax revenues, the value added of the industrial sector and economic openness have a positive impact on tax revenues in the long and short term. and the results also indicated a decrease in government spending due to the upward trend in the deficit Fiscal and public debt leads to an increase in internal and external spending.

Tarawalie and Hemore (2021) aimed to show the determinants of tax revenues in Sierra Leone during the period 1990-2020, and the study relied on the automatic distributed regression test to analyze the data in the long and short term. Taxation in Sierra Leone in the long and short term, while inflation has a negative impact on tax revenues in Sierra Leone in the long term and the short term.

Boukbech and Bousselhami (2019) aimed at analyzing the determinants of tax revenues in developing countries during the period 2001-2014. The study used the cross sectional time series model to analyze the data. The results of the study showed that per capita gross domestic product and the added value of the agricultural sector have a positive impact on tax revenues in developing countries. The population growth rate has a negative impact on tax revenues, while inflation, public spending and economic openness have a positive impact on tax revenues in developing countries.

Akintoya et al (2019) aimed to show the determinants of tax revenue in Nigeria. the study evaluated the impact of political stability and the absence of violence as an institutional factor in association with economic factors that are the share of the industry in the GDP. They used the autoregressive distributive lag model (ARDL) to analyze the data in the long and short term. They concluded that there is a relationship Positive relationship between political stability, absence of violence, and tax revenues in Nigeria. The study recommended that the government improve political stability and absence of violence in Nigeria, and improve tax revenues through voluntary compliance with tax laws.
aimed to investigate the impact of tax revenue determinants on the growth of tax revenues in Ghana, and the study used the autoregressive distributed lag model to analyze the data. Amoh and Adom (2017) they concluded that foreign direct investment, the value added of manufacturing industries, the value added of services, public debt balances, and government consumption spending have a negative impact on revenue growth taxation in Ghana.
Castro and Camarillo (2014) analyze the impact of economic, structural and social factors on tax revenues in OECD countries for the period 2001-2011. The study used panel data analysis. The results showed that the per capita GDP and the industrial sector have a positive impact on tax revenues, while the agricultural sector and the ratio of foreign direct investment to Gross fixed capital formation has a negative impact on tax revenues.
The most important thing that distinguishes this study from previous studies is that most of the previous studies conducted on non-Arab countries, so this study came to provide additional practical evidence on the determinants of tax revenues in Arab countries using cross-sectional time series data and the (ARDL) model.

Descriptive Analysis
Table No. (1) Shows the descriptive analysis of the study variables.
Table No. (1)
Descriptive Analysis

STD	minimum	maximum	median	Mean	
2.825	10.879	24.690	14.951	15.324	**TR**
1,850.430	2,664.642	9,115.060	4,221.090	5,045.336	**PCI**
8.192	12.499	39.890	25.223	25.252	**IND**
4.315	1.953	15.405	4.506	6.632	**AGR**

The mean of tax revenues to GDP was (15.324%), the median was (14.951%), the standard deviation was (2.825%), the minimum value was (10.879%) and the upper value was.(%24.69)
The results showed that the mean per capita real GDP amounted to (5,045.336) US dollars, the median was (4,221.09) US dollars, and the standard deviation was (1,850.43) US dollars. The highest value was (9,115.06) US dollars, and the lowest value was (2,664.642) US dollars.
The results indicated that the highest value added to the industrial sector to the gross domestic product was (39.890%) and the lowest value was (12.499%). The arithmetic mean was (25.252%) and the standard deviation was.(%8.191)
The results also indicated that the highest value added to the agricultural sector to the gross domestic product (15.405%) and the lowest value (1.953%), with the arithmetic mean (6.632%) and the standard deviation (4.315%).

Pearson Correlation Coefficient

Table No. (2) Shows the Pearson correlation coefficient between the variables of the study, as it shows the nature of the relationship between the variables, whether the relationship is direct or inverse.

Table No. (2)

Pearson correlation coefficient

AGR	IND	PCI	TR	
			1.000	**TR**
		1.000	0.020	**PCI**
	1.000	-0.558	0.182	**IND**
1.000	0.466	-0.574	-0.515	**AGR**

The results showed that there is a weak direct relationship between each of (per capita real GDP and value added of the industrial sector to GDP) and tax revenues to GDP, and a weak inverse relationship between value added of the agricultural sector to GDP and tax revenues to the gross domestic product.

Data and Methodology

Data

The data of the study (tax revenues to GDP, per capita income from real GDP, value added of the industrial sector to GDP, value added of the agricultural sector to GDP) were obtained from the World Bank database.

Methodology

The study used both the descriptive and the quantitative analytical approach, as the descriptive approach was used by referring to previous studies and scientific research published to write the theoretical framework, while the quantitative analytical approach was used by stating the determinants of tax revenues in the Arab countries (Jordan, Egypt, Lebanon) During the time period 2000-2021.

Econometric Model

The study model formulated based on previous studies as a study (Castro, 2014; Teref, 2018; Alqudah, 2021) in order to clarify the determinants of tax revenues in the Arab countries (Jordan, Egypt, Lebanon) during the period 2000-2021 through the following econometric model:

$TR_{it} = f(PCI_{it}, IND_{it}, AGR_{it})$……(1)

The linear form of the model as follows:

$$TR_{it} = \alpha_0 + \alpha_1 PCI_{it} + \alpha_2 IND_{it} + \alpha_3 AGR_{it} + U_t \text{……(2)}$$

where:

TRit: tax revenue to the GDP of the country i over the time period t.

PCIit: real GDP per capita for country i over time period t.

INDit: The value added of the industrial sector to the GDP of country i over time period t.

AGRit: the value added of the agricultural sector to the country's GDP i during time period t.

Ut: the random error term.

Unit Root Test

The unit root test is considered one of the most important tests that must be performed before estimating the study model in order to ascertain the degree of stationary time series of the study variables and to determine the appropriate methodology for estimation. The study is at the level of significance of 5%, the most important of which are (Levin, Lin and Chu Test (LLC)), (Fisher-PP test), (Hadri test), and (Breitung test) (Gujarati & Porter, 2009). The (LLC) test was used to ascertain the degree of stillness of the study variables, and Table No. (3) Illustrates this.

The results showed that all study variables: (tax revenues to GDP, per capita income from real GDP, value added of the industrial sector to GDP, value added of the agricultural sector to GDP) were not stationary at the level of significance level 0.05 %. All variables became stationary after taking the first difference, and thus the null hypothesis rejected, which states that the study variables are not stationary at the first difference at the 0.05% level of significance.

Table No. (3)
LLC Test Results

Variable	At Level at 5%	At first Difference at 5%	Stationary
TR	0.42085 (0.6631)	-3.45657 (0.0003)	I(1)
PCI	-1.15785 (0.1235)	-1.92309 (0.0272)	I(1)
IND	-0.82611 (0.2044)	-3.30788 (0.0005)	I(1)
AGR	2.44715 (0.9928)	-3.25266 (0.0006)	I(1)

Determination of the Number of Lag Periods

In order to cancel the Serial Correlation problem to the error term. it is necessary to determine the number of appropriate lag times, by using several criteria such as Hannan – Quinn (HQ), Schwarz Info Criterion (SIC), Akaike Info Criterion (AIC), Likelihood Ratio Test (LRT) and Final Prediction Error Criterion (FPE) to help find the number of model lag times (Lu, 2011). Table No. (4) Shows the results of this test.

Table No. (4)
Determination of the number of time lag periods test.

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-748.9834	NA	1.94e+09	32.73841	32.89742	32.79798
1	-530.3207	389.7901	290375.2	23.92699	**24.72205***	24.22482
2	-504.0508	**42.26029***	**188981.8***	**23.48047***	24.91158	**24.01657***
3	-496.7868	10.42236	288380.3	23.86029	25.92745	24.63466
4	-479.1397	22.25065	291853.6	23.78868	26.49189	24.80132
5	-470.1810	9.737718	457902.0	24.09483	27.43408	25.34573

The results showed in Table No. (4) That the number of periods of time lag for the study model is (2) two periods based on the (AIC) criterion.

Cointegration Test

To ensure the existence of a long-term complementary relationship between the variables of the study, the Pedroni Engel - Granger test was used for cointegration, which is based on testing the null hypothesis, which states that there is no cointegration between the variables of the study at the level of significance of 5%. Table No. (5) Shows the results of this test.

Table No. (5)
Cointegration Test

Within dimension	**Statistic**	**Prob.**	**Weighted statistics**	**Prob.**
Panel v-Statistic	2.333710	0.0098	1.916293	0.0447
Panel rho-Statistic	2.301309	0.0093	2.699541	0.9965
Panel PP-Statistic	-1.784187	0.0372	0.871530	0.8083
Panel ADF-Statistic	-1.912833	0.0279	0.473514	0.6821
Between dimension	**Statistic**	**Prob.**		
Group rho-Statistic	3.786621	0.0009		
Group PP-Statistic	1.403818	0.9198		
Group ADF-Statistic	1.317570	0.0062		

The results of the Pedroni Engel-Granger Test for cointegration in Table 5 indicated that most of the statistics are significant (seven out of eleven statistics), and the null hypothesis, which states that there is no cointegration between the determinants of tax revenues in the study sample countries, was rejected when 5% significance level.

Estimating the Study Model

The study model (determinants of tax revenues in the Arab countries) was estimated using dynamic PANEL models using the autoregressive distributed deceleration method (PMG / ARDL), a method that combines the group mean method (PMG) and the traditional pooled estimation method (Peseran et al., 1999). Table No. (6) shows the results of estimating the study model.

Table No. (6)
Estimating the study model using the (PMG / ARDL) method

Long run equation				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
PCI	0.001479	0.000798	1.852445	0.0727
IND	0.260280	0.066871	3.892288	0.0004
AGR	0.315439	0.140789	2.240506	0.0233
Short run equation				
COINTEQ01	-0.585373	0.183044	-3.197988	0.0030
D(PCI)	0.006808	0.005428	1.254305	0.2183
D(PCI(-1))	0.007832	0.003871	2.023172	0.0510
D(IND)	-0.376682	0.233699	-1.611825	0.1162
D(IND(-1))	-0.233255	0.361502	-0.645239	0.5231
D(AGR)	-1.139157	0.815277	-1.397263	0.1714
D(AGR(-1))	-0.660670	0.474565	-1.392160	0.1729
C	6.218602	1.529947	4.064587	0.0003

The results in Table No. (6) indicated the significance of the study variables at a significant level of 10%. The long-term study equation can be written as follows:

TR = 0.001 PCI + 0.260 IND + 0.315 AGR

The effect of the independent variables on the dependent variable (tax revenues) can be explained as follows:

The results showed that there is a statistically significant direct effect at the level of significance of 10% of the real GDP per capita on tax revenues, as an increase in the per capita real GDP by one unit leads to an increase in tax revenues by (0.001) units with constant factors. this is consistent with the study of each of (Castro, 2014; Gustofan, 2021; Teref, 2018; Alqudah, 2021; Tujo, 2021). The null hypothesis was rejected, which states that "there is no statistically significant effect of real GDP per capita on tax revenues at the significance level ($\alpha \leq 0.10$). This is consistent with the expected economic hypothesis between real GDP per capita and tax revenues. As the per capita income of the real GDP increases the size of the tax base and the income withheld from the tax on the one hand, and the demand for shopping and purchasing goods and services. The increase in economic development and its reflection on the economy on the other hand, and therefore the increase in the per capita income of the real GDP it leads to higher tax revenues, which indicates a positive relationship between real GDP per capita and tax revenues (Al-Khatib, 2006).

The results showed that there is a statistically significant direct effect at the level of significance of 5% of the value added of the industrial sector to the gross domestic product on tax revenues. As an increase in the value added of the industrial sector to the gross domestic product by one-unit leads to an increase in tax revenues by (0.260). Unit, ceteris paribus. This is consistent with the study of (Castro, 2014; Minh et al., 2022; Teref, 2018) and contradicts the study of (Tujo, 2021). The null hypothesis was rejected, which states that "there is no statistically significant effect of the added value of the industrial sector on tax revenues at the level of significance ($\alpha \leq 0.05$). This is consistent with the expected economic hypothesis between the value added of the industrial sector and tax revenues. As the greater the production this led to an increase in the income of the industrial sector, and thus an increase in the direct tax rate, represented by taxes on corporate income, and an increase in indirect taxes, which are represented by sales tax and production fees. Therefore, the

increase in the added value of the industrial sector leads to an increase in tax revenues, which indicates the existence of a relationship. There is a direct correlation between the added value of the industrial sector and tax revenues (Alwan, 2008).

The results showed that there is a direct and statistically significant effect at the level of significance of 5% for the value added of the agricultural sector to GDP on tax revenues, as an increase in the value added to the industrial sector to GDP by one unit leads to an increase in tax revenues by (0.315). Unit, ceteris paribus. This is consistent with the study of each of (Teref, 2018; Alqudah, 2021) and contradicts the study of each of (Castro, 2014; Tujo, 2021). The null hypothesis was rejected, which states, "There is no statistically significant effect of the added value of the agricultural sector on tax revenues at the level of significance ($\alpha \leq 0.05$). This is consistent with the expected economic hypothesis between the value added of the agricultural sector and tax revenues. As the greater the production Agricultural, this led to an increase in the income of the agricultural sector, and thus an increase in the proportion of the cut-off tax on the state sectors. The extent of its impact on the revenues of taxpayers, and therefore the increase in the added value of the agricultural sector leads to an increase in tax revenues. Which indicates the existence of a direct relationship between the value added of the agricultural sector and tax revenues (Alwan, 2008).

Conclusions and Recommendations

The study aimed to show the determinants of tax revenues in the Arab countries (Jordan, Egypt, Lebanon) during the period 2000-2021, and the results reached the following:

The results showed that there is a statistically significant direct effect at the level of significance of 10% of the real GDP per capita on tax revenues, as an increase in per capita GDP by one unit leads to an increase in tax revenues by (0.001) units with stability other factors. Also, the results showed that there is a statistically significant direct effect at the level of significance of 5% for the value added to the industrial sector to GDP on tax revenues, as an increase in the value added to the industrial sector to GDP by one unit leads to an increase in tax revenues by (0.260) unit, ceteris paribus.

and the results showed that there is a statistically significant direct effect at the level of significance of 5%, for the value added of the agricultural sector to the GDP on tax revenues, as an increase in the value added of the agricultural sector to the GDP by one unit leads to an increase in tax revenues by (0.315) unit, ceteris paribus.

Recommendations: In light of the findings of the study, the study recommends the following: Work to reduce taxes on productive economic sectors such as the industrial and agricultural sectors. Putting in place deterrent laws concerned with preventing tax evasion instead of raising taxes on individuals and sectors. Expanding the tax base to include many businesses oriented towards services and luxury goods. And conducting more studies on the determinants of tax revenues in the Arab countries to include many countries and other variables that were not covered by the current study.

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