

THE RELATIONSHIP BETWEEN PUBLIC DEBT, ECONOMIC GROWTH AND INFLATION IN EGYPT

Dr. Ahmed Mohamed Adel Abdel Aziz (✉)

ABSTRACT:

The continuous increase in public debt in Egypt has become a matter of great concern. This study aims to know if the public debt in Egypt has reached the overhang level or not, by verifying the relationship of public debt with both the economic growth rate and the inflation rate in Egypt during the period from the end of June 2010 until the end of June 2020. The study revealed the applicability of the debt “Laffer” curve during the period from 2016 to 2020, which links the ratio of public debt to GDP and the real growth rate. The study also found a positive correlation between the growth rate of public debt and the inflation rate in Egypt. Therefore, the research recommended the necessity of reducing the public debt as a percentage of GDP to less than 70%, to become within the safe limits, and directing the proceeds of public loans to increase productive investments that generate enough to repay the debt and its interests, which leads to an increase in the supply of goods and services, raising growth rate and reduce the inflation rate.

KEY WORDS:

Public Debt, Economic Growth, Inflation, Egypt, debt “Laffer” curve.

INTRODUCTION

1. STATEMENT OF THE PROBLEM:

Public borrowing is a normal procedure that governments take when needed, but the problem lies in the inefficient use of the proceeds of the public loan, and the state's inability to repay. This is reflected in two major macro variables: the real growth rate and the inflation rate. The efficient use of the proceeds of the public loan leads to an increase in productive investments and thus an increase in the supply of goods and services, thus raising the real growth rate, decreasing the inflation rate, and increasing the ability to repay the debt.

The continuous increase in public debt in Egypt has become a matter of great concern, especially after the increase in external debt at unprecedented rates that reached more than 40% in 2017. The external debt exceeded 200% of exports, which is considered the safe limit, and the public debt exceeded 120% of the GDP, which makes it classified as a very large debt, because it exceeded 90% of the GDP.

2. OBJECTIVE OF THE STUDY:

This research aims to answer two questions: First: What is the relationship between public debt and the economic growth in Egypt? Second: What is the relationship between public debt and the inflation rate in Egypt? The study period has been chosen to be from the end of June 2010, that is, less than a year before the January 25 revolution, until the last official statement available, in the end of June 2020.

3. HYPOTHESES OF THE STUDY:

The research will test the next following hypotheses:

- 1-There is a relationship between public debt as a percentage of GDP (PD/GDP) as an independent variable, and the growth rate (GR) as a dependent variable, in Egypt during the study period.

2-There is a relationship between the growth rate of public debt (PDG) as an independent variable and the inflation rate (IR) as a dependent variable, in Egypt during the study period.

4. IMPORTANCE OF THE STUDY:

The importance of the study lies in its handling of one of the most important economic problems currently facing Egypt, which is the problem of high public debt, and its effects on both economic growth and inflation, proposing possible solutions to this problem in the light of the research results.

5. PREVIOUS STUDIES:

There are many studies that dealt with the problem of public debt, but among the most important ones of these studies, from the researcher's point of view, are the following:

- M. Wheeler study (1999), investigates the macroeconomic impacts of government debt in the United States. The study concluded that there was significant negative impact of government debt on inflation.
- G. Kwon study (2006), provided comprehensive empirical evidence that supported the hypothesis that an increase in public debt was typically inflationary in countries with large public debt. The main findings of the paper were that an increase in public debt was typically inflationary in indebted developing countries, and weak inflationary in other developing countries that were not indebted.
- Reinhart and Rogoff study (2010), examined the systemic relationship between high public debt levels, Growth and inflation in a sample of advanced economies, as well as emerging market countries over the period of 1946 to 2009. They reported that in most of those cases, economic growth remained stagnant for more than a decade.

6. RESEARCH METHODOLOGY AND DATA:

The research consists of six sections, shown as follows:

- The first section deals with the causes and forms of public debt.
- The second one presents the non-linear theoretical relationship between public debt and growth (debt Laffer curve).
- The third one is concerned with the theoretical relationship between public debt and the inflation rate.
- The fourth one reviews the data on domestic debt in Egypt during the study period.
- The fifth one reviews the debt data of the foreign debt in Egypt during the study period.
- The last one and last reviews the total public debt (total domestic and foreign debt) and its non-linear relationship to growth, and its linear relationship to inflation.

The research will be based on data derived from the annual reports of the Central Bank of Egypt from 2010 to 2020, and the World Bank website also.

1-PUBLIC DEBT: CAUSES AND TYPES

A government usually borrows for three main reasons: the first is to finance the state's budget deficit. (Achieng, 2012) The second is the insufficiency of the national savings to finance the productive investments that the state needs, or the insufficiency of the state's foreign exchange earnings to cover the deficit in the international balance of payments. (Husted & Melvin, 2001) The third is that the public loan is considered one of the economic policy tools, which are used to achieve certain macroeconomics goals, such as reducing inflation by increasing the domestic public debt to absorb excess money supply. (Dornbusch & Fischer Stanley, 1994)

Public debt can be divided in terms of the source of the loans into domestic (internal) debt and foreign (external) debt. (Samuelson & Nordhaus, 1995) There are three possible definitions of external (and thus, domestic) debt. The first focuses on the currency in which the debt is issued; (with external debt, it is defined as foreign currency debt). The second focuses on the residence of the creditor; (with external debt, it is debt owed to non-residents). The third focuses on the place of issuance and the legislation that regulates the debt contract, (Regarding external debt, it is debt issued in foreign countries and under the jurisdiction of a foreign court). (Panizza, 2008)

Many argue that internal debt is not a burden because we owe it all to ourselves, and although this is an oversimplification, it is a valid idea, Because these loans are repaid through tax revenues paid by people. But the external debt, represents a burden because the debtor state must deduct part of its available resources to pay it abroad. Therefor serving the external debt represents a reduction in what can be consumed locally. (Samuelson & Nordhaus, 1995)

The public debt level considered low if the ratio of public debt to GDP is less than 30%, medium if it is between 30% to 60%, high if it is between 60% to 90%, and very high if it is above 90%. (Reinhart, 2010) It is considered within the safe limits if it does not exceed 60% or 70%. (Al-Faqi, 2021)

It is important to express external debt in terms of export of goods and services, which are the mirror image of the capacity to manage the external sector imbalances. (Mahmood, Rauf, & Ahmad, 2009). According to the World Bank, as a rule of thumb, a country that has an external debt that exceeds 200% of its exports of goods and services suffers from a foreign debt overhang problem, because it crossed the safe limits. (Richards, 2013)

2-THE THEORETICAL RELATIONSHIP BETWEEN PUBLIC DEBT AND ECONOMIC GROWTH

To simplify, it is possible to say that the debtor country is similar to the debtor company. Theoretically, the greater the company's debts, the greater its investments, and consequently, the higher its profits, and the greater its ability to repay its debts, which gives creditors confidence in its financial ability. But after a certain threshold, the matter turns to the opposite direction, and it turns into a company heavily burdened with debts, and its ability to repay decreases. This relationship is illustrated by the debt Laffer curve by clarification through a relationship between the debt balance and estimated repayment capacity. Similarly the ability of the state to generate revenues that enable it to pay the public debt is of interest to creditors as well. (Krugman, 1988)

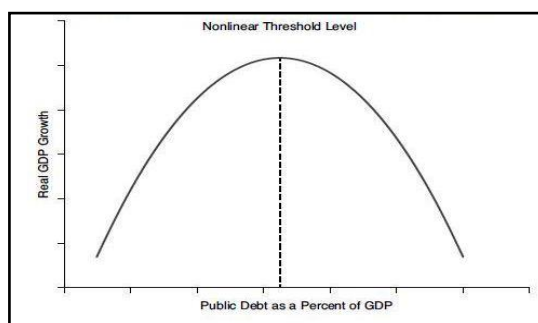
The debt laffer curve is one example of nonlinear bell-shaped relationships in economics. Originally it was introduced by Sachs (1989), and was used to establish the concept of debt overhang. This refers to a scenario where higher and unsustainable levels of borrowing by developing countries expose them to losses. A pronounced debt burden and the associated cost of servicing it will create difficulties for developing economies to properly invest their income. (Megersa, 2015)

Therefore, the Laffer curve for debt has been reformulated to represent the relationship between the public debt ratio to GDP (PD/GDP) and the real growth rate (GR) as shown in Figure 1, which shows that at low debt levels, increases in the debt-to-GDP ratio generate a positive economic stimulus, leading to an increase in the real growth rate. But after reaching the non-linear threshold, any increase in this ratio will lead to a decline in the real growth rates. Existence of a nonlinear threshold would imply that neoclassical theories on the relationship between debt and growth may be well grounded. Such theories suggest that; with the increase in public debt, investors expect that the government will increase taxes in the future to pay off these debts, and these expectations lead to a decrease in the

incentive to invest and thus a decrease in potential economic output. (Barro, 1979)

This led to the emergence of the term debt trap on a large scale in economic writings in the eighties, where these writings indicated that the expansion of borrowing by developing countries leads to weakening investment incentives because investors fear the tax burdens that the government may impose on them in future to be able to repay these debts. Thus, if debt helps the government in the short term to bridge the financing gap, but in the long run the high rate of public debt leads to lower economic growth. (Bagoury, 2022)

FIGURE (1): THE DEBT “LAFFER” CURVE



Source: (Salmon, 2021)

Additionally, a nonlinear threshold could suggest that increasing government borrowing competes for funds in the nation's capital markets, which in turn raises interest rates and crowds out private investment, confirming the debt overhang theory. (Salmon, 2021)

Economic literature has shown that if a debtor country reaches a stage where debt has increased to a degree that exceeds its ability to repay debt and debt service, confidence in its economy will weaken, investment will decline, and economic growth will decline too. (Musa, 2022)

A country suffers from debt overhang if it owes more money to its creditors than it is able to pay. Debt overhang can arise either because a country borrows excessively or because a previously manageable stock of debt becomes intractable due to a change in a country's circumstances, like a fall in the price of its exports relative to imports or poor economic management. A country experiencing debt overhang will be unable to attract new creditors, since lending to such a country would, by the definition of debt overhang, result in a stream of expected repayments whose present value is less than that of the loan. A country suffering from debt overhang will invest less than it would in the absence of such an overhang and consequently may forego projects with a positive net present value. Therefore debt relief can promote investment and growth when debt overhang inhibits a country's economic performance. (Arslanalp & Henry, 2006)

Empirically C.M. Reinhart and K.S. Rogoff examined the systemic relationship between high public debt levels, Growth and inflation in a sample of advanced economies, as well as emerging market countries over the period of 1946 to 2009. They reported that in most of those cases, economic growth remained stagnant for more than a decade. What is notable about their findings is the presence of a non-linear relationship between public debts and economic growth. It was shown that when the ratio of public debts to GDP is higher than 90%, the annual economic growth rate is as much as 1.2% lower than when the public debt ratio is less than 90%. When the public debt ratio is small, an increase in debts is not observed to have an impact on economic growth. However, when the public debt ratio is higher than 90%, there is a tendency that an increase in debts lowers economic growth. Surprisingly, the relationship between public debt and growth is remarkably similar across emerging markets and advanced economies. For emerging markets when gross external debt reaches 60% of GDP, annual growth declines by about 2%; for levels of external debt in excess of 90% of GDP, growth rates are roughly cut in half. The study indicated that there is a high average external

debt in European countries where the external public debt on average is about 200% of the GDP in developed countries. (Reinhart, 2010)

Checherita-Westphal and Rother examined the relationship between public debts and per-capita GDP through various methods based on data concerning 12 euro-area countries from 1980 to 2010. As a result, it was confirmed that when the ratio of public debts to GDP was higher than the range of 90-100%, any increase in the public debt ratio reduced more than that per-capita GDP. (Kobayashi, 2015)

Neither the value of the debt nor its ratio to the GDP is not considered the only indicator to infer the existence of a problem in the public debt. Therefore, there are institutions that have added other indicators. For example, assistance under the Heavily Indebted Poor Countries (HIPC) Initiative; which set new indicators, namely the ratio of external public debt to exports, and clarified that if this ratio does not exceed 150% of export then the external public debt is considered within safe limits. As well as the ratio of the local public debt to tax revenues, and clarified that, if this ratio does not exceed 250% of tax revenue then the internal public debt is considered within the safe limits. (The Policy Development and Review Department, 2000)

1. THE THEORETICAL RELATIONSHIP BETWEEN PUBLIC DEBT AND INFLATION

Theoretically, using the proceeds of domestic public loans to establish public productive projects or infrastructure projects that result in an increase in private production projects leads to an increase in the supply of goods and services and thus a decline in the inflation rate (Provided that aggregate demand remains constant or increases at a rate less than aggregate supply). Vice versa if the loans are used for consumer expenditures or projects that did not generate profits or sufficient revenues to pay off the local public debt, the government will be forced to increase fees and taxes, especially indirect ones,

which will lead to a high rate of inflation due to the tax burden-shifting phenomenon.

Similarly, the use of foreign public loans in the same investing way leads to a decrease in the inflation rate, provided that these projects provide the foreign currency needed to repay the loan and its interest. This goal can be achieved through increasing exports or following a policy of substituting imports by domestic production, thus providing the foreign currency that was paid for imports to repay the foreign loan and its interest. But if foreign borrowing is not accompanied by gaining or saving more foreign currency the repayment of loan installments and interests will pressure the exchange rate of national currency downward, which will lead to a rise in the rate of inflation as a result of what is known as the phenomenon of Exchange-rate pass-through effect.

As inflation is affected by the public debt, the public debt affects inflation too, because the rise in inflation leads to a decrease in the real value of public revenues, which leads to an increase in the deficit, and the need to borrow again to finance the deficit. (Helmy, 2021)

Empirically the relationship between public debt and inflation has generally been studied in many countries by different authors using different estimation techniques. (Aimola & Odhiambo, 2020) For example, M. Wheeler investigated the macroeconomic impacts of government debt for the United States; the study concluded that there was significant negative impact of government debt on inflation, suggesting non-existence of inflationary pressures. (Wheeler, 1999)

Conversely, G. Kwon et al. provided comprehensive empirical evidence that supported the hypothesis that an increase in public debt was typically inflationary in countries with large public debt. The main findings of the paper were that an increase in public debt was typically inflationary in indebted developing countries, and weak in other developing countries that were not indebted. (Kwon, 2006)

C.M. Reinhart and K.S. Rogoff examined the systemic relationship between high public debt levels, Growth and inflation in a sample of advanced economies, as well as emerging market countries over the period of 1946 to 2009. In the case of public debt and inflation relationship of the study, findings revealed that for advanced economies, there was no systemic relationship between high public debt levels and inflation. On the other hand, results for emerging market economies showed that high public debt levels coincided with higher inflation episodes. (Reinhart, 2010)

2. DOMESTIC DEBT IN EGYPT (2010-2020)

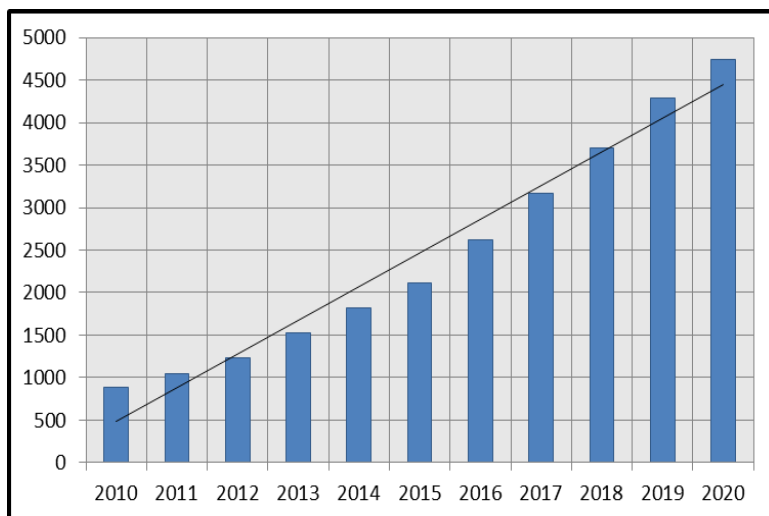
The following table reviews the official data for each of the value of the domestic debt (DD), its annual growth rate (DDG), and the ratio of domestic debt to GDP (DD/GDP).

TABLE (1): INDICATORS OF DOMESTIC DEBT IN EGYPT 2010-2020

N	End of June	DD Billion Pounds	DDG %	DD/GDP %
1	2010	888.7	17.7%	73.7%
2	2011	1044.9	17.6%	76.2%
3	2012	1238.1	18.5%	80.3%
4	2013	1527.4	23.4%	87.1%
5	2014	1816.6	18.9%	90.9%
6	2015	2116.4	16.5%	87.1%
7	2016	2619.6	23.8%	96.7%
8	2017	3160.9	20.6%	91.1%
9	2018	3696.4	16.9%	83.3%
10	2019	4282.1	15.8%	80.5%
11	2020	4742.1	10.7%	81.5%
Average			18.2 %	84.4%

Sources: (Central Bank of Egypt, 2010-2020)

**FIGURE (2): DOMESTIC DEBT VALUE (DD) IN EGYPT 2010-2020
(Billion Pounds)**



It is evident from the previous table and figure that the value of the domestic debt (DD) has taken a general upward trend during the study period, rising from 888.7 billion pounds in 2010 to reach 4.7 trillion pounds in 2020, with an annual average growth rate of 18.2%.

The proportion of domestic debt to GDP (DD/GDP) fluctuated up and down during the study period around a general upward trend, to rise from 73.7% in 2010 and peaked at a percentage of 96.7% in 2016, reached 81.5% in 2020, this exceeds the safe limits, because the domestic debt should not exceed 60% of GDP, as it is considered a safe boundary. (Zaki, 2000)

3. FOREIGN DEBT IN EGYPT (2010-2020)

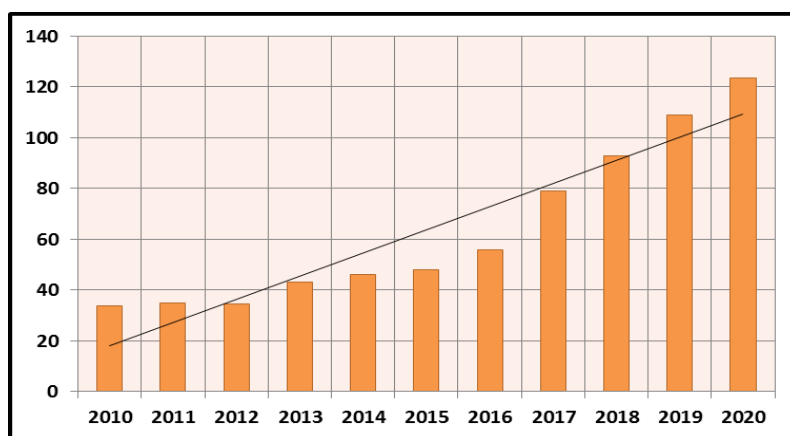
The following table reviews the main indicators of foreign debt, which are the value of foreign debt (FD) in billions of dollars, the growth rate of this debt (FDG), and the ratio of foreign debt to GDP (FD/GDP).

TABLE (2): INDICATORS OF FOREIGN DEBT IN EGYPT 2010-2020

N	End of June	FD Billion Dollars	FDG %	FD/GDP %
1	2010	33.7	6.9%	15.9%
2	2011	34.9	3.5%	15.2%
3	2012	34.4	-1.4%	13.5%
4	2013	43.2	25.5%	17.3%
5	2014	46.1	6.7%	16.4%
6	2015	48.1	4.3%	14.9%
7	2016	55.8	16%	18.1%
8	2017	79	41.7%	33.6%
9	2018	92.6	17.2%	37%
10	2019	108.7	17.3%	36%
11	2020	123.5	13.6%	34.1%
Average		13.7%	23%	

Sources: (Central Bank of Egypt, 2010-2020)

**FIGURE (3): FOREIGN DEBT VALUE (FD) IN EGYPT 2010-2020
(Billion Dollars)**



The value of foreign debt has taken a general upward trend (Except for a decrease in only one year, 2012) to rise from 33.7 billion dollars in 2010 to 123.5 billion dollars in 2020, with an annual average growth rate of 13.7%. It is clear that as of 2017, it has started to grow more than usual, in that year; it achieved the highest growth rate of 41.7%.

The proportion of foreign debt to GDP (FD/GDP) fluctuated up and down during the study period around a general upward trend, to rise from 15.9% in 2010 and peaked at a percentage of 37% in 2018 and then reached 34.1% in 2020.

The reports of the Central Bank of Egypt show that the foreign debt service ratio to the current proceeds (the proceeds of merchandise and service exports and net transfers) has increased significantly from 4.5% in 2010 to 22.5% in 2020. (Central Bank of Egypt, 2010-2020) In 2010, Egypt's external debt amounted to 36 billion dollar, or 17% of its GDP and 79% of its exports of goods and services. Ten years later, and specifically in 2020, Egypt's external debt amounted to 123.5 billion dollar or 34.1% of its GDP, and an alarming 285% of its exports of goods and services. (Helmy, 2021) Thus, Egypt has crossed the limits of the safe external debt (200%).

According to the Egyptian government's agreement with the International Monetary Fund in 2016, the fiscal policy aims to reduce the budget deficit by increasing revenues and rationalizing spending with the aim of making public resources available for use in spending on high-priority areas, such as infrastructure, health, education and social protection. (INTERNATIONAL MONETARY FUND, 2016)

4. PUBLIC DEBT, GROWTH AND INFLATION IN EGYPT

6.1. PUBLIC DEBT AND GROWTH RATE:

To study the relationship between public debt (total domestic and foreign debt) and both the real growth rate and the inflation rate, the following table reviews the necessary data.

TABLE (3): PUBLIC DEBT INDICATORS IN EGYPT 2010-2020

N	End of June	PD Billion Pounds	PDG %	PD/GDP %	GR %	IR %
1	2010	1081.127	16.0%	89.6%	5.1%	10.7%
2	2011	1253.602	16.0%	91.4%	1.8%	11.8%
3	2012	1446.908	15.4%	93.8%	2.2%	7.3%
4	2013	1831.96	26.6%	104.4%	2.2%	9.8%
5	2014	2147.598	17.2%	107.3%	2.9%	8.2%
6	2015	2483.403	15.6%	102.0%	4.4%	11.4%
7	2016	3115.104	25.4%	114.8%	4.3%	14.0%
8	2017	4593.96	47.5%	124.7%	4.2%	29.8%
9	2018	5356.718	16.6%	120.3%	5.3%	14.4%
10	2019	6102.825	13.9%	116.5%	5.6%	9.4%
11	2020	6718.1	10.1%	115.6%	3.6%	5.6%
Average			20.4%	107.3%	3.8%	12%

Sources: (Central Bank of Egypt, 2010-2020), (The World Bank, 2022)

The public debt as a percentage of GDP (PD/GDP) has increased from 89.6% in 2010 to reach its maximum increase in 2017 to reach 124.7% and then reach 115.6% in 2020. These percentages are classified as a very high debt, because it is over 90%. And it is greater than the safe levels of public debt, where it should not exceed range of 60% to 70%.

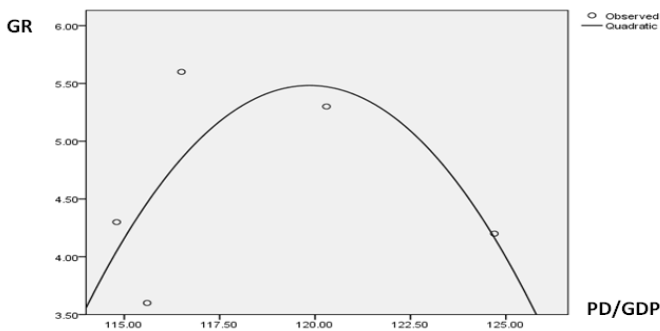
To find out the nature of the relationship between the public debt ratio to GDP and the real growth rate in Egypt during the study period, their data were represented together in the following figure.

FIGURE (4): PD/GDP & GR IN EGYPT 2010-2020



It is clear from the previous figure that the Debt Laffer curve does not apply to the case of Egypt during the study period as a whole; Therefore, the quadratic curve was re-estimated based on data for the period from the beginning of the implementation of the economic reform program in 2016 to 2020 only, it was found that it took the shape of Laffer curve as shown in the following figure.

FIGURE (5): OBSERVED AND ESTIMATED QUADRATIC CURVE OF (PD/GDP) & (GR) IN EGYPT 2016-2020



Source: SPSS Output.

Data of PD/GDP is represented on the horizontal axis, and data of GR on the vertical axis. It appears from the previous figure that (PD/GDP) ratio rises, so the growth rate (GR) rises until it reaches a threshold of approximately 120%, and then the higher the percentage, the lower the growth rate.

The following table presents the results of the simple regression model estimation between public debt as a percentage of GDP (PD/GDP) as an independent variable and the growth rate (GR) as a dependent variable, in Egypt from 2016 to 2020.

**TABLE (4): THE RESULTS OF SIMPLE REGRESSION
QUADRATIC MODEL BETWEEN (PD/GDP) AND (GR)
IN EGYPT (2016-2020)**

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
PDGDP	13.457	9.794	66.897	1.374	.303
PDGDP ** 2	-.056-	.041	-66.843-	-1.373-	.303
(Constant)	-800.978-	585.893		-1.367-	.305

Source: SPSS Output.

From the previous table, the estimated equation can be written as:

$$GR = -800.978 + 13.457 (PD/GDP) - 0.056 (PD/GDP)^2 \text{ ----- (1)}$$

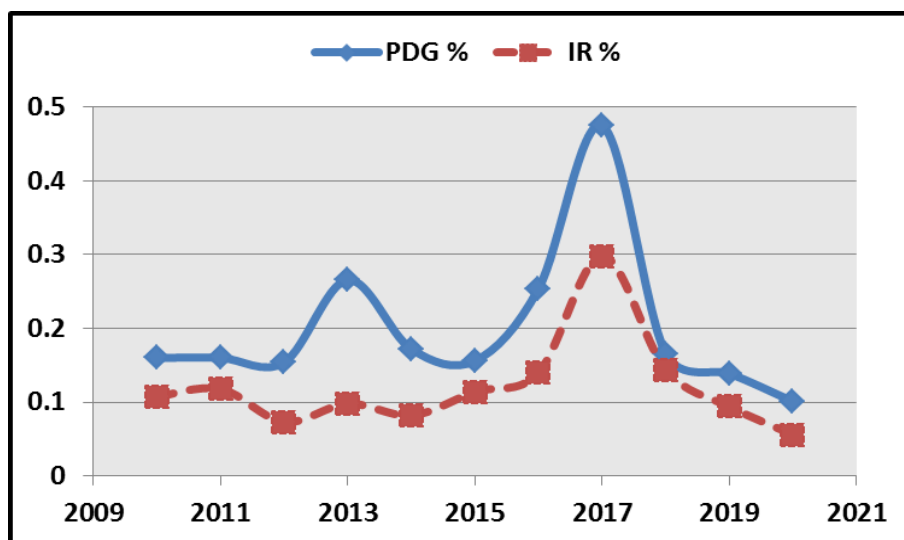
But the results of the t-tests were not statistically significant, which makes us lose confidence in the correctness of the estimated equation, and most likely the reason for this is the

short period of time from 2016 to 2020. Therefore, it was not possible to process the data statistically to estimate a significant equation.

6.2. PUBLIC DEBT AND INFLATION RATE:

In order to find out the nature of the relationship between public debt growth and inflation, their data presented in Table No.3 are represented in the following chart.

FIGURE (6): PDG AND (IR) IN EGYPT 2010-2020



The public debt growth rate and the inflation rate fluctuated up and down without a clear general trend, but the harmony between both curves seems clear.

By estimating simple regression model between the annual public debt growth rate (PDG) as an independent variable and the inflation rate (IR) as a dependent variable, the results were as presented in the following table.

**TABLE (5): THE RESULTS OF SIMPLE REGRESSION
LINEAR MODEL BETWEEN (PDG) AND (IR) IN EGYPT
(2010-2020)**

Model Summary						
Model	R	R Square	Adjusted R Square		Std. Error of the Estimate	
1	.900 ^a	.810	.789		2.9714	
a. Predictors: (Constant), PUBLIC DEBT ANNUAL GROWTH						
Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	.701	2.039		.344	.739
	PUBLIC DEBT ANNUAL GROWTH	.566	.091	.900	6.190	.000
a. Dependent Variable: INFLATION RATE						

Source: SPSS Output.

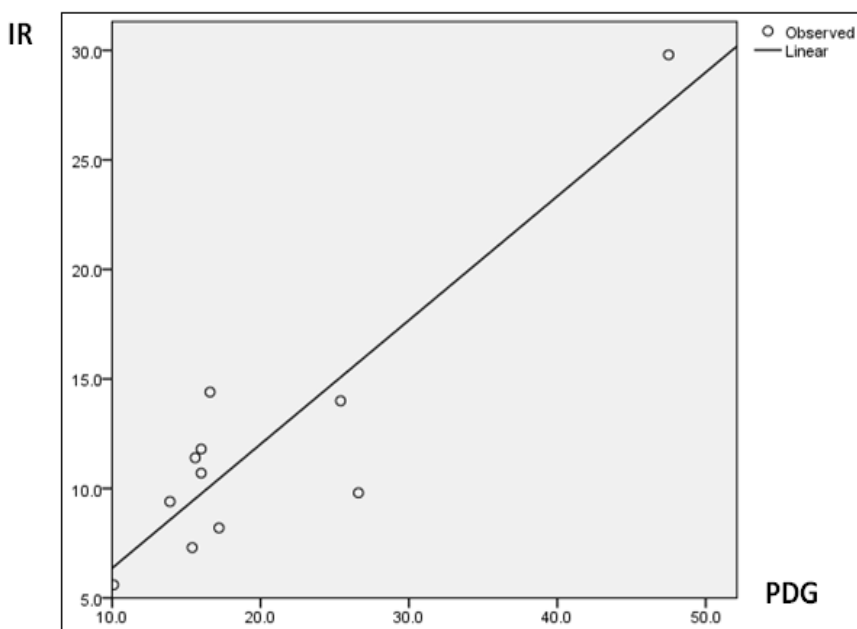
From the results, we find that, there is a strong positive significant correlation between the public debt growth rate (PDG) and inflation rate (IR), with person coefficient (R) value of 90%. And from the value of adjusted R², we find that the change in PDG as an independent variable explains 78.9% of the change in the IR as a dependent variable. From the value of β_0 and β_1 , this relationship can be expressed by the following estimated equation:

$$IR = 0.556 PDG \text{ ----- (2)}$$

This means that if Public Debt Growth Rate is equal to zero, the Inflation Rate will be equal to 0.7 approximately, which is the value of the constant item β_0 in the equation, but it was not statistically significant, so it was excluded .

This equation also tells us that every one unit change in PDG leads to a less change in the IR, with value of 0.556, which is the marginal slope β_1 of this linear equation.

**FIGURE (5): ESTIMATED LINEAR CURVE OF (PDG) & (IR)
IN EGYPT 2010-2020**



Source: SPSS Output.

The previous figure shows the linear curve of the indicated estimated equation. With the comparison with the points that represent the actual observations of the data of the two variables. Data of PDG is represented on the horizontal axis, and data of IR on the vertical axis.

The positive relationship between PDG and IR can be explained by concentrating the uses of public debt in infrastructure investment, and therefore not using it to increase the supply of goods and services sufficiently to control prices. Rather, the public debt was most likely used in infrastructure projects that did not generate enough public revenues for the state, and did not encourage the creation of new private investments or the expansion of the existing ones sufficiently to increase the production then increase the aggregate supply, in addition to a decrease in imports. Therefore the government had to impose additional indirect taxes and fees to finance the repayment of the domestic debt; this led to an increase in the price level, due to traders shifts the burden of taxes and fees to consumers.

As for the increase in the external debt, it was accompanied by a decrease in the exchange rate of the Egyptian pound, which means that the foreign debt was not invested enough in projects that provide the domestic products as an alternative to the foreign products and thus reduce imports, or was not used in investments that lead to an enough increase in exports, therefore the government did not have sufficient foreign exchange resources. The decline in the exchange rate of the pound leads to an increase in the prices of imports and thus an increase in the price level and inflation.

CONCLUSION

The research found that the domestic debt, the foreign debt, and the total public debt exceeded the safe limits in Egypt during the period from 2010 to 2020. The government should do its best to reduce the public debt to safe limits that are less than 70% of the gross domestic product, which is the goal that the government are targeting by 2026.

The Debt Laffer curve applied for the period from 2016 to 2020 only, the (PD/GDP) ratio rises, so the growth rate (GR) rises until it reaches a threshold of approximately 120%, and then the higher the percentage, the lower the growth rate. This threshold is considered high, and the relationship was not statistically significant due to the short period of time since the implementation of the second economic reform program, starting in 2016, therefore, it needs to be re-tested in the future to reliably and statistically estimate the impact of public debt on growth.

There is a strong positive significant correlation between the public debt growth rate (PDG) and inflation rate (IR), with person R value of 90%. This can be explained by not directing public loans to sufficient investments to increase the supply of goods and services. Therefore the research recommends investing public loans in productive projects that contribute to increasing the supply of goods and services, reducing imports, and increasing exports, with the aim of reducing inflation rates and stabilizing the exchange rate of the Egyptian pound.

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