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The reflection of the reciprocal relationship between the budget deficit and the accumulation of public debt on fiscal and monetary situation in Lebanon (1992-2018)

إنعكاس العلاقة التبادلية بين عجز الموازنة العامة وتراكم الدين العام على الوضعين المالي والنقدي في لبنان (1992-2018)

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Abstract

This study aimed to determine the reflection of the correlation between the public budget deficit and the accumulation of public debt on the fiscal and monetary situation in Lebanon.

The researcher used the standard descriptive and analytical approach based on official data and statistics, so that the study relied on data for the time period 1992-2018. The study ended up that there is a statistically significant negative impact between the budget deficit and spending, and a direct impact on inflation and the exchange rate, and there is no impact on tax revenues and money supply(M3), as for public debt, there is a statistically significant negative impact on spending, tax revenues, money mass and a direct effect on interest, and there was no statistically significant effect on inflation and the exchange rate.

Key words: Budget Deficit, Public Debt, Fiscal policy, Monetary policy.

الملخص

هدفت هذه الدراسة الى تحديد انعكاس العلاقة التبادلية بين عجز الموازنة العامة وتراكم الدين العام على الوضعين المالي والنقدي في لبنان.

استخدمت الباحثة المنهج الوصفي والتحليلي القياسي بالإستناد الى البيانات والاحصاءات الرسمية بحيث اعتمدت الدراسة على البيانات للفترة الزمنية 1992 _2018
توصلت الدراسة الى وجود اثر سلبي ذات دلالة إحصائية بين العجز الاجمالي والإنفاق، واثر طردي على التضخم وسعر الصرف، وعدم وجود اثر على الايرادات الضريبية والكتلة النقدية
أما بالنسبة للدين العام فهناك اثر سلبي ذات دلالة إحصائية على الانفاق، الايرادات الضريبية، الكتلة النقدية واثر طردي على الفائدة ولم يكن هناك اثر ذا دلالة احصائية على التضخم وسعر الصرف

الكلمات المفتاحة:عجز الموازنة، الدين العام، السياسة المالية، السياسة النقدية.

Introduction

The state's general budget deficit is a global phenomenon, as it is almost rare to find a country that does not suffer from this problem, and this is equal to industrial capitalist countries with advanced economies and underdeveloped countries in which the deficit has turned into a continuous characteristic

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close to the characteristics of the economies of these countries, and an indication of the existence of structural imbalances in them.

The increase in the budget deficit increases the loads on citizens to service the public debt and increases the wealth of the few who have capital to buy the national debt. Consequently, deficits have negative effects on the redistribution of social wealth. The growing of budget deficit has reached lebanon to be unable to attract domestic and foreign investment. This problem has been exacerbated by increased public debt, which has various implications for economic activity at all levels, including interest rates, domestic liquidity levels, international reserves, balance of payments, exports and exchange rates. The deficit in the public budget also contributes to increasing inflation rates, especially when the state deliberately finances the deficit by printing paper money, which leads to an increase in its supply in the market and a decrease in the actual value of the national currency, or when the state deliberately depletes its hard currency assets to cover the deficit in the trade balance, so the modern vision of public debt no longer focuses on how to reschedule or reduce public debt, but rather focuses on assessing the extent of the ability of the economy of countries and their efficiency in repaying the current and future public debt while achieving sustainability. The Lebanese economy is like any economy in the world, suffers from several crises, most notably is the problem of the deficit in the public budget, which is the lack of public revenues to public expenditures, so the state resorted to covering this deficit through borrowing, which is one

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of the means of financing the budget deficit, which led to the emergence of other problems, which is the high levels of public debt, and the problem of deficit and debt had economic repercussions on the fiscal and monetary situation, which are considered one of the most important indicators that the state has to manage the national economy, hence the need is to study the reflection of the reciprocal relationship between the fiscal deficit and the cumulative public debt on the fiscal and monetary situation in Lebanon

Problem statement

The research problem was formulated as follows:

What is the impact of the reciprocal relationship between the budget deficit and the accumulation of public debt on the fiscal and monetary situation in Lebanon?

- Is there a relationship between the fiscal deficit and the cumulative public debt in Lebanon?

- What is the nature of this relationship between the fiscal deficit and the cumulative public debt in Lebanon?

- Is there an impact of the reflection of the correlation between the public budget deficit and the accumulation of public debt in Lebanon on the deterioration of the state's fiscal policy (public spending, tax revenues)?

- Is there an impact of the reflection of the correlation between the public budget deficit and the accumulation of public debt in Lebanon on the

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deterioration of the state's cash (inflation, exchange rate, money supply(M3), interest)?

Aims and Objectives

It aims to study the impact of the budget deficit on the accumulation of public debt and its reflection on the fiscal and monetary situation, and the objectives can be summarized in the following points:

- Identify the basic concepts related to the public budget deficit and public debt

- Identify the economic literature that affected the issue of budget deficit

- Attempt to highlight the nature of the relationship between the public budget deficit and public debt

- Measuring the impact of the public budget deficit and the accumulation of public debt on fiscal and monetary policies in Lebanon

- Coming up with recommendations that may help address the budget deficit and alleviate the public debt in the Lebanese economy and how to achieve fiscal and monetary stability in it.

Variables of the study:

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The study model was applied using time series on Lebanon during the period (1992-2018), where annual data was obtained, and shown as follows:

- Data of dependent variables represented by (fiscal policy: public spending, tax revenues) and (monetary policy: inflation, exchange rate, money supply(M3), real interest rate) and its sources from the Ministry of Finance and the Central Bank of Lebanon for the year 2022.

-Data of the independent variables represented by (budget deficit, public debt) and their sources are a database from the Ministry of Finance and the Central Bank of Lebanon for the year 2022.

Formulate and build a study model.

$$(\mathbf{public\_expenditure})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

$$(\mathbf{inflation})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

$$(\mathbf{tax\ revenue})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

$$(\mathbf{exchange\_rate})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

$$(\mathbf{monetary\_nugget})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

$$(\mathbf{real\ interest\ rate})_{\mathbf{t}i} = \boldsymbol{\alpha}_0 + \mathbf{b}_1\,(\mathbf{total\_\ deficit})_{\mathbf{ti}} + \mathbf{b}_2(\mathbf{Public\_debt})_{\mathbf{ti}} + \mathbf{e}_{\mathbf{t}}.$$

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Based on the formulation and construction of the study model, the type of variables and the unit of measurement for each variable will be explained, and Table (1) illustrates this.

Table (1): variables of the study

Unit	**variable**	**Variable type**	**variables**
Milliard(L.L)	Total deficit	independent	**total_ deficit**
Milliard(L.L)	Public Debt	independent	**Public debt**
Milliard(L.L)	Public Expenditure	dependent	**public_expenditure**
%	inflation	dependent	**inflation**
Milliard(L.L)	Tax Revenue	dependent	**tax revenue**
L.L	Exchange Rate	dependent	**exchange_rate**
Milliard(L.L)	Money supply	dependent	**money supply**
%	Real interest rate	dependent	**real interest rate**

Hypothesis of the study

Based on the problems and questions of the study, the researcher made a correlation matrix between the study variables represented by (budget deficit and public debt) and (public spending, inflation, tax revenues, exchange rate, money supply(M3), real interest rate) using Pearson's correlation coefficient.

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The first hypothesis: There is a statistically significant (positive) reciprocal relationship between the budget deficit and public debt.

The second hypothesis: There is a statistically significant (inverse) correlation between (total deficit, public debt) with public spending.

The third hypothesis: There is a statistically significant (positive) reciprocal relationship between (total deficit, public debt) with inflation.

Fourth hypothesis: There is no relationship between (total deficit, public debt) with tax revenues.

Fifth hypothesis: There is a statistically significant (positive) reciprocal relationship between (total deficit, public debt) with the exchange rate.

Sixth hypothesis: There is a statistically significant (inverse) reciprocal relationship between (total deficit, public debt) with the money supply(M3).

Seventh hypothesis: There is a statistically significant (positive) reciprocal relationship between (total deficit, public debt) with the real interest rate.

Methodology

The researcher used the descriptive approach and the standard analytical method in this study, where the descriptive approach was used to clarify the concepts and classifications of the reciprocal relationship between the budget deficit and the accumulation of public debt on the fiscal and monetary situation in Lebanon during the period (1992-2018).

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This method was also used for descriptive comparison of the opinions of writers and specialists in this field, while the standard analytical method was used to build the standard model for the study variables based on time series data.

Theoretical frame work:

Definition of public deficit

Public budget deficit problem is one of the most important economic problems facing developed and non-developed countries because of its direct effects on economic activity in general, and the deficit is meant as that shortage of public revenues of the state when financing its public expenditures, and the nature and degree of the budget deficit vary from one country to another so that the deficit cannot be attributed to a single reason, but to a network of overlapping reasons, some of which are related to the growth aspect of public expenditures, and some of which are related to the side of low public revenues, and accordingly governments resort for several ways and methods to finance the deficit, most notably: the new monetary issuance or internal and external borrowing, and with the worsening of the deficit problem, this requires governments to work to confront it as it represents a structural imbalance with negative repercussions(Nahhas, 2009, p:5).

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Public deficit in Lebanon:

The expansionary financial policies of successive Lebanese governments since 1992, within the framework of the habit of reconstruction and economic advancement plans, led to the escape of public spending through an expansionary spending policy that led to the growth of public spending at an accelerated pace and without controls, in exchange for the scarcity of financial resources available to meet this spending, which resulted in a chronic deficit in the public budget in Lebanon as a result of the failure of government public revenues to face the large increases in government public expenditures, so that this deficit constituted a complex phenomenon that is due to a set of reasons that led to its exacerbation, including those related to the expenditure side through the high cost of servicing the public debt, the cost of salaries and wages, and financial transfers to support Electricity of Lebanon and others(ministry of finance, 2018, p:3).

Some of them are related to the revenue side through the decrease in the ratio of public revenues and tax revenues as a percentage of GDP and the spread of the phenomenon of corruption, tax evasion and others, so that the deficit has become the main reason for the accumulation of the volume of the Lebanese public debt and vice versa, so that it requires the state to work to confront the dilemma of the deficit in the public budget through a package of reforms that affect the restructuring of the national economy, confronting imbalances in the public budget, and following effective fiscal policies to rationalize public spending and maximize the sources of Public revenues,

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combating corruption, tax evasion, and others are all the same tracks with the sole aim of working to confront the problems of the public budget deficit and the accumulation of public debt in Lebanon(Abou Zaki, 2014).

Definition of fiscal policy:

Fiscal policy is a major tool of economic policy that the state relies on to intervene, control and direct its various sectors, it has an important impact on economic activity, and occupies an important place among policies because it can achieve the goals sought by the national economy. The tools of fiscal policy are one of the most important tools of economic management, which includes public expenditures and public revenues that are collected by the state's general budget, so that public expenditures represent an amount of money spent for satisfying public needs, and they are of many types so that they are divided into real, transformative or current, investment or productive and unproductive expenditures, and generate multiple effects on production, consumption, income, economic growth and others, and in return, public revenues represent the resources from which the state obtains The funds needed to pay their expenses so that the sources of obtaining them vary from one country to another, most notably: public and private domains - taxes and fees - public loans. However, tax revenues are considered one of the most prominent types of revenues affecting the national economy, so that their effects are reflected on consumption, production, income distribution, the general level of prices and others (Ghadeer, 2010, p:197).

Fiscal policy in Lebanon:

Successive Lebanese governments have adopted since 1992, within the framework of their financial and economic policies, a number of general basic policies, so that the main objective of the tax policy was to give differential advantages in order to contribute to providing some incentives to the private sector by making investments on the one hand, and providing as much revenue as possible to the treasury in order to reduce the budget deficit and contribute to financing reconstruction spending on the other hand, but the leniency in the application of tax policy led to depriving the state treasury of these tax revenues that could have been used to face the accumulation of public debt and the budget deficit, which we noticed during the study period, so that the percentage of tax revenues from GDP did not exceed 14%, which is a very low percentage, so it is necessary to work on introducing many amendments to the tax system in order to make it more efficient and fair(IMF, 2019).

Definition of Monetary policy:

Monetary policy is one of the most important economic policies used by the state to intervene in economic activity, which takes monetary variables as a subject for its intervention in order to achieve a set of economic goals, mainly represented in achieving high growth rates and reducing inflationary crises, as well as maintaining high levels of employment and working to stabilize the balance of payments.

In order to achieve these objectives, the Central Bank, as responsible for managing the monetary policy of the state, uses a number of measures, which vary between direct measures by intervening directly in the work of the banking system, such as framing loans, setting certain rates, issuing instructions and orders, or in friendly ways, or through indirect tools such as the rediscount rate, the statutory reserve policy and the open market policy, and the Central Bank can also use unconventional tools such as quantitative and qualitative easing and the application of zero rates. Especially in times of crisis.

Through our exposure to the relationship of fiscal policy with monetary policy, it became clear that there is a relationship and mutual effects between fiscal and monetary policies and macroeconomic variables, as fiscal policy has a direct impact on income and then aggregate demand, while monetary policy has an indirect impact on aggregate demand, and fiscal policy is more effective in facing economic recession, unlike monetary policy, which is more effective in facing inflationary pressures. However, coordination and complementarity between the two policies is essential, because each has common effects on economic activity and aims to achieve economic stability, and the integration of each of their objectives would lead to the achievement of the objectives of the general economic policy of the state (Geanina& Maiorescu, 2011,p:3).

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Monetary policy in Lebanon:

The monetary policy in Lebanon has had a positive impact on the Lebanese economy in terms of maintaining inflation rates at acceptable levels, in addition to maintaining monetary stability and the exchange rate of the national currency despite its cost, in addition to the relative stability of interest rates, but this was accompanied by the exacerbation of the problems of the budget deficit and the high volume of public debt, and with the impediment of the growth of productive capacity and external competitiveness of the national economy(Rizkallah, 2020).

Public debt

The issue of public debt is one of the most important issues that have a direct impact on the economies of countries, the standard of living of their children, and the future of current and future generations, as public debt represents an agreement between two parties under which the debtor party, usually the state or any public legal person, undertakes to pay the installments and interest of the debt to the creditor party, which is usually from the public, local or foreign financial bodies or from countries, and this is done under the debt contract agreed upon between the two parties, so that the debt is divided, according to its source, to an internal public debt denominated in local currencies, and external public debt denominated in foreign currencies, and the reasons for the exacerbation of the debt crisis of developing countries are due to a number of internal and external reasons intertwined with each other, and on the other hand, public debt management represents an important role in not falling into the debt crisis, as it represents the process of preparing and applying a strategy to manage government debt to collect the required amount of financing for that debt. In order to ensure that the financing needs of the government are met to pay its obligations, and to diversify sources of financing, avoid major economic imbalances and reduce risks, the most important functions of effective debt management are determined in policy-making, enacting laws and legislations, regulating and identifying debt sources, and others (Jonathan, 2011, p:11).

Public debt in Lebanon:

Lebanon's public debt arose during the devastating civil war due to the disintegration of state institutions, weak oversight and the accumulation of deficits in the state's financial accounts. The size of the Lebanese public debt recorded about 4.475 billion L.L. in 1992 and about 47% of GDP, which is still an acceptable debt, but as a result of a set of overlapping causes and reasons, direct and indirect, foremost of which are the failures of economic recovery and reconstruction plans, the absence of financial and economic reform plans, the dilemma of the problem of chronic deficit in the public budget, low tax deduction rates, monetary stabilization policies, high interest rates and the spread of corruption, and the structural imbalances in the Lebanese economy and the state of political and security instability in Lebanon and neighboring countries, all of which led to an accelerated increase in the volume of public debt during the study period and its

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dangerous levels and became a heavy load on the national economy, and threatens financial and monetary stability in Lebanon. The total public debt in Lebanon at the end of 2018 amounted to about 127,650 billion L.L. and about 149% of GDP, so that the volume of debt increased during the study period by 26.8 times. The worsening of the public debt crisis in Lebanon in such a dangerous manner requires the state to work on a comprehensive and radical review as it seeks to address the economic and financial conditions by accelerating the required economic and financial reforms, with the aim of controlling the fiscal deficit and limiting the acceleration of public debt growth in order to stabilize it first and work to reduce it later (Rizkallah, 2020).

The impact of the relationship between public debt and the public budget deficit in Lebanon

The general budget is of a great importance to the state and society, as it represents a financial program for the work of the government, through which it seeks to implement its goals in various economic, social and political fields within a specific period of time, often a year, it is also the tool through which it can develop estimates of revenues and public expenditures, and thus can identify through this, the amount of deficit or surplus in its budget. Therefore, the main reason for countries to resort to debt is to cover the public budget deficit so that whenever the deficit increases, it will lead to an increase in the public debt and its service increases year after year, and this means deducting more financial resources available to meet the load of

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servicing the public debt instead of using it to finance the development of the economy, so the public debt is linked to a strong relationship with the state's budget deficit so that it represents the total accumulated fiscal deficits, which is financed from the financial resources available to the government (Affendi, 2016, p. 13).

Since most countries achieve a deficit in the public budget (that is, when the tax revenue does not cover government spending), so governments must bankrolls the annual deficit in their budget by borrowing (borrowing), whether from internal or external sources (internal debt or external debt), so that the difference between the public debt at the end of the period (year) compared to the beginning of the period results from a deficit achieved during this period, and the fact that the relationship between the deficit in the public budget and the amount of Public debt is a two-way relationship, because the evolution of the amount of public debt also affects the evolution of the amount of the budget deficit through the rate of the interest that should also be paid, i.e. servicing this debt, and analytically public debt service payments are considered as transferable payments (current) by the government to bondholders, and so the larger the volume of public debt, the lower the amount of net taxes (taxes - transfer payments) (Al-Sadiq, 1998, p. 99).

As a result, public debt will not stop growing as long as there is a budget deficit, and this deficit will only be achieved if tax revenues exceed public spending by more than interest payments on existing debt. In general, the higher the volume of debt, the higher the cost of servicing it, i.e., the greater the interest payments, as other things remain the same, and the larger the deficit.

Based on the above, it is clear that the public debt feeds itself, and the larger it is, the more it becomes easier to reduce the volume of public spending and increase tax receipts to control and stop the growth of this debt. Lebanon suffered and constitutes a large chronic deficit in the public budget, which was accompanied by the problem of accelerating the growth of the total public debt volume during the study period, as a result of several reasons and interrelated reasons, so that the high volume of debt and its growing service cost emerged through the resort of successive governments to finance these deficits through debt, which in turn led to an increase in the deficit and without decline due to the service and receivables of this debt, which was called the phenomenon of the vicious circle. It is clear that the relationship between the high volume of public debt and the worsening problem of the public budget deficit in Lebanon is direct (Attia, 1997).

That is, the deficit is the main reason for the accumulation of the volume of the Lebanese public debt through annual borrowing to cover the amount of the annual deficit, which in turn led to an increase in public debt service expenditures, so that the debt service expenditure item constituted the highest percentage in the general budget in Lebanon

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Analytical study:

The results of estimating the study model (all results below were based on the data from appendices attached):

Table (2): the results of the correlation matrix between the variables

variables	scale	Public spending	infaltion	Tax revenues	Exchange rate	Money supply	Intrest rate	Public debt
Public deficit	Correlation	**0.832-	*0.480	**0.733-	**0.509	**0.765-	**0.638	0.780**
	Significance level	0.000	0.013	0.000	0.000	0.000	0.000	0.000
Public debt	Correlation	**0.982-	*0.403	**0.970-	0.358	**0.982-	**0.865	--------
	Significance level	0.000	0.041	0.000	0.067	0.000	0.000	--------

Source: Prepared by the researcher according to the outputs of the Eviews program

*statistically significant at the level of 0.05, ** statistically significant at the level of 0.01, ** **statistically significant at the level of 0.10.

The first main hypothesis, which states that "there is a statistically significant correlation at the level of significance (α≤0.05) between the budget deficit and the public debt in Lebanon during the time period between 1992-2018.

"Through the results of the correlation matrix between the variables of the study, where the researcher relied on the Pearson correlation coefficient to measure the reciprocal relationship between public budget deficit and the

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public debt, and the results shown in Table (2) indicate the existence of a statistically significant reciprocal relationship at the level of significance (α≤0.05) between the deficit of the total and the public debt during the time period between 1992-2018, and the value of the correlation (0.780) with a significance level of 0.000 less than (0.05),

- The model of the impact of the budget deficit and public debt on the fiscal policy represented by (public spending)

The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the impact of independent variables (budget deficit and public debt) on the dependent variable (fiscal situation: public spending), and accordingly the study model was estimated using the fully corrected least squares method (FMOLS), and retained in its best form. Table 3 illustrates the results of the estimate.

Table (3): Results of the impact of public deficit and public debt on the Fiscal Situation (Public Expenditure

Dependent Variable "Public Expenditure"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	**Estimated Transactions Coefficients**	**VIF**
Public deficit	**0.0858**	**-1.7952**	**0.2815**	**-0.5053***	
Public debt	**0.0000**	**-12.0018**	**0.0129**	**-0.1545****	**2.320**
(Constant)	**0.0616**	**1.9650**	**0.9010**	**1.7705**	**2.320**
Determination coefficient =0.972 Adjusted coefficient of determination =0.970 coefficient of inflation of variance= 2.320					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

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It is noted through the table that the average variance inflation coefficients (VIF) is equal to (2.320), which is a value less than the maximum (5), and indicates that there is no linear duplication problem in the model, in addition to that the value of the coefficient of determination was (0.972), as it means that the independent variables included in the model (budget deficit and public debt) explain 97.2% of the variance in the variable public expenditure.

With regard to the results of the model, the researcher reached the following results: The impact of the budget deficit on the fiscal situation (public spending), where **the results indicate a negative (inverse) and statistically significant impact at the level of 0.10 (and the value of the significance level 0.0840 is less than 0.10)** where the regression coefficient reached (-0.5053), which indicates that the doubling of the budget deficit from the current reality will contribute to the decrease in public spending by (-0.5053) billion LBP.

With regard to the impact of public debt on the fiscal situation (public spending), **the results indicate a negative (inverse) and statistically significant impact at the level of 0.10 (the value of the significance level of 0.0000 was less than 0.05) where the regression coefficient reached (-0.1545),** which indicates that the doubling of public debt from the current reality will contribute to the decrease in public spending by (-0.1545) billion LBP. Based on what has been presented above, the multiple linear regression

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equation of the budget deficit and public debt model on the fiscal policy represented by (public expenditure) can be formulated as follows:

$$\widetilde{PEXP} = \mathbf{1.7704 - 0.5053(total\ \ deficit) - 0.1544\ (Public\ debt) + e_t.}$$

- The model of the impact of the budget deficit and public debt on the fiscal policy represented by (tax revenues)

The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the effect of independent variables (budget deficit and public debt) on the dependent variable (fiscal situation: tax revenues), and accordingly the study model was estimated using the fully corrected least squares method (FMOLS), and maintained in its best form. Table 4 below shows the results of the estimate.

Table (4): The Impact of Budget deficit and Public Debt on the Fiscal Situation (Tax Revenue)

Dependent variable "Tax Revenue"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	Estimated Transactions Coefficients	**VIF**
Public deficit	**0.3819**	**0.8915**	**0.2533**	**0.2259**	**1.986**
Public debt	**0.0000**	**-8.9942**	**0.0116**	**-0.1042****	**1.986**
(Constant)	**0.2411**	**1.2033**	**0.8109**	**0.9758**	**-**
Determination coefficient = 0.969, Adjusted coefficient of determination = 0.930 None Average coefficient of inflation of variance = 1.986					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

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It is noted through the table that the average variance inflation coefficients (VIF) is equal to (1.986), which is a value less than the maximum (5), and indicates that there is no linear duplication problem in the model, in addition to that the value of the coefficient of determination reached (0.930), as it means that the independent variables included in the model (budget deficit and public debt) explain 93% of the variance in the variable tax revenues.

With regard to the results of the model, the researcher reached the following results: **The impact of the budget deficit on the fiscal policy (tax revenues), where the results indicate that there is no effect and statistically significant at the level of 0.05 (and the value of the significance level was 0.381 greater than 0.05).**

With regard to the impact of public debt on the fiscal policy (tax revenues**), the results indicate a negative (inverse) and statistically significant impact at the level of 0.0.5 (the value of the significance level was 0.0000 less than 0.05) where the regression coefficient reached (-0.104)**, which indicates that the doubling of public debt from the current reality will contribute to the decrease in tax revenues by (-0.1545) billion LBP.

Based on what has been presented above, the multiple linear regression equation for the budget deficit model and public debt on the fiscal situation represented by (tax revenues) can be formulated as follows:

$$\widetilde{\boldsymbol{TRT}} = \mathbf{0.975 + 0.2258(total\ \ deficit) - 0.1041\ (Public\,debt) +\ e_t.}$$

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- Model of the impact of the budget deficit and public debt on the monetary policy represented by (inflation)

The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the impact of independent variables (budget deficit and public debt) on the dependent variable (monetary policy: inflation), and accordingly the study model was estimated using the fully corrected least squares method (FMOLS), and maintained in its best form. Table 5 below illustrates the results of the estimate.

Table (5): Consequences of the Impact of Budget deficit and Public Debt on the Monetary Situation (Inflation)

Dependent variable "Inflation"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	Estimated Transactions Coefficients	**VIF**
Public deficit	**0.0672**	**1.9256**	**1.7993**	**3.4648***	**2.247**
Public debt	**0.4650**	**-0.7435**	**0.0836**	**-0.0622**	**2.247**
(Constant)	**0.0029**	**3.3426**	**5.7709**	**19.2897****	**-**
None Determination coefficient = 0.295, Adjusted coefficient of determination = 0.413 Mean coefficient of inflation of variance = 2.247					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

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It is noted through the table that the average coefficients of inflation of variance (VIF) are equal to (2.247), which is a value less than the maximum (5), and indicates that there is no problem of linear duplication in the model, in addition to that the value of the coefficient of determination reached (0.295), as it means that the independent variables included in the model (budget deficit and public debt) explain 29.5% of the variance of the quotient in the inflation variable.

With regard to the results of the model, the researcher reached the following results: **The impact of the budget deficit on the monetary policy (inflation), where the results indicate a positive (direct) and statistically significant impact at the level of 0.10 (and the value of the significance level 0.0672 is less than 0.10)** where the regression coefficient reached (3.4648), which indicates that the doubling of the budget deficit from the current reality will contribute to increasing inflation by (3.4648) billion LBP.

With regard to the impact of public debt on the monetary policy (inflation), the results indicate that there is no effect of public debt on the monetary policy (inflation), where the value of the significance level was 0.4650 greater than 0.05). Based on what has been presented above, the multiple linear regression equation for the budget deficit model and public debt on the monetary policy represented by (inflation) can be formulated as follows:

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$$\widetilde{INF} = \mathbf{19.2897 + 3.4647(total\ \ deficit) - 0.0621\ (Public\ debt) +\ e_t.}$$

- Model of the impact of the budget deficit and public debt on the monetary policy represented by (exchange rate)

The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the effect of independent variables (budget deficit and public debt) on the dependent variable (monetary policy: exchange rate), and accordingly the study model was estimated using the fully corrected least squares method (FMOLS), and maintained in its best form. Table 6 below illustrates the results of the estimate.

Table (6): Impact of Budget deficit and Public Debt on the Monetary Situation (Exchange Rate)

Dependent variable "Exchange Rate"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	Estimated Transactions Coefficients	**VIF**
Public deficit	**0.0466**	**2.10E+00**	**8.55E-09**	**1.79E-08**	**2.320**
Public debt	**0.7238**	**-3.58E-01**	**4.02E-10**	**-1.44E-10**	**2.320**
(Constant)	**0.000**	**6.40E+01**	**2.58E-08**	**1.65E-06**	**-**
No Coefficient of Determination = 0.263, Adjusted Coefficient of Determination = 0.201 Mean Coefficient of Inflation of Variance = 2. 320					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

It is noted through the table that the average inflation coefficients of variance (VIF) are equal to (2.320), which is a value less than the maximum (5), and indicates that there is no linear duplication problem in the model, in addition to that the value of the coefficient of determination was (0.263), as

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it means that the independent variables included in the model (budget deficit and public debt) explain 26.3% of the variance in the variable exchange rate
With regard to the results of the model, the researcher reached the following results: **The impact of the budget deficit on the monetary policy (exchange rate), where the results indicate a positive (direct) and statistically significant impact at the level of 0.05 (and the value of the significance level 0.0466 is less than 0.05),** where the regression coefficient reached (1.79E-08), which indicates that the doubling of the budget deficit from the current reality will contribute to increasing the exchange rate by (1.79E-08) billion LBP
With regard **to the impact of public debt on the monetary policy (exchange rate), the results indicate that there is no effect of public debt on the monetary policy (exchange rate),** where the value of the significance level was 0.7238 greater than 0.05). Based on what has been presented above, the multiple linear regression equation of the budget deficit model and public debt on the monetary policy represented by (exchange rate) can be formulated as follows

$$\widetilde{ER} = \mathbf{1.65E-06+1.79E-08(total\ \ deficit)-1.44E-10(Public\ debt)+\ e_t.}$$

Model of the impact of the budget deficit and public debt on the monetary policy represented by (money supply(M3)) The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the effect of independent variables (budget deficit and public

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debt) on the dependent variable (monetary policy: money supply(M3)), and accordingly the study model was estimated using the fully corrected least squares method (FMOLS), and retained in its best form. Table 7 below illustrates the results of the estimate.

Table (7): Consequences of the impact of the budget deficit and public debt on the monetary policy (money supply).

Dependent variable "Money Supply"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	Estimated Transactions Coefficients	**VIF**
Public deficit	**0.8093**	**0.2441**	**3.3875**	**0.8268**	**2.320**
Public debt	**0.0000**	**-11.3350**	**0.1549**	**-1.7559****	**2.320**
(Constant)	**0.6552**	**-0.4524**	**10.8433**	**-4.9054**	**-**
No Coefficient of determination = 0.962, Adjusted coefficient of determination = 0.958 Mean coefficient of inflation of variance = 2.320					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

It is noted through the table that the average inflation coefficients of variance (VIF) are equal to (2.320), which is a value less than the maximum (5), and indicates that there is no linear duplication problem in the model, in addition to that the value of the coefficient of determination reached (0.962), as it means that the independent variables included in the model (budget deficit and public debt) explain 96.2% of the variance of the quotient in the exchange rate variable.

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With regard to the results of the model, the researcher reached the following results: **The effect of the budget deficit on the monetary policy (monetary supply), where the results indicate that there is no effect of the budget deficit on the monetary policy (money supply) and the value of the significance level was 0.8093 greater than 0.05)**.

With regard to **the impact of public debt on the monetary policy (money supply), where the results indicate a negative (inverse) and statistically significant impact at the level of 0.05 (the value of the significance level was 0.000 less than 0.05)** where the regression coefficient reached (-1.7559), which indicates that the doubling of public debt from the current reality will contribute to the decrease in the money supply(M3) by (1.7559) billion LBP. Based on what has been presented above, the multiple linear regression equation for the budget deficit model and public debt on the monetary policy represented by (money supply(M3)) can be formulated as follows:

$$\breve{MO} = -4.9053 + 0.8267(\text{total deficit}) - 1.7559(\text{Public debt}) + e_t.$$

The model of the impact of the budget deficit and public debt on the monetary policy represented by (real interest rate) The following is a detailed presentation of the results of the statistical estimation of the study model, which studies the effect of independent variables (budget deficit and public debt) on the dependent variable (monetary policy: real interest rate), and accordingly the study model was estimated using the fully corrected

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least squares method (FMOLS), and maintained in its best form. Table 8 below illustrates the results of the estimate.

Table (8): Consequences of the Impact of public deficit and public debt on the monetary situation (Interest rate)

Dependent variable "Interest Rate"					
Independent Variables	**P-Value**	**Constant Limit(t)**	**Standard Error S.E**	Estimated Transactions Coefficients	**VIF**
Public deficit	**0.1562**	**-1.4659**	**0.7146**	**-1.0476**	**2.320**
Public debt	**0.0000**	**6.2994**	**0.0327**	**0.2059****	**2.320**
(Constant)	**0.0000**	**9.6057**	**2.2874**	**21.9717****	**-**
None Determination factor = 0.852, adjusted coefficient of determination = 0.839 Average inflation coefficient Variance = 2.320					

*Significant at 0.05 **Significant at 0.10 ***Significant at 0.01

Source: Prepared by the researcher according to the outputs of the Eviews program.

It is noted through the table that the average coefficients of inflation of variance (VIF) is equal to (2.320), which is a value less than the maximum (5), and indicates that there is no linear duplication problem in the model, in addition to that the value of the coefficient of determination reached (0.851), as it means that the independent variables included in the model (budget deficit and public debt) explain 85.1% of the variance in the real interest rate variable.

With regard to the results of the model, the researcher reached the following results: **The effect of the budget deficit on the monetary policy (real interest rate), where the results indicate that there is no effect of the**

budget deficit on the monetary policy (real interest rate) and the value of the significance level was 0.1562 greater than 0.05).

With regard to **the impact of public debt on the monetary policy (real interest rate), the results indicate a positive (positive) and statistically significant impact at the level of 0.05 (the value of the significance level was 0.0000 less than 0.05)** where the regression coefficient reached (0.2058), which indicates that the doubling of public debt from the current reality will contribute to increasing the real interest rate by (0.2058) billion LBP.

Based on what has been presented above, the multiple linear regression equation for the budget deficit model and public debt on the monetary policy represented by (real interest rate) can be formulated as follows:

$$\widetilde{\boldsymbol{RIR}} = \mathbf{21.971} - \mathbf{1.047}(\textbf{total deficit}) + \mathbf{0.2058}(\textbf{Public debt}) + \mathbf{e_t}.$$

Practical results:

The results of the analysis of the study model test for the budget deficit and public debt (as independent variables) on the variables related to fiscal policy (public spending, tax revenues) and monetary policy (inflation, exchange rate, money supply(M3) and real interests) showed the following:

-There is a statistically significant (positive) correlation at the level of significance (α≤0.05) between the budget deficit and the public debt during the time period between (1992-2018), so that the value of the correlation (0.780) with a significance level of 0.000 is less than 0.05.

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- There is a negative (inverse and statistically significant relationship at the level of 0.10 (and the value of the significance level was 0.0840 less than 0.10) regarding the impact of the budget deficit on the fiscal policy (public spending).

- With regard to the impact of public debt on the fiscal policy (public expenditure), there is a negative (adverse) and statistically significant impact at the level of 0.10 (the value of the significance level of 0.0000 is less than 0.05).

There is no statistically significant effect of the budget deficit on the fiscal policy (tax revenues) at the level of 0.05 (and the value of the significance level is 0.381 greater than 0.05)

- With regard to the impact of public debt on the fiscal policy (tax revenues), the results indicate a negative (inverse) and statistically significant impact at the level of 0.0.5 (and the value of the significance level is 0.0000 less than 0.05)

- The results indicate a positive (positive) and statistically significant impact at the level of 0.10 of the budget deficit on monetary policy (inflation) (The significance level value was 0.0672 less than 0.10)

- with regard to the effect of public debt on the monetary policy (inflation), the results indicate that there was no effect of public debt on the monetary policy (inflation) with a significance level value of 0.4650 greater than 0.05).

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- The results indicate a positive (positive) and statistically significant effect at the level of 0.05 of the budget deficit on the monetary policy (exchange rate) (and the value of the significance level was 0.0466 less than 0.05)

- With regard to the impact of public debt on the monetary policy (exchange rate), where the results indicate that there is no effect of public debt on the monetary policy (exchange rate), where the value of the significance level was 0.7238 greater than 0.05).

- The results indicate that there was no effect of the budget deficit on the monetary policy (money supply(M3)) and the significance level value was 0.8093 greater than 0.05).

- With regard to the impact of public debt on the monetary policy (money supply(M3)), where the results indicate a negative (inverse) and statistically significant effect at the level of 0.05 (and the value of the significance level of 0.000 is less than 0.05)

-the results indicate that there is no effect of the budget deficit on the monetary policy (real interest rate). With regard to the impact of public debt on the monetary policy (real interest rate)

- the results indicate a positive (positive) and statistically significant impact at the level of 0.05 (the value of the significance level was 0.0000 less than 0.05).

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Recommendations:

- Rationalizing government spending is generally in accordance with a comprehensive development strategy, and reducing spending on salaries and wages in particular by creating a kind of balance between them and domestic revenues, this item represents the major reason for the imbalance between public expenditures and public revenues

- Reluctance to borrow to finance current expenditures so that future generations do not bear the load of current spending

- Increasing the share of development expenditures in the Lebanese budget in order to advance the economy, which in turn will lead to the growth of domestic revenues and reduce the financing gap, and the profits from these investments will be directed to debt service and not a burden on the budget.

- The need to publish all tables and details related to public debt, the size of loan installments, interest, creditors, etc., which increases the transparency and clarity of the budget.

- Studying, monitoring and rationalizing productive projects, and supporting them in the short term.

- Assisting large projects in the medium and long term, in conjunction with fighting rampant corruption in departments and strengthening accountability and control.

- Unleashing the hand of the judiciary to affect the big corrupt before their petty, accompanied by the withholding of immunities in all cases of corruption

- Control and effective management of external and internal public debt and its servicing burdens.

- Make public debt management more coherent, rational and independent of the Central Bank. - Establishing an independent body from the Central Bank to manage public debt, in addition to granting it administrative independence from the Ministry of Finance.

- Separating banking supervision from the Central Bank and giving it administrative and financial independence.

- The economic system must be separated from the political system and politics should be in the service of the economy and the separation of politics from the administration and this is essential.

- Change the existing economic system as a whole and transform it from a rentier economy to an economy that takes into consideration the real economic foundations and creates integrated growth between sectors.

Initiate major reforms to make the tax burden more progressive, broaden the tax base and enhance tax compliance.

- The need to stop encouraging dollarization and encourage the use of the Lebanese pound instead of thwarting the initiative under the pretext of maintaining monetary stability

- Rationalization of the number of Employees in different departments.

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Appendices:

Development of money supply(M3) in Lebanon for the period (1992-2018)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Money supply(M3)	11869	15678	19651	22883	29241	34898	40509	45369	49354

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Money supply(M3)	52918	56952	64368	71310	74445	80224	90196	103505	123731

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Money supply(M3)	138909	146576	156797	167571	177397	186360	200192	208613	212993

Source: Central Administration of Statistics, Annual Bulletins 1992-2018

Development of the inflation in Lebanon for the period (1992-2018)

YEAR	1992	1993	1994	1995	1996	1997	1998	1999	2000
Inflation(%)	99.85	24.74	8.23	10.28	8.9	7.75	4.55	1.55	0.35

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Inflation(%)	1.3	4.3	3	1.7	2.6	5.6	9.3	5.5	1.8

YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018
Inflation(%)	5.7	6.6	5.2	2.2	1.9	-3.75	-0.8	4.4	6.7

Source: Central Administration of Statistics, Annual Bulletins 1992-2018

Real interest rate in Lebanon for the period of (1992-2018)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Real Interest(%)	40.20	28.30	23.90	24.70	25.20	20.30	-	19.50	18.20

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009

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Real Interest(%)	17.20	16.60	13.40	10.80	10.60	10.30	10.30	10	9.60

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Real Interest(%)	8.30	7.5	7.20	7.30	7.30	7.10	8.40	8.30	9.10

Source: International Monetary Fund, International Financial Statistics

The development of Lebanese currency rate for the period (1992-2018)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Currency rate(LBP)	1716	1741	1680	1612	1571	1527	1508	1508	1507.5

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Currency rate(LBP)	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Currency rate(LBP)	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5	1507.5

Source: Lebanese Central Bank, Annual Reports 1992-2018

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The development of revenue, expenditure, taxes and public debt for the period (1992-2005)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Revenue	1.14	1.84	2.220	3.020	3.554	3.366	4.039	4.568	4.759	4.826	5.250	6.660	7.555	7.485
Expenditure	2.219	3.020	5.247	5.649	7.259	7.963	7.449	8.262	10.622	8.857	10.138	10.592	10.541	10.203
Total Deficit	-1.081	-1.165	-3.006	-2.616	-3.725	-4.647	-3.530	-3.704	-5.873	-4.229	-4.309	-3.938	-3.026	-2.798
Taxes Revenue	740	1.028	1.656	2.100	2.869	2.894	3.097	3.350	2.936	2.961	3.995	4.502	5.169	4.866
Public debt	3015	3165.75	4115.47	12060	15647.85	23064.7	22612.5	32109.75	38290.5	42963.75	48240	49747.5	54058.95	58038.75

Source: The table was prepared by the researcher based on the data of the Lebanese Ministry of Finance

The development of revenue, expenditure, taxes and public debt for the period (2006-2018)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Revenue	7.316	8.749	10.553	12.705	13.684	14.070	14.164	14.201	16.400	14.435	14.959	17.524	17.405
Expenditure	11.879	12.587	14.957	17.167	17.047	17.601	20.081	20.563	21.032	20.393	22.412	23.186	26.821
Total Deficit	-4.563	-3.838	-4.404	-4.462	-4.363	-3.521	-5.917	-6.382	-4.632	-5.958	-7.453	-5.662	-9.416
Taxes Revenue	4.943	5.583	7.182	8.867	9.976	9.885	10.187	10.116	10.388	10.330	10.597	12.381	12.766
Public debt	60300	65124	70852.5	77018.17	79279.42	84525.52	86967.67	95726.25	100399.5	105977.25	112911.75	119846.25	128288.25

Source: The table was prepared by the researcher based on the data of the Lebanese Ministry of Finance