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The Impact of Tax Revenue on Macroeconomic Variables: A Case Study from Palestine

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Abstract

Taxes are a vital component of fiscal policy. Governments use tax revenues to either stimulate or slow down an economy. The purpose of this paper is to examine the cause-and-effect relationship between taxes and inflation, Real GDP, Real GDP Per Capita, and unemployment for the State of Palestine. The data was collected from the Palestinian Monetary Authority, covering the period from 1996 to 2022. A time series analysis was conducted to measure the cause-and-effect relationship. The results indicated that taxes are positively significant for both Real GDP and Real GDP Per Capita. This finding helps policymakers in determining the impact of tax revenue on the Palestinian economy, especially since Israel controls some of the collection of tax revenues. Meanwhile, taxes were not significant for either inflation or unemployment.

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Introduction

The nexus between taxes and macroeconomic variables such as unemployment, inflation, and economic growth has long been a subject of intense debate and empirical scrutiny among economists. This interplay takes on even greater significance in the context of developing economies, where fiscal imbalances and macroeconomic instability can pose formidable challenges to growth and development. One such economy is Palestine, a region beset with a myriad of

economic and political complexities.

The purpose of this paper is to explore the effect of tax revenue on unemployment, inflation, and economic growth in Palestine. As a case study, it will shed light on the intricate dynamics of these economic factors within a unique geopolitical context.

Tax revenue, a critical source of government finance, plays a pivotal role in shaping a country's fiscal policy and, by extension, its macroeconomic environment.

Through rigorous empirical analysis, this study hopes to contribute to the existing body of literature on fiscal policy and macroeconomic performance, with a particular focus on the Palestinian context. The findings of this study could potentially guide effective policymaking, fostering sustainable economic growth, and alleviating the pressing issues of unemployment and inflation in Palestine.

Taxes play an important role in fiscal policy for a country’s economy. In developed countries, taxes are used to achieve economic stability. On the other hand, in developing countries, taxes are used to achieve economic development. The government utilizes taxes to raise the economic and productive efficiency of a country by monitoring economic resources and exploiting them to their full potential (Hijazi, 2001). Tax legislation influences investment, consumption, savings, employment, and inflation in an economy. (AL-Mahaeni, 2003).

In 1994, the Oslo Agreement was reached, resulting in the establishment of the Palestinian National Authority. In 2004, the Palestinian Legislative Council established the first Palestinian Income Tax Law (Act 17/2004), which took effect legally in the year 2005. During the Israeli occupation era prior to 2005, the Jordanian and Egyptian income tax laws were enforced in the West Bank and Gaza, respectively (Alawna, 1992). In 2011, major reforms were made to the Palestinian Income Tax Law, which resulted in the adoption of a new Income Tax Law (Act 8/2011). One of the major changes was the use of the Israeli currency (Shekel) for taxing Palestinian income, in addition to rate reductions and exemptions.

The Council of Tax Administration in the Ministry of Finance is responsible for administering Palestinian tax matters. The Council is structured into five directorates differentiated by type of taxes, namely the General Directorate of Income Taxes, the General Directorate of Property Taxes, the General Directorate of Customs, Excise, and Tobaccos, the General Directorate of Value Added Tax, and the General Directorate of Petroleum.

In addition, according to the Paris Economic Protocol signed between the Palestinian Authority and the Israeli Government, some taxes are collected by the Israeli government on behalf of the Palestinian Government. These taxes are known as the ‘maqasa,’ and they should be transferred to the Palestinian Government; they include the following:

1. **Direct taxes on Palestinian labor wages:** This refers to income tax deducted from Palestinian workers' salaries.
2. **Indirect taxes on imports from Israel:** These include various taxes such as VAT (Value Added Tax) and customs duties on goods imported from Israel into the Palestinian territories.
3. **Indirect taxes on imports from other countries:** These may include taxes such as VAT, customs duties, and other fees levied on goods imported into the Palestinian territories from countries other than Israel. (Hillis, 2021)

The collected taxes, maqasa, are supposed to be transferred to the Palestinian Authority on a regular basis according to agreed-upon procedures outlined in the protocol. The purpose of this arrangement is to support the Palestinian Authority financially and enable it to carry out its governmental functions, including providing public services and infrastructure development. The maqasa system has created a level of economic dependency of the Palestinian Authority on Israel. Since the PA relies on Israel for the collection and transfer of significant portions of its revenue, any disruptions or delays in the transfer of these funds can have serious consequences for the Palestinian economy and the functioning of the Palestinian government. The control and transfer of tax revenues through the maqasa system also have political implications. It can be used as a tool by Israel to exert pressure on the Palestinian Authority or to influence political developments in the region. Disputes over tax revenues and delays in their transfer have been sources of tension between the two parties in the past (Hillis, 2021).

Table 1 shows the Palestinian government fiscal indicators from 1996 to 2022.

Table 1. The Palestinian government fiscal indicators from 1996 to 2022

	Tax revenue (including clearance – USD Million)	Non-tax revenue (USD Million)	Current Revenues/Current Expenditures (%)	External support to the budget (USD Million)	Government debt/GDP (%)
1996	559.6	85.9	77.8	291.5	7.6
1997	689	118.3	93	268.1	10.7
1998	771.6	96.8	103.5	236.3	13.5
1999	827.5	114	99.9	244.9	15.2
2000	828	111	78.3	510	20
2001	183	92	24.9	849	21.8
2002	213	82	29.2	697	21.1
2003	639	124	60.2	620	21.4
2004	904	146	68.7	353	23.1
2005	1,125.00	245.00	68.70	636.00	24.80
2006	565	157	50.6	1019	22.2
2007	1,520.00	122.00	63.00	1,322.00	26.40
2008	1,409.80	486.20	54.40	1,978.10	23.30
2009	1,391.50	283.60	53.00	1,401.80	23.90
2010	1,673.20	254.50	63.00	1,187.00	21.10
2011	1,969.60	220.00	73.50	977.50	21.10
2012	2,057.60	232.10	73.50	932.10	22.00
2013	2,287.70	254.40	71.40	1,358.00	19.00
2014	2,658.30	270.50	81.00	1,230.40	17.40
2015	2,653.50	249.80	83.90	796.80	20.00
2016	2,958.40	607.10	97.00	766.30	18.50
2017	3,241.70	390.80	96.20	720.40	15.80
2018	3,093.50	430.30	94.60	664.80	14.60
2019	2,982.50	355.70	89.90	492.10	16.30
2020	3,137.30	374.60	89.20	464.10	23.50
2021	3,771.80	402.50	104.70	321.40	21.20
2022	4,293.00	458.10	112.70	344.80	18.50

Source: Palestine Monetary Authority https://www.pma.ps/en/Statistics//TimeSeriesData

We noticed from the table above that there is a general upward trend in tax revenue over the years, with tax revenue in 1996 at $559.6 million increasing to a total of $4,293 million. At the same time, non-tax revenue also shows an increasing trend, indicating potential diversification in revenue sources or improved revenue collection mechanisms. The Current Revenues to Current Expenditures ratio reflects the government's ability to cover its current expenditures with its current revenues, where higher percentages indicate healthier fiscal management. The significant fluctuations in external support to the budget highlight the vulnerability of Palestine's fiscal situation to changes in international aid and support. The ratio of government debt to GDP provides insights into the country's debt sustainability. Lower percentages suggest healthier debt levels relative to the size of the economy, where in 1996 the debt to GDP ratio was 7.6%, reaching 18.5% in 2022,

showing a significant increase.

Table 2 shows macroeconomic indicators for Palestine covering years from 1996 to 2022.

Table 2. Macroeconomic indicators for Palestine covering years from 1996 to 2022

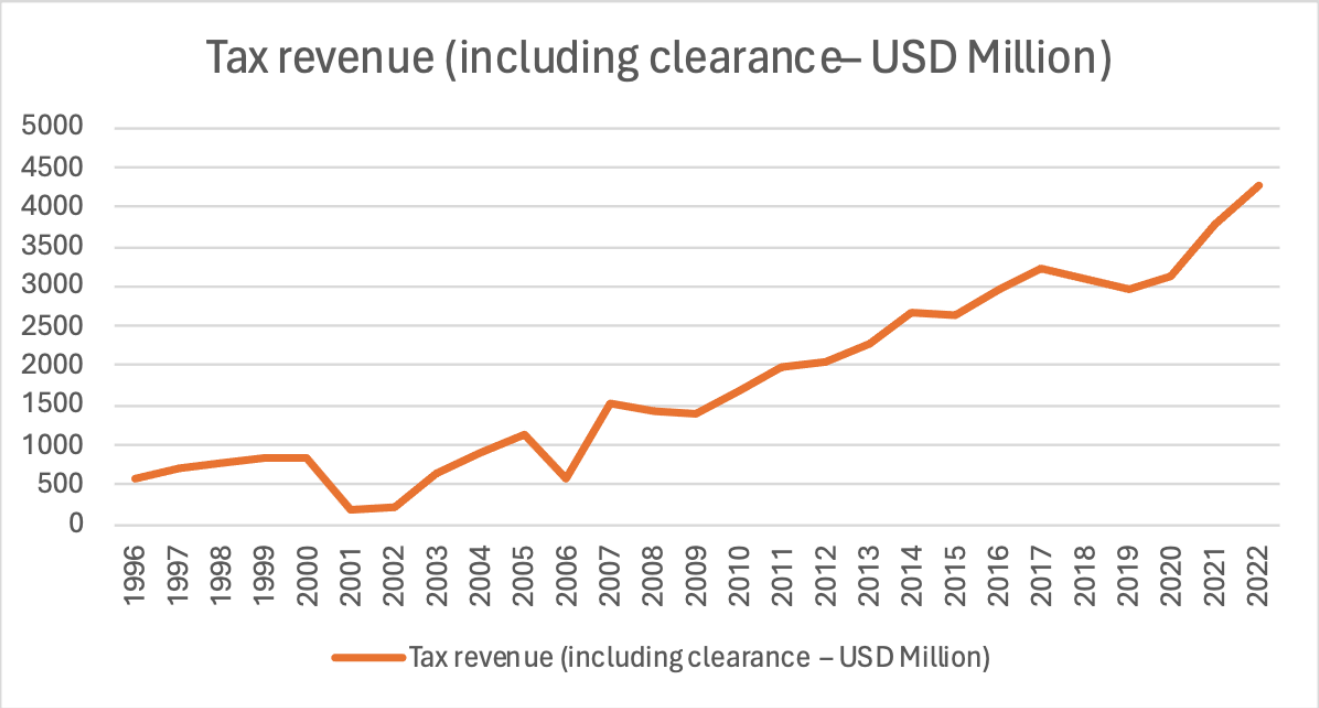
Year	Unemployment rate (%)	Consumer price index (2018 = 100)	Real GDP per capita (USD)	Real GDP at (2015) prices (USD)
1996	23.8	49.58	2249.2	5483.5
1997	20.3	53.09	2442.2	6287.8
1998	14.4	56.05	2701	7189.1
1999	11.8	59.16	2830.2	7784.4
2000	14.3	60.82	2506.5	7118.4
2001	25.3	61.56	2208	6455.6
2002	31.2	65.08	1877.6	5649.4
2003	25.5	67.94	2080.1	6441.2
2004	26.8	69.98	2463.6	7853.4
2005	23.50	72.86	2,659.20	8,740.10
2006	23.7	75.66	2553.3	8653
2007	21.70	77.06	2,570.00	8,980.80
2008	26.60	84.69	2,686.90	9,648.00
2009	24.50	87.02	2,841.90	10,477.10
2010	23.70	90.28	2,929.80	11,082.40
2011	20.90	92.88	3,131.60	12,146.40
2012	23.00	95.46	3,242.10	12,886.90
2013	23.40	97.11	3,314.50	13,492.40
2014	26.90	98.79	3,233.00	13,471.10
2015	25.90	100.20	3,277.90	13,972.40
2016	26.90	99.98	3,489.80	15,211.00
2017	25.70	100.20	3,463.10	15,426.90
2018	26.20	100.00	3,417.70	15,616.20
2019	25.40	101.58	3,378.30	15,829.00
2020	23.40	100.83	2,922.50	14,037.40
2021	26.40	102.08	3,051.50	15,021.70
2022	24.40	105.90	3,086.80	15,612.50

Source: Palestine Monetary Authority https://www.pma.ps/en/Statistics//TimeSeriesData

These indicators offer insights into the economic performance and welfare of the Palestinian population over time. The unemployment rate fluctuates over the years but generally shows a decreasing trend from the late 1990s to the early 2010s before experiencing some fluctuations in later years. The CPI reflects changes in the cost of living and inflation

rates. It generally increases over the years, indicating a rise in prices and inflationary pressures, although there are fluctuations. Real GDP per capita measures the economic output per person, adjusted for inflation. It generally increases over the years, indicating economic growth and improvement in living standards. Real GDP at constant prices provides a measure of the total economic output, adjusted for inflation. It shows an overall increasing trend over the years, reflecting economic growth.

The graph below shows the Tax Revenues from 1996 to 2022.



Graph 1. Tax Revenue for Palestine for the period from 1996 to 2022

The graph above shows the tax revenue over time. We notice that there is an overall increase in tax revenue over time. The graph shows that there was a decrease in tax revenue in 2001 and 2002. This decrease was due to the political instability caused by the Second Intifada. With the end of the Second Intifada, the tax revenue continued to increase till 2006, where it took another downward drop. This was caused by the political instability caused by the elected Hamas-led government. However, after the resolution of that government, tax revenue was monotonically increasing till the year 2022.

The paper will proceed as follows: the next section will discuss the relevant theoretical framework; the literature review section will state the relevant literature for the paper; the methodology section will explain the model that will be used in the analysis process; the results section will show the output from the EViews software; and finally, the conclusion section will assert the ending remarks of the paper.

Theoretical Framework

The main challenge for governments around the world is to permanently increase the well-being of citizens by implementing appropriate economic policies and programs through direct participation in local and global economic activities. Governments try to achieve this goal by providing public goods, such as roads, bridges, dams, ports, and public services such as education, security, health, sanitation, etc., that constitute the economic and social infrastructure. All of these economic activities generate lucrative employment opportunities and accelerate economic growth and development in the short, medium, and long term (Kawano and Slemrod, 2016).

Taxation is defined as the transfer of real economic resources from the private sector to the public sector to finance public sector activities. It is the transfer of financial resources from private economic agents such as households and corporate bodies to the public sector to finance community development (Okeke, et. al, 2018).

The tax system leverages itself as a real tool that mobilizes the nation's internal resources and also lends itself to creating an enabling environment for promoting economic growth. Therefore, taxes play a major role in helping the country meet its needs and promoting self-reliance. The need for tax payments has been a phenomenon of global importance as it affects every economy regardless of national differences.

Taxes are one of the most important economic tools used by governments to finance public spending and achieve economic and social development in countries. Here are some of their importance (Tchamyou and Asongu, 2017):

1. Financing public spending: Taxes are collected from individuals and companies and directed to finance public services, such as health, education, transportation, security, etc., in order to improve the quality of life for citizens.
2. Stimulating economic growth: Taxes help finance economic projects, provide infrastructure, and encourage private investments, which enhances economic growth and increases job opportunities.
3. Distributing wealth more equitably: Taxes can be used to balance the distribution of wealth in society, as the wealthy are taxed at higher rates than the poor, which helps reduce the gap between social classes.
4. Controlling prices and inflation: Taxes can be used to control prices and inflation, as a tax can be imposed on luxury and entertainment products to reduce excess spending and inflation.
5. Improving the trade balance: Taxes can be used to improve the economic balance in countries, as taxes can be imposed on imported products to encourage local industries and improve the trade balance.

In the nineteenth century, the modern tax system was developed as countries began to determine the type and rates of taxes based on income, wealth, and consumption. In the twentieth century, countries began to develop the tax system further, and taxes began to include all people and companies at specific rates according to the different types of taxes, such as taxes on income, value added, inheritance, gifts, real estate, sales, etc. The modern tax system requires continuous development and modernization as the economy, technology, financial systems, and tax laws change continuously, which requires updating the tax system to keep pace with these changes and ensure the sustainability of tax revenues (Terefe and Teera, 2018).

Tax revenues are the incomes that the government receives from imposing taxes on citizens, residents, companies, and institutions. These revenues include all types of taxes imposed by the government, such as income tax, value-added tax,

corporate tax, and other taxes. Tax revenues also help stimulate economic growth, enhance investment in infrastructure and public projects, and contribute to providing financial stability for the government and the state. The size of tax revenues depends on several factors, such as quality, tax rates, size of the economy, employment rate, national income, economic growth rates, and others. Tax revenue levels vary between different countries, as tax rates, types of taxes, and levels of the economy differ between different countries (Tchamyou and Asongu, 2017).

Total tax revenue as a percentage of GDP reflects the government's share in raising the economy's resources through taxes. This measure can be used as an indicator of the government's ability to control the state's resources. The tax burden is measured by total tax revenues as a percentage of GDP. This indicator includes all levels of government and is measured in millions of dollars and as a percentage of GDP (Tchamyou, 2019).

In short, taxation is the transfer of income or resources from the private sector to the public sector in order to empower the public sector to implement some - if not all - of the nation's economic and social goals. Taxes may be imposed on wealth, income, or in the form of price surcharges, and these taxes may be collected through the following revenues (Akhor and Ekundayo, 2016):

- Direct taxes: These are taxes imposed directly on a person or company, and these persons or companies are expected to pay the taxes. In other words, a direct tax is a tax imposed directly on the income and property of individuals and companies, and it includes the following: personal income tax, corporate income tax, petroleum profits tax, capital gains tax, and others.
- Indirect taxes: These are taxes imposed on people or groups who are not intended to bear the burden or occurrence but will pass it on to other people. They are usually imposed on goods or services that do not fall directly on the producer or the first payer but on their final payers and consumers.

Economic growth is defined as the process by which the real income per capita of a country increases over a long period of time and is measured by the increase in the quantity of goods and services produced in a country. A growing economy produces more goods and services in each successive period of time. Hence, from a broader perspective, it means raising people's standard of living and reducing inequality in income distribution.

Economic growth is the basis for increased prosperity and comes from the accumulation of more capital and innovations that lead to technical progress. This is an idea similar to the growth model, which considers economic growth in terms of growth in gross domestic product due to the increase in population, technical progress, and investment, and growth according to... Classical economics denotes an increase in the rate of investment. In other words, economic growth is a function of the share of profit in national income. There is a positive relationship between a high rate of profit and a high growth rate in the long run (Nelson, 2000).

Unemployment is the state of not having a job or job opportunity for an individual who is looking for work and can work. The unemployment rate is the ratio of individuals who are looking for work and cannot find it to the total labor force in the country or a specific region. Unemployment may occur for many reasons, such as the lack of vacant jobs, the lack of suitability of the skills needed for the available jobs, changes in the economy or labor market, lack of investment in

economic sectors with a large workforce, and other reasons (Zhattau, 2013).

Unemployment greatly affects the individual and society, as it can lead to poverty and social and psychological disorders, affect economic growth and development in countries, and increase pressure on social protection systems, governments, and various institutions. Therefore, economists and government officials work to analyze and understand the causes of unemployment and develop policies and solutions to reduce it and provide job opportunities for individuals in society (Fakhri, 2011).

Inflation is an increase in the general price level of goods and services in an economy, which reduces the purchasing power of the local currency. More specifically, inflation can be defined as an increase in the level of prices of goods and services offered in the market for a long period of time, which leads to a reduction in the purchasing power of the local currency.

Inflation is defined as the case of an increase in the general price level of a wide range of goods and services over a long period of time. It is measured as the rate of increase in the general price level during a specific period of time. As for the neoclassicals and their followers, inflation is essentially a monetary phenomenon. (Gupta and Lynch, 2016)

The inflation rate varies from one country to another and varies based on several factors such as the level of spending, economic growth, central bank and government policies, and the size of the total supply of goods and services available in the market. When the inflation rate exceeds the desired rate, this is considered an economic problem that must be dealt with to avoid its negative effects.

Unemployment and inflation remain issues of concern, especially in developing countries, and especially for policymakers and researchers alike. This is because unemployment and inflation are two of the key macroeconomic indicators and determinants of economic growth and development that are considered priorities for any economy. For several decades, economic performance has not been impressive. The persistence of the economic crisis, with its attendant problems of high inflation, high exchange rates, debt accumulations, an adverse balance of payments, and high unemployment rates, is difficult to explain (Sanusi, 2012).

Now we will consider the different theories that study the relationship between taxes and macroeconomic variables. Ricardo is considered one of the most prominent thinkers of the classical school, who worked to deepen the views and ideas of this school, and through his analysis of the growth process, and the division of society's resources into three categories (land, labor, and capital), he considered the capitalist class to be the producer and necessary for the process of economic growth. This is because it consumes a small part of its income that comes from profits, and the rest turns into savings, which is considered the basis for capital accumulation (Kurz, 2010).

Ricardo confirms that taxes are an important factor in financing economic growth, but he warns against increasing their rates on the profits of capitalists, so as not to hinder the flow of economic growth.

The Keynesian model is another theory that explains the relationship between economic growth and social transformations, and it is considered one of the most widely used models in the study of economic development. The

hypothesis of the Keynesian model is based on the fact that income rises over time. There is a period of time in which societies are characterized by increased productivity and economic growth, and then there is a reversal in the long term. This growth results in social transformations that include the increase of the middle classes and social separation, which leads to a trend where the model naturally moves toward stability. The Keynesian model is used to study the effect of economic growth on the distribution of wealth in society. According to the model, wealth and income rise over time, and when societies reach a certain level of wealth, the distribution of wealth shifts from being concentrated at least below them to a more equal distribution, and economic growth contributes to this transition. The Keynesian model can be used in taxation by analyzing the effect of tax policies on the distribution of wealth. For example, governments can use taxes to direct economic growth towards higher levels of income, thus contributing to reduce inequality in distribution, but if taxes are imposed unfairly, this can increase inequality in distribution between economic groups (Roberts, 1978).

To study the cause-and-effect relationship between taxes and GDP, we can start with the simple Keynesian model stating that GDP is represented by the following equation:

$$GDP = C + I\,(r) + G(t) + (X\text{-}M)$$

Where C represents consumption; I is investment; r is the interest rate; G is government spending; T is taxes; X is exports; and M is imports.

According to the simple Keynesian model above, taxes have a direct effect on GDP. Keynes realized that through taxes, governments can either stimulate or slow down an economy.

In other words, taxes are a vital component of fiscal policy.

Literature Review

A vast literature has studied the relationship between taxes and macroeconomic variables.

Hillis (2021) studied the economic and political effects of the withholding of the maqasa (clearance tax) by the Israeli government on the Palestinian economy. The paper concluded that this withholding will affect the Palestinian economy through the following avenues:

1. Threat to Palestinian financial stability:

The repeated withholding of clearance revenues by the Israeli occupation represents a direct threat to Palestinian financial stability, given the financial leakage and depletion it causes to the treasury of the Palestinian Authority. The truth of the matter is that the Palestinian economy faces two different threats as a result of “Israel’s” control over clearance revenues:

The first threat: related to the inability It is difficult to predict the size of these revenues, despite their importance to the Palestinian economy, as a major component of local revenues. These revenues are considered a safety valve for the

Palestinian government in its ability to fulfill its obligations and pay the dues due to it, as it constitutes, on average, three quarters of Palestinian local revenues.

The second threat: related to financial leakage from the treasury of the Palestinian Authority, as the latter suffers from large financial losses resulting from the loss of the proceeds of value-added tax, purchase tax, and import customs due to indirect import through "Israel".

2. Impact on the Palestinian general budget:

Customs clearance revenues, which are estimated at about 15% of the gross domestic product, constitute the backbone of the Palestinian budget. They provide more than 65% of local revenues and more than half of its public expenditures. Therefore, freezing or deducting clearance revenues directly affects the ability of the Palestinian government to secure the bill for salaries and wages for public employees, meaning that the Palestinian government will not be able to pay the employees' salaries in full, which is estimated at approximately 150 million dollars per month. In such a situation, its repercussions will be reflected in an almost general paralysis, affecting all aspects of economic life, due to the state of stagnation resulting from employees not receiving full salaries, given that employee salaries are the primary driver of demand and consumption.

3. Impact on public debt and arrears:

As a result of the clearing revenues crisis and the noticeable and significant increase in the general budget deficit, public debt rose, according to Ministry of Finance data, from $2,369.5 million in 2018 to about $2,795.2 million in 2019, at a rate of 17.9%, specifically due to the increase in domestic debt as a result of the Palestinian government borrowing from banks. This is in an attempt to overcome the clearing crisis and provide other sources of income, in order to fulfill the dues and obligations resulting from it, which also resulted in an increase in the volume of arrears accumulated by the government. Thus, the increase in the volume of domestic debt and the arrears accumulated by the government threatens the safety of the banking system and threatens the plans of expansion and borrowing in the future.

4. Impact on the investment climate:

The recurrence of crises, especially the clearing revenue crisis, the decline in the ability to predict the future, the accumulation of arrears on the public sector towards suppliers, and the rise in interest rates due to the impact of public debt, frustrate future investment projects, which will reflect negatively on future production and operation. Reading this situation shows that the Israeli occupation controls the largest portion of public revenues, Palestinian "clearance revenues," and thus the absence of control over this essential part of the components of public treasury revenues enables the occupation to exploit these funds against the Palestinian people as a means of blackmail and political and financial pressure. The Palestinian government must address this situation and attempt to strengthen the independence of its financial resources so that it does not fall under the political and financial blackmail of "Israel."

Abdulrahman et al. (2023) examined the effect of tax reform on economic growth in Sudan. The study covered the period from 1961 to 2021. The data for the analysis were collected from the World Bank. The ordinary least squares method was utilized to analyze the data. The results have demonstrated that population growth and foreign direct investment had a significant impact on economic growth. Meanwhile, tax reforms had a minor impact.

Mai and Van (2022) investigated the tax revenues and economic development in Southeast Asian countries by using secondary data sources from the World Bank and a quantitative analysis model to study the impact of the level of economic development of countries in Southeast Asia on tax revenues. The results indicated that from 2000 to now, the level of economic development in these countries has increased significantly, which is reflected in the increase in per capita GDP, and where income taxes in these countries have increased. In addition, the results of the study showed that per capita GDP has a positive impact on tax revenues in countries of this region.

Alinaghi and Reed (2021) conducted a meta-analysis on the impact of taxes on economic growth within Organisation for Economic Cooperation and Development (OECD) countries. An inherent challenge in synthesizing tax estimates lies in their divergence, primarily due to variations in government budget constraints as implied by different regression specifications in studies. To tackle this issue, we adopt a taxonomy developed by Gemmell, Kneller, and Sanz, which forecasts growth effects stemming from various tax-spending-deficit combinations. This taxonomy is applied to 979 estimates derived from forty-nine studies focusing on tax effects in OECD nations. Our key finding reveals that a 10 percent rise in taxes is correlated with a reduction in annual GDP growth by around 0.2 percent when incorporated into a Tax Negative tax-spending-deficit combination. Conversely, the same tax increase is linked to an increase in annual GDP growth of approximately 0.2 percent when integrated into a Tax Positive fiscal policy package.

Abd Hakim (2020) investigated the effects and consequences of both direct and indirect taxes on economic growth and total tax revenues in a group of 51 countries during the period 1992 to 2016. The dynamic Panel Generalized Method of Moments estimation (GMM) was used to analyze the data. The results indicated that direct taxes have a significant negative effect on economic growth, while indirect taxes had no significant effect. In addition, this study also found a significant positive contribution of direct taxes to total tax revenues compared to indirect taxes. The paper concluded that a tax structure based on direct taxes such as taxes on income, profits, and capital gains is harmful to economic growth but more efficient in terms of tax revenue collection in a country.

Oumer and Ramakrishna (2020) studied the relationship between increased public spending, GDP, and tax revenues in Ethiopia. The results showed that positive shocks in the fiscal deficit led to positive changes in GDP, while negative shocks reduced GDP.

Rehman, Khan, and Kousar (2020) aimed to investigate the relationship between Pakistan’s economic growth and government revenue sources. The results concluded that tax revenues have a significant positive effect on economic growth in Pakistan.

Al-Fatlawi (2019) aimed to identify the measurement and analysis of the dynamic effects of fiscal policy on the gross domestic product. This study implemented the model using data from the United States of America, covering the period

(1990-2017). The paper concluded that increasing taxes has a negative impact on the Gross Domestic Product.

Egbunike, Emudainohwo, and Gunardi (2018) studied the impact of tax revenues on economic growth in Nigeria and Ghana. The study found a positive effect of taxes on the GDP of Nigeria and Ghana. The study recommended, among other things, appropriate measures to ensure that tax revenues are used effectively for the development of the economy.

Alkhatib and Abdul-Jabbar (2017) aimed to study issues that influence tax evasion in Palestine. The proper strategies to address these factors can reduce the harmful consequences of tax revenue loss. This study adapts the economic deterrence theory. Finally, incorporating economic factors like tax penalties, probability of detection, and tax rates alongside tax knowledge could indeed offer a more comprehensive understanding of tax evasion behavior in the Palestinian context.

Babatunde, Ibukun, and Oyeyemi (2017) touched on the relationship between tax revenues and economic growth in Africa from 2004 to 2013. The results indicated that tax revenues have a positive significant effect on GDP and, thus, promote economic growth in Africa. Therefore, both high and low levels of taxation are favorable for economic growth.

Iriqat and Anabtawi (2016) studied the causality between Gross Domestic Product and tax revenues in Palestine. The study used secondary data from the Palestine Monetary Authority covering the period (1999-2014). The results indicated that tax revenues do not Granger-cause each of the Gross Domestic Product, Government spending, Consumption, Investment, and Balance of trade. Furthermore, the period was divided into three stages based on the change in the income tax act. The paper demonstrated that the impact of tax revenue and macro-economic variables changed from one stage to another.

Doménech and García (2008) explored the funding of essential public goods and social welfare programs through various tax models in a framework incorporating unemployment. We introduce unemployment, stemming from the wage-setting behavior of a monopolistic union, into a neoclassical growth model. This model includes a detailed tax structure for financing public expenditures and social transfers, along with parameters representing government inefficiencies in converting taxes into public goods or transfers. The primary finding is that the relationship between unemployment and labor taxes hinges significantly on government efficiency and unions' perceptions regarding how wages influence the welfare state. When unions recognize that transfers and social benefits are linked closely to labor taxes, they are less inclined to push for higher wages in response to tax increases. This observation offers an alternative explanation for the absence of a positive correlation between unemployment and labor taxes in many OECD countries and periods. Empirical evidence from 21 OECD countries supports the idea that the interaction between taxes and government inefficiency affects unemployment rates.

This paper aims to identify the cause-and-effect relationship between tax revenue and different macroeconomic variables for Palestine. The contribution of this paper to the present literature lies in the fact that it is a study that evaluates the effect of taxes on the economy as a whole. Rather than studying the effect of taxes on one macroeconomic variable, we took a number of economic variables that measure the well-being of the Palestinian economy. In addition, this study applies the cause-and-effect relationship to a semi-independent economy, i.e., the Palestinian economy. This economy is

unique in its nature due to its geopolitical relationship to the Israeli economy. Thus, this paper studies the different economic theories in an unstable environment; it will demonstrate whether economic theory will hold in an environment characterized by uncertainty, volatility, complexity, and ambiguity.

Data and Methodology

The data for this paper was collected from the Palestine Monetary Authority (PMA) website, covering the period from 1996 to 2022. The variables considered are GDP (RGDP), GDP per capita (RGDPPC), inflation (I), taxes (T), and unemployment (U). These variables were listed, and a number of statistical tests will be applied to study the interaction of these variables with one another.

The Augmented Dickey-Fuller test is a statistical test used to determine whether a unit root is present in a time series dataset, which indicates whether the series is stationary or non-stationary. Stationary means that the variable is stationary, indicating that it does not exhibit trends or patterns over time and has a constant mean and variance. Non-stationary means that the variable is non-stationary, suggesting that it exhibits trends or patterns over time and does not have a constant mean and variance. Stationarity is an essential concept in time series analysis because many statistical techniques assume stationary data (Greene, 1995).

The Johansen Cointegration Test is a statistical method used to determine whether there exists a long-term relationship, or cointegration, between two or more non-stationary time series variables. The results of the Johansen Cointegration Test are significant in economic and financial analysis because they imply the existence of stable, long-term relationships between variables, which can be exploited in various modeling and forecasting exercises (Greene, 1995, p.567).

The Granger Causality Test is a statistical test used to determine whether one time series variable "Granger-causes" another, meaning that past values of the first variable help predict the current values of the second variable. The lag length represents the number of past observations considered when assessing causality. In the Granger Causality Test, “Yes" suggests that there is evidence of Granger causality from the first variable to the second. “No" suggests that there is no evidence of Granger causality from the first variable to the second (Granger, 1969).

The Fully Modified Least Squares (FLS) model is a regression analysis technique used in econometrics, particularly in time series analysis. It builds upon the basic Ordinary Least Squares (OLS) regression method by incorporating additional adjustments to address potential issues such as endogeneity, autocorrelation, and heteroscedasticity. Endogeneity occurs when independent variables are correlated with the error term in a regression model. This violates one of the assumptions of OLS regression, leading to biased and inconsistent parameter estimates. FLS addresses endogeneity by including additional variables or instrumental variables in the model to capture and control for the omitted variables that may cause endogeneity. Autocorrelation refers to the correlation between error terms in a time series dataset. It can lead to inefficient parameter estimates and biased hypothesis testing results. FLS adjusts for autocorrelation by including lagged values of the dependent variable or other relevant variables in the regression model. Heteroscedasticity occurs when the variance of the error terms is not constant across observations. This violates another assumption of OLS regression and can lead

to inefficient parameter estimates and incorrect inference. FLS addresses heteroscedasticity by using robust standard errors or weighted least squares to give more weight to observations with smaller variances. In the FLS model, variables that are considered endogenous, meaning they may be affected by other variables in the model, are treated with special attention. These variables are typically denoted by "I" in the regression equation. Instrumental variables are used in FLS to deal with endogeneity. These variables are correlated with the endogenous variables but are not directly correlated with the error term. They are used as proxies to capture the variation in the endogenous variables that is unrelated to the error term. The term "fully modified" refers to the comprehensive adjustments made in the model to address endogeneity, autocorrelation, and heteroscedasticity simultaneously. By incorporating these adjustments, the FLS model provides more reliable and efficient parameter estimates compared to standard OLS regression, particularly in the context of time series data. Overall, the Fully Modified Least Squares model is a robust regression technique used in econometrics to analyze time series data while addressing common issues such as endogeneity, autocorrelation, and heteroscedasticity (Phillips, 1995, p.1023).

Results

The data for the analysis was collected from the Palestinian Monetary Authority, and the EViews 12 software was used to analyze the data. We will start our analysis by conducting the Augmented Dickey-Fuller (ADF) test to show whether the variables are stationary or non-stationary.

Table 3. Augmented Dickey-Fuller Test

Variable	Stationary / Non-Stationary
T	No unit root at first difference
I	No unit root at first difference
U	No unit root at first difference
RGDPPC	No unit root at first difference
RGDP	No unit root at first difference

The table above presents the results of ADF tests conducted on various variables. Each row in the table represents a different variable, and the columns describe the outcome of the ADF test for each variable. The Stationary / Non Stationary column indicates the outcome of the ADF test for each variable. For all variables (T, I, U, RGDPPC, and RGDP), the test indicates "No unit root at first difference." This means that after differencing the data (i.e., subtracting each value from the previous value), the resulting series becomes stationary. In other words, the variables are stationary after taking the first difference. Since the results are stationary at the first difference, we will now conduct the Johansen Cointegration Test, where the results are shown in Table 4 below.

Table 4. Johansen Cointegration Test

Variable	Cointegration
T and I	Yes
T and U	Yes
T and RGDP	Yes
T and RGDPPC	Yes

The above table presents the results of the Johansen Cointegration Test for several pairs of variables. The Variable column lists the pairs of variables being tested for cointegration. In this case, the pairs are (T and I, T and U, T and RGDP, T and RGDPPC). The cointegration column indicates the outcome of the Johansen Cointegration Test for each pair of variables. Based on the results, “Yes" indicates that cointegration is found between each pair of variables tested (T and I, T and U, T and RGDP, T and RGDPPC). This suggests that there exists a long-term relationship between the variables, even though they may individually be non-stationary. We will now conduct the Johansen Cointegration Test, where the results are shown in Table 5 below.

Table 5. Granger Causality Test

Variable	Lag Length	Granger Causality
RGDPPC T	2	Yes
T RGDPPC	2	No
RGDP T	2	No
T RGDP	2	No
I T	2	No
T I	2	No
U T	2	No
T U	2	No

The above table presents the results of the Granger Causality Test for various pairs of variables. The Variable column lists the pairs of variables being tested for Granger Causality. In this case, the pairs are combinations of different economic variables, with one variable leading and the other following. The lag length column indicates the lag length used in the Granger Causality Test. The Granger Causality column indicates the outcome of the Granger Causality Test for each pair of variables. Granger causality is detected from RGDPPC to T at a lag length of 2. This implies that past values of RGDPPC help predict the current values of T. However, for the remaining pairs of variables, including T to RGDPPC, RGDP to T, T to RGDP, I to T, T to I, U to T, and T to U, there is no evidence of Granger causality at a lag length of 2. These results provide insights into the potential directional relationships between the variables tested. We will now

conduct the Fully Modified Least Squares Model for the four dependent variables – RDPPC, RGDP, Inflation, and Unemployment - and Taxes as the independent variable. The results are shown in Table 6 below.

Table 6. Fully Modified Least Squares Model

Dependent Variable	Coefficient	P Value	Significant / Insignificant
RGDP	2.2873	0.0076	Significant
RGDPPC	0.9239	0.0281	Significant
I	-0.0027	0.8205	Insignificant
U	-0.0174	0.0989	Insignificant

The table above shows that taxes were both significant in relation to RGDP and RGDPPC; meanwhile, they were insignificant in relation to unemployment and inflation. Thus, taxes have a positive effect on both RGDP and RGDPPC, where a 1 unit increase in taxes will result in a 2.2873 and 0.9239 increase in RGDP and RGDPPC, respectively. Nonetheless, taxes have no significant effect on inflation and unemployment.

Conclusion

In this paper, we have examined the effect of taxes on inflation, real GDP, real GDP per capita, and unemployment. The motivation for this study stemmed from the utilization of taxes by Israel as a tool of pressure against the Palestinians, frequently withholding taxes collected on behalf of the Palestinian Authority. This prompted us to investigate how taxes impact the Palestinian economy as a whole. Our analysis has indicated that taxes have a significant positive effect on both real GDP and real GDP per capita. However, they do not have a significant effect on unemployment or inflation. These findings imply that taxes contribute positively to both economic growth and total productivity in the Palestinian economy, aligning with the results of Hijazi (2001) and macroeconomic theories, where real GDP and real GDP per capita are functions of taxes. Therefore, the tax variable emerges as one of the independent variables influencing both real GDP and real GDP per capita. These results are particularly relevant for the Palestinian case, where unemployment and inflation are not under the control of the Palestinian government. The Palestinian unemployment rate excludes Palestinians working in Israel and Israeli settlements, skewing the true status of Palestinians. Similarly, due to the absence of a local currency and a real central bank in Palestine, the Palestinian Monetary Authority cannot adjust inflation, as Palestinians use the Israeli shekel, importing inflation from Israel. Consequently, taxes do not need to contribute directly to unemployment and inflation since other exogenous variables influence their fluctuation.

Overall, our analysis provides valuable insights for policymakers, economists, and analysts to evaluate the fiscal health of Palestine, identify trends, and formulate appropriate fiscal policies to support economic growth and stability. While there have been improvements in real GDP per capita and overall real GDP over the years, challenges such as unemployment and inflation persist. Policymakers can utilize the data presented here to assess economic performance, pinpoint areas for

improvement, and devise policies to foster sustainable economic growth and development.

However, the study's limitation lies in the limited inclusion of macroeconomic variables reflecting the standard of living or well-being of the Palestinian population. For instance, poverty levels could have been explored to ascertain whether taxes tend to reduce poverty through effective programs. This area warrants further investigation for the Palestinian case. Additionally, a longer time series period would have yielded more accurate results. Although the semi-independent Palestinian economy emerged in 1994, a longer time span, ideally spanning 40 years, would provide more robust insights. Quarterly data would also enhance accuracy.

In conclusion, taxes indeed play a vital role in the economic growth process of the Palestinian economy. Yet, challenges persist, particularly concerning the withholding of taxes by Israeli authorities, which pressure and control the Palestinian government to advance their political agenda. This underscores the urgent need for an independent Palestinian State with control over its borders and tax collection, free from Israeli hegemony. Achieving this objective demands serious consideration and strong support from the international community, primarily the United States of America, to realize a Free Palestine independent of Israeli control.

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