

# The Relationship between Public Debt and Economic Growth in Jordan for the Period (1990-2018)

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## Abstract

The study aims to identify the effect of public debt on economic growth in Jordan between 1990 and 2018. The importance of the study lies in the effects of net public debt on the Jordanian economy and economic stability, and thus the identification of the role of public debt in Jordanian economic growth. To achieve the aim of the study the descriptive analytical approach was used. Simple Linear Regression (SLR) has been employed to measure and analyze the relationship between Net Public Debt (NPD) and Gross Domestic Product (GDP). The study showed that there is a clear negative relationship between the ratio of NPD to GDP and the rate of economic growth in Jordan during the first period of the study, and this relationship became more clear during the period 2006-2018, and this negative relationship became strong when the public debt ratio to GDP exceeded 80.0%.

**Keywords:** Gross Domestic Product (GDP), Net Public Debt (NPD), Net External Debt (NED), Net Domestic Debt (NDD), Economic Growth (EG), Jordan.

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## 1. Introduction

The debt problem has emerged as one of the most prominent obstacles facing developing countries, because of its negative effects on the process of economic and social development. Development in these countries collided with the decrease in their local savings, high consumption rates and the lack of local investments. That led to resorting to debt as one of the means of providing the necessary financing to achieve the desired growth and advancing economic development. As a result of continuous borrowing, coverage of shortcomings in domestic savings by borrowing has led to a high balance of public debt (Al-Adayleh et al., 2015). Like other developing countries, Jordan suffers from structural imbalances as a result of the lack of financial and economic resources, which led to a persistent and chronic deficit in the trade balance and the public debt as a result of low level revenues, due to the low rate of withholding tax, which ranges between (20% - 25%) of income, which is a low percentage compared to developed countries, which ranges between (35% - 40%) of the income, which results in little tax receipts and lower direct revenue ratio of public revenues (Al-Khatib and Shamiyeh, 2016).

## 2. Study Problem

The Jordanian economy depends on loans since the establishment of the Kingdom, which led to an increase in the burdens of these debts. Therefore, the need has emerged to study the structure of the Net Public Debt (NPD) and explain its impact on Economic Growth (EG), whether the debt is domestic or external. Therefore, this study attempts to answer the following questions:

1. Does Net Public Debt (NPD) affect Economic Growth (EG) in Jordan?
2. What are the trends in the development of Net Public Debt (NPD)?

## 3. The importance of study

The importance of the study lies in the effects of Net Public Debt (NPD) on the economic growth in Jordan, and the extent to which the Jordanian government can benefit from it in drawing its policies related to NPD and EG.

## 4. Study Objectives

This study seeks to achieve the following goals:

1. Identifying the size of the Domestic and External Debt and which of them did Jordan depend on during the study period.
2. Identifying the EG rates in Jordan during the study period.
3. Identifying the effect of NDP on EG in Jordan during the study period.

## 5. Study Methodology

This study is based on the use of analytical descriptive method to analyze and interpret the relationship between the economic variables of Gross Domestic Product (GDP) and the effect of the Net Public Debt (NPD). Data

analysis process will be depending on the base null hypothesis testing, and the use of a Linear Regression Equation (LRQ):

$$Y = a + bX$$

X = the Explanatory Variable, Independent Variable (IV); Net Public Debt (NPD).

Y = the Dependent Variable (DV); Gross Domestic Product (GDP).

The slope of the line is *b*, and *a* is the intercept (the value of *y* when *x* = 0).

## 6. Data sources

Various sources of books and researches have been relied upon to cover the theoretical aspect of this study in addition to the Central Bank of Jordan and the Department of Statistics of Jordan data in order to provide data related to the study.

## 7. The structure of NPD and EG in Jordan

### 7.1. Economy growth (EG)

EG is considered one of the most important economic goals that countries seek to achieve. It is also a necessary condition for improving the living standard of society and an indication of the size of prosperity experienced by society. Economic growth is defined as an increase in average real per capita income over time (Al-Hammoudi, 2015). Individual's standard of living improves if total income growth rate exceeds the rate of population increasing.

### 7.2. Net Public Debt (NPD)

Public debt is defined as the quantitative accumulation of the budget deficit resulting from increased government spending, and NPD is the additional money the government obtains from the private sector by offering treasury bills and government bonds (Connell & Brue, 2002). The NPD is defined as the amount of money the state obtains from the national or external market and undertakes to refund it and pay interest on it according to certain conditions, NPD is subject to support and rejection in light of the positive or negative effects of the NPD on the level of employment, production and justice in the distribution of national income (Abdul Majeed, 1996). NPD is divided into two parts: Net Domestic Debt (NDD) and Net External Debt (NED).

#### 7.2.1 Net Domestic Debt (NDD)

The NDD is also known as an amount of money that the state obtains from natural and legal individuals residing within the state, and in return, the state is obliged to pay the principal of the loan and the benefits due from it according to the loan contract (Saeed, 1997). Internal loans are a transfer of purchasing power from one economic unit to another within the national economy, so they do not cause any real increase in the purchasing power of society, but there may be material gains that the government will achieve in case of a decrease in the value of the local cash, because internal loans are made in the national currency. Domestic loans do not lead to any increase in national wealth, unlike external loans that transfer part of the wealth to the borrowing country. The internal loan to the state provides a portion of the national wealth in the local currency, and therefore does not affect the exchange rate.

#### 7.2.2 Net External Debt (NED)

The NED is also known as an amount of money that the state obtains from natural and legal individuals residing outside the state, and in return, the state is obliged to pay the principal of the loan and the benefits due from it according to the loan contract (Saeed, 1997). The NED is the direct cash burden of the total cash payments to external creditors to pay the principal and its benefits, and the direct monetary burden of the external public debt is measured by the contents of these payments, a decrease in the size of economic welfare for the debtor community and the transfer of the economic surplus upon payment (Fawzi, 1965). External indebtedness is characterized as providing additional resources without an immediate reduction in the use of other economic resources, whether the resources allocated for consumption or capital formation, and this means that the alternative cost has been postponed to a later time, that is, until the principal and interest accrued is repaid.

The economic analysis has been divided into two opposite views; the first view is attributed to classic thinkers who view public loans as an exceptional source and may only resort to narrow limits. So that these loans have economic implications and burdens on the national economy and affect EG negatively. The other view is attributed to Keynes who see that indebtedness is considered a form of additional financing for the economy, which leads to supporting the economy. If the external loans are directed to increasing capital formation and production capacity in order to pay the principal and benefits of the loan.

### 7.3. The evolution of Jordanian indebtedness size

Jordan began to resort to external financing since the establishment of the Kingdom, and the first external loan was contracted in 1950 with Britain, which was the only source of lending at the time (Al-Nabulsi, 1993). Jordan's dependence on external and internal loans is due to several reasons, including the long-term political, social and

population problems that have afflicted it as a result of the wars it has fought since the beginning of the second half of the last century, the lack of natural resources, and the misuse of available ones.

The figures announced by the Central Bank of Jordan indicate that the size of Jordan's NPD as on December 31, 2018 is 28.3 billion dinars, of which 16.2 billion dinars are NDD and 12.1 billion dinars are NED. Thus, the NPD constitutes about 94.4% of Jordan's GDP, and this percentage exceeds the ratio set by the World Bank, so that it should not exceed 77% for developed countries, and not more than 64% for developing countries. debt ratios exceed global levels and the permitted rate in the NPD law, so work must be done to reduce NPD to return to acceptable limits and reduce the burden on the government budget by setting budgets with zero deficit and raising the efficiency of bidding committees to reduce expenditures and developing the efficiency of anti-corruption agencies, and the development of public budget management through the use of budget programs and performance that improved the financial performance of many countries of the world, and approved by general law regulation budget in Jordan in 2008.

According to Table (1), we note that the existing balance of public debt increased from about 6.1 million dinars in 1990 to 28.3 billion dinars at the end of 2018, with an average of 11.5 billion dinars during this period. The dependence on the NED was the beginning of this period five times the internal debt, where the balance of the NED in 1990 was about 5.1 billion dinars, while the balance of the NDD amounted to 1.0 billion dinars, and the dependence on the external NPD continued until the end of 2007. The focus began in Reliance on the NDD at the beginning of 2008, when the balance of the NDD at the end of the same year reached 5.8 billion dinars, while the balance of the NED was 3.6 billion dinars. In 2018, the balance of the NDD was 16.2 billion dinars, or 57.3% of the NPD, and the balance of NED was 12.1 billion dinars, 42.7% of the NPD.

Table 1. Evolution of NPD (NDD & NED) size in Jordan (1990 - 2018)

Year	Net domestic debt*	The growth rate in domestic debt***	Net external debt**	The growth rate in external debt***	Net public debt**	The growth rate in Net public debt***
1990	1,037.4	-	5,064.3	-	6,101.7	-
1991	1,061.7	2.3%	4,958.7	-2.1%	6,020.4	-1.3%
1992	1,041.5	-1.9%	4,577.6	-7.7%	5,619.1	-6.7%
1993	1,143.8	9.8%	4,229.6	-7.6%	5,373.4	-4.4%
1994	1,181.3	3.3%	4,720.5	11.6%	5,901.8	9.8%
1995	966.1	-18.2%	4,911.8	4.1%	5,877.9	-0.4%
1996	994.6	3.0%	5,164.3	5.1%	6,158.9	4.8%
1997	914.2	-8.1%	4,998.1	-3.2%	5,912.3	-4.0%
1998	1,152.0	26.0%	5,333.7	6.7%	6,485.7	9.7%
1999	1,054.0	-8.5%	5,510.1	3.3%	6,564.1	1.2%
2000	1,235.0	17.2%	5,043.5	-8.5%	6,278.5	-4.4%
2001	1,151.7	-6.7%	4,969.8	-1.5%	6,121.5	-2.5%
2002	1,334.9	15.9%	5,350.4	7.7%	6,685.3	9.2%
2003	1,703.7	27.6%	5,391.8	0.8%	7,095.5	6.1%
2004	2,082.0	22.2%	5,348.8	-0.8%	7,430.8	4.7%
2005	2,467.0	18.5%	5,056.7	-5.5%	7,523.7	1.3%
2006	2,961.0	20.0%	5,186.5	2.6%	8,147.5	8.3%
2007	3,695.2	24.8%	5,253.3	1.3%	8,948.5	9.8%
2008	5,754.0	55.7%	3,640.2	-30.7%	9,394.2	5.0%
2009	7,086.0	23.1%	3,869.0	6.3%	10,955.0	16.6%
2010	7,980.0	12.6%	4,610.8	19.2%	12,590.8	14.9%
2011	9,996.0	25.3%	4,486.8	-2.7%	14,482.8	15.0%
2012	12,678.0	26.8%	4,932.4	9.9%	17,610.4	21.6%
2013	13,440.0	6.0%	7,234.5	46.7%	20,674.5	17.4%
2014	14,621.0	8.8%	8,030.1	11.0%	22,651.1	9.6%
2015	15,487.0	5.9%	9,390.5	16.9%	24,877.5	9.8%
2016	15,794.0	2.0%	10,299.0	9.7%	26,093.0	4.9%
2017	15,402.0	-2.5%	11,867.2	15.2%	27,269.2	4.5%
2018	16,221.0	5.3%	12,087.5	1.9%	28,308.5	3.8%

Source: \*Department of Statistics of Jordan.

\*\*Central Bank of Jordan.

\*\*\*Descent from the preparation of researchers.

According to figure (1) we can see the evolution of indebtedness volume in Jordan to the period of (1990-2018).

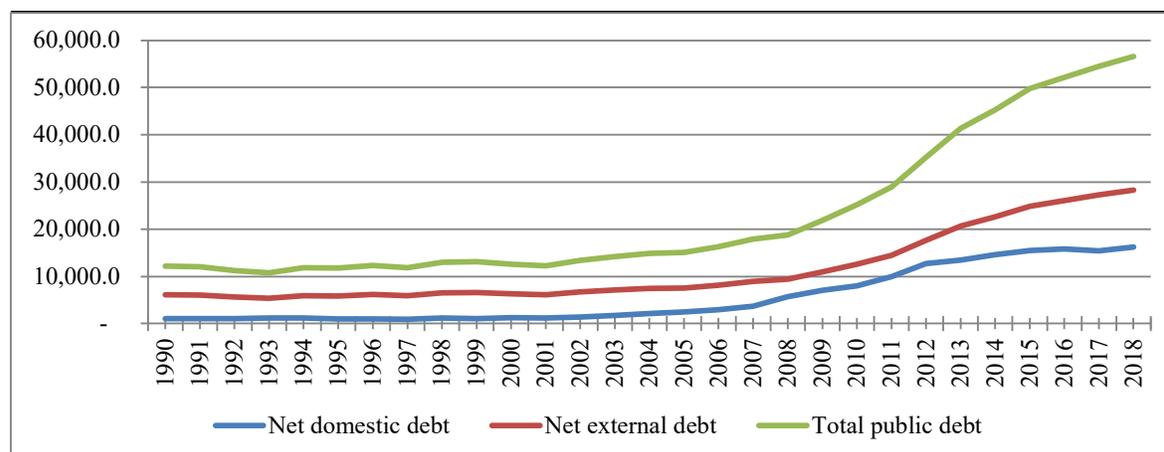


Figure 1. Evolution of indebtedness volume in Jordan (1990-2018)

#### 7.4. The evolution of indebtedness volume as a percentage of Jordan's GDP

Most of the loans were contracted with external parties. It is noted from Table (2) that the volume of NED constituted 183.4% of GDP, while the amount of NDD was about one fifth of this figure, or 37.6%, and the balance of NDD remained at an average of 25.0 of GDP in the period 1990-2007. Meanwhile the ratio of NED has been decreasing at a steady rate during the same period and recorded on average about 95.7, and therefore the average NPD relative to GDP for the same period was about 120.7. With the beginning of the Arab crisis (Gulf War), the suffering of the Jordanian economy seemed clear, as the size of NPD was twice the size of the GDP during the period 1990-1994, the average share of NED was 139.0 of GDP, while the average NPD was 31.8 of GDP during this period, while the average NPD was 170.8 of GDP. Since 1992, with Jordan entering the stage of economic reformation programs, the impact of those programs on the Jordanian economy has become clear, as the ratio of the debt size attributable to GDP fell from 221 in 1990 to about 66.9 at the end of 2010, an average of 112.5 of GDP during this period. NDD constituted 31.7 of NPD, while the share of NED was 68.3 of NPD. After the amendment of the Public Debt Law of 2001, the share of NDD began to increase as a percentage of GDP to record about 33.3% during the period 2002-2010. On the other hand, the ratio of NDD to GDP decreased to 41.5. This is clear in Figure (2), the development of the size of the debt as a percentage of the GDP.

Table 2. Evolution of indebtedness size as a percentage of GDP (1990-2018)

Year	Net domestic debt / GDP	Net external debt / GDP	Net public debt / GDP
1990	37.6	183.4	221.0
1991	35.9	167.6	203.5
1992	28.8	126.8	155.6
1993	29.4	108.9	138.3
1994	27.1	108.3	135.4
1995	20.5	104.2	124.7
1996	20.3	105.2	125.4
1997	17.8	97.3	115.1
1998	20.5	95.1	115.6
1999	18.2	95.4	113.6
2000	20.6	84.1	104.7
2001	18.1	78.1	96.2
2002	19.6	78.8	98.4
2003	23.6	74.6	98.2
2004	25.7	66.1	91.8
2005	27.6	56.7	84.3
2006	27.7	48.6	76.3
2007	30.5	43.3	73.8
2008	36.5	23.1	59.6
2009	41.7	22.8	64.4
2010	42.4	24.5	66.9
2011	48.7	21.9	70.6
2012	57.7	22.5	80.2

Year	Net domestic debt / GDP	Net external debt / GDP	Net public debt / GDP
2013	56.3	30.3	86.6
2014	57.1	31.4	88.5
2015	57.5	34.9	92.4
2016	56.8	37.0	93.8
2017	53.3	41.1	94.3
2018	54.1	40.3	94.4

Source: Central Bank of Jordan.

Figure (2) clarifies the evolution of indebtedness size as a percentage of GDP to the period of (1990-2018).

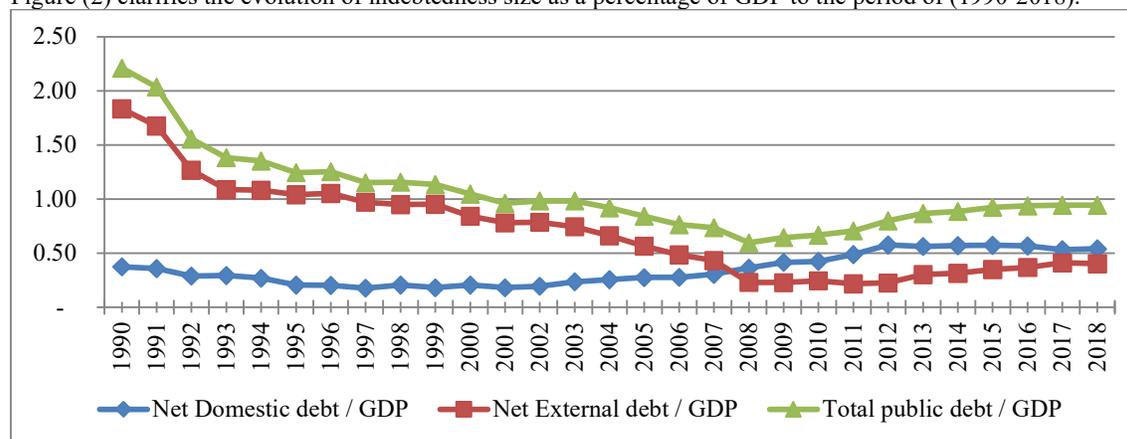


Figure 1. Evolution of indebtedness size as a percentage of GDP for the period (1990-2018)

### 7.5. Literature Review

Several studies have addressed the issue of public debt of developing countries, with most studies dealing with the economic effects of loans on the economic activity of the country in general. The results of these studies aim to highlight the importance of analyzing the relationship between public debt and economic growth in each country. Al-Daghmi Study (2019), the study aimed to test the effect of public debt and public investment on economic growth in Jordan for the period 1990-2017. The study used multiple linear regressions to test hypotheses. The study concluded that public debt has a negative impact and statistically significant on the economic growth in Jordan, where the value of the impact factor reached -11%, which means that, with keeping other factors constant, the increase in the public debt by 1% leads to a decrease in economic growth in Jordan by 11%. While the investment has a positive and statistically significant impact on economic growth in Jordan, where the value of the impact factor was 10%, which means that, with keeping other factors constant, an increase in public investment by 1% leads to an increase in economic growth in Jordan by 10%. The study reached a set of recommendations, the most important was to limit the expansion of public debt and reduce it to reduce its negative effects on economic growth in Jordan.

Abd Rahman et al. (2019) examined the existence of mutual consensus on the effects of public debt on the economic growth of a country or group of economies in "How does public debt affect economic growth? A systematic review". A systematic review on related articles from SCOPUS database was conducted by adopting a standard procedure in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), namely identification, screening and eligibility. Thirty-three articles were chosen as the main articles to be reviewed. It was found that there is no mutual consensus on the relationship between public debt and economic growth. The relationship can be positive, negative or even non-linear. Besides, the 90 % threshold as argued in the Reinhart-Rogoff hypothesis is also not applied across all countries.

According to Saungweme and Odhiambo's article in (2019) "The Impact of Public Debt on Economic Growth", it provides a detailed survey of existing theoretical and empirical literature on the impact of public debt on economic growth in both developing and developed economies. The aim of the article is to add to the existing debate on the relationship between public debt and economic growth in world economies. Overall, it concludes that theoretical models and empirical studies yield inconclusive results depending on a set of heterogeneous factors, including the level of development of the sampled countries, data coverage, methodology used, and the researchers' choice of control variables, among other factors.

In 2018, Lotto and Mmari conducted their study "Domestic Debt and Economic Growth in Tanzania - An Empirical Analysis". The main objective of the paper was to examine the impact of domestic debt on economic

growth in Tanzania for the period 1990 to 2015. This study used the Ordinary Least Square (OLS) regression method to estimate the effects of domestic debt on economic growth in Tanzania. The study found that there is an inverse but insignificant relationship between domestic debt and the economic growth of Tanzania as measured by GDP annual growth. The inverse relationship between domestic debt and GDP may be caused by different factors such as; increased trend in domestic borrowing, government lenders' profile dominated by commercial banks and non-bank financial institutions which promotes the "crowding out" effect; the nature of the instruments used by the government; the improper use of the domestic borrowed funds which may include funding budgetary deficits, paying up principal and matured obligations on debt, developing financial markets as well as funding other government operations.

A study by Kim et al., in 2017, "Public Debt, Corruption and Sustainable Economic Growth" investigated whether the marginal effect of public debt on economic growth is dependent upon corruption (a proxy for institutional quality) or not. The topic of public debt has been an important issue in the study. The main focus lies in the relationship between public debt and economic growth. For this purpose, the ordinary least squares (OLS), fixed effects models and the dynamic panel generalized method of moments (GMM) models are used to analyze data of 77 countries from 1990 to 2014. The empirical results show that the interaction term between public debt and corruption is statistically significant. This confirms the hypothesis that the effect of public debt on economic growth is a function of corruption. The sign of the marginal effect is negative in corrupt countries, but public debt enhances economic growth within countries that are not corrupt, i.e., highly transparent.

A study conducted by Al-Nuwairan and Bani Khalid in (2017) entitled "The Impact of External Indebtedness of Economic Growth in Jordan: An Analytical Standard Study for the Period (1991-2015)". The study aimed to test the relationship between external debt and economic growth in Jordan; and to identify the reality of external indebtedness in Jordan and its development through time; as well as to identify the relationship between external public debt and economic growth. The study examined the effect of the ratio of external indebtedness on the annual growth in the average per capita GDP for the period (1991-2015). The study used the descriptive analytical method in the theoretical side of the study, in addition to using the statistical method by analyzing time series in the applied side of it. The study concluded that there is no statistically significant effect of external indebtedness on economic growth due to the presence of an interval between capital projects funded through external financing and the achievement of positive growth rates with a negative impact represented by the increase in the cost of external financing.

Nooh conducted the study "Internal and External Debt in Jordan: An Analytical Study" in (2016) in order to test the effect of public debt, both internal and external, on the Jordanian economy. The study relied on standard analysis on the new classic model using the Cup Douglas equation, which depends on capital and employment in addition to public debt as independent variables, and the model was estimated in three different forms, the first using public debt and the second using external public debt and the last using internal public debt. Johansen's method of joint integration and error correction testing were applied to test the long-term relationship between variables during the study period (1980-2013). The results showed that there is a negative impact of public debt on economic growth, and that the negative impact of external public debt and domestic public debt on the economy is the same.

A study by Al-Habashneh, et al. entitled "The debt burden on the Jordanian economy during the period (1980-2011)" in (2015) aimed to explain the public debt burden on the Jordanian economy, in addition to investigating the relationship between the size of public debt and economic activity represented by the gross domestic product, During the period (1980-2011). To achieve the goal of the study, the modern standard method was used, using the method of joint integration of Johansson, to find the integrative relationship between the variables after applying the Dickey Fuller enhanced test to uncover the stability of the variables, It was found that all the variables are stable after taking the first difference and therefore they were integrated from the first rank. The Grainger test was also applied to clarify the relationship between the study variables, as it was found that the relationship was one-way from the public debt towards growth in GDP. Two basic tools were used for estimating, analyzing the components of variance and the response function of the reaction. It was found that the results are compatible with economic theory and previous studies, and the results have shown that the impact of public debt on economic activity will be negative in the long run.

#### 7.6. Data analysis

The study sample is taken for the period from 1990 till 2018, these data represent the GDP and the development value of NPD (NDD and NED), see table (3).

Table 3. Gross domestic product and Net Public Debt in Jordan for the period 1990–2018 (Million JDs)

Year	GDP*	Net domestic debt**	Net external debt**	Net public debt**
1990	2,760.9	1,037.4	5,064.3	6,101.7
1991	2,958.0	1,061.7	4,958.7	6,020.4
1992	3,610.5	1,041.5	4,577.6	5,619.1
1993	3,884.2	1,143.8	4,229.6	5,373.4
1994	4,357.4	1,181.3	4,720.5	5,901.8
1995	4,714.7	966.1	4,911.8	5,877.9
1996	4,911.3	994.6	5,164.3	6,158.9
1997	5,137.4	914.2	4,998.1	5,912.3
1998	5,609.9	1,152.0	5,333.7	6,485.7
1999	5,778.1	1,054.0	5,510.1	6,564.1
2000	5,998.6	1,235.0	5,043.5	6,278.5
2001	6,363.7	1,151.7	4,969.8	6,121.5
2002	6,794.0	1,334.9	5,350.4	6,685.3
2003	7,228.8	1,703.7	5,391.8	7,095.5
2004	8,090.7	2,082.0	5,348.8	7,430.8
2005	8,925.4	2,467.0	5,056.7	7,523.7
2006	10,675.4	2,961.0	5,186.5	8,147.5
2007	12,131.4	3,695.2	5,253.3	8,948.5
2008	15,756.2	5,754.0	3,640.2	9,394.2
2009	16,999.9	7,086.0	3,869.0	10,955.0
2010	18,828.9	7,980.0	4,610.8	12,590.8
2011	20,524.3	9,996.0	4,486.8	14,482.8
2012	21,964.0	12,678.0	4,932.4	17,610.4
2013	23,868.5	13,440.0	7,234.5	20,674.5
2014	25,595.8	14,621.0	8,030.1	22,651.1
2015	26,925.0	15,487.0	9,390.5	24,877.5
2016	27,829.6	15,794.0	10,299.0	26,093.0
2017	28,903.5	15,402.0	11,867.2	27,269.2
2018	29,984.1	16,221.0	12,087.5	28,308.5

Source: \* Department of Statistics of Jordan.

\*\* Central Bank of Jordan.

As shown in figure (3) NPD in Jordan increased and GDP took the form of increasing and sustained growth to the period of (1999-2018).

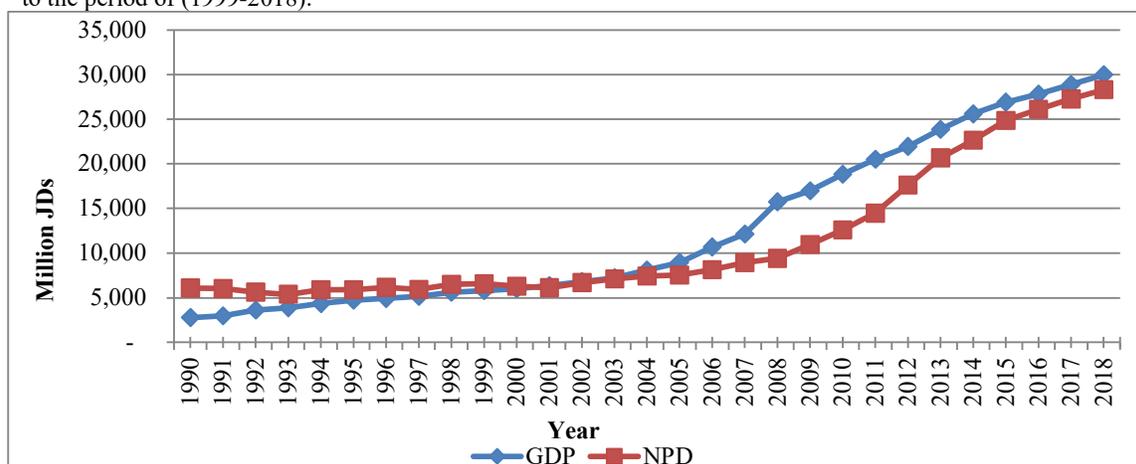


Figure (3): The relationship between NPD and GDP for the period (1990-2018)

Table (4) shows the correlations between each one of the variables. The correlation coefficients (R) between GDP and NPD are very strong (96.3%). We can recognize from the results that the variables are statistically significant.

Table 4. Correlations

Correlations			
		GDP	NPD
Pearson Correlation	GDP	1.000	.963
	NPD	.963	1.000
Sig. (1-tailed)	GDP	.	.000
	NPD	.000	.
N	GDP	29	29
	NPD	29	29

Table (5) shows the variables included into the model. That is, which variables are acting as predictor variables or Independent Variables (IVs). In this case we have included one predictor: NPD (Net Public Debt).

Table 5. Variables Entered/Removed

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	NPD <sup>b</sup>	.	Enter
a. Dependent Variable: GDP			
b. All requested variables entered.			

Table (6) displays the information about how the variables relate to each other. The “R” column represents the value of R, the multiple correlation coefficients. R can be considered to be a measure of the quality of the prediction of the dependent variable. The “R Square” column represents the R<sup>2</sup> value (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables. It is clear that there is a strong relationship between NPD and GDP, where R = .963, and R<sup>2</sup> = .928, with Std. Error of the Estimate = 2526.4; also, it is statistically significant.

Table 6. Model Summary

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.963 <sup>a</sup>	.928	.925	2526.385	.928	347.328	1	27	.000
a. Predictors: (Constant), NPD									
b. Dependent Variable: GDP									

The F-ratio in the ANOVA Table (7) tests if the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, F (1, 27) = 347.328, P-value = 0.000 < .05, so the regression model is a good fit of the data.

Table 7. ANOVA

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2216861132.498	1	2216861132.498	347.328	.000 <sup>b</sup>
	Residual	172330804.620	27	6382622.393		
	Total	2389191937.118	28			
a. Dependent Variable: GDP						
b. Predictors: (Constant), NPD						

Table (8) explains the statistical significance of each of the independent variables tests whether the unstandardized (or standardized) coefficients are equal to 0 (zero) for each of the coefficients, H<sub>0</sub>: β = 0 versus H<sub>a</sub>: β ≠ 0 is conducted. If P-value < .05, the coefficients are statistically significantly different to 0 (zero). The t-value and corresponding p-value are in the “t” and “Sig.” columns, respectively, in this study, the tests tell us that NPD P-value = .000 < 0.05, so NPD in the model. As shown in table (8), the parameter refers to the tendency which increasing NPD by 1 JD leading to decrease GDP by 1.164 Jordanian dinars. By applying the linear regression equation, it was possible to derive the following equation:  
 GDP = (-713.228 + 1.164 NPD)

Since the P-value equals 0 < 0.05 we reject H<sub>0</sub> and conclude that there is no relationship between Net Public Debt and Gross Domestic Product and accept the validity of the model, where R<sup>2</sup> = 0.973, and the “NPD” explains about 97.3% of the variation in the “GDP”. Thus, the model fits the present data. Since the P-value = .413 > 0.05, we accept H<sub>0</sub> which indicates that there is no relationship between Net Public Debt and Gross Domestic Product.

Table 8. Coefficients

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-713.228	857.277		-.832	.413
	NPD	1.164	.062	.963	18.637	.000

a. Dependent Variable: GDP

## 8. Findings and recommendations

### 8.1. Findings

The study finds some statistical results about the relationship between the NPD (NDD and NED) and its impact on the GDP. Descriptive analysis showed that the size of NPD increased in Jordan to critical levels, which constituted more than 94.4% of GDP for the year 2018. It is an alarming rate for exceeding the upper limit of 60.0% according to the Jordanian Public Debt Law of 2001. NED was acquired as a proportion of the GDP, 40.3% of the NPD was attributed to GDP, while NDD accounted for 54.1% as a percentage of GDP until the end of 2018, as the trend towards internal borrowing began since the beginning of 2008, when internal loans formed 61.3% in that year of all loans. The Jordanian economy, represented by the GDP, achieved positive growth for all 29 years of the study. The average GDP growth was 9.2% at current prices for the same period. The study showed that there is a clear negative relationship between the ratio of NPD and GDP in Jordan during the first period of the study, and this relationship became clearer during the period 2006-2018, and this negative relationship became strong when the ratio of public debt to GDP exceeded 80.2%. The average GDP growth in the periods when NPD ratios for the output were less than 80.2% was about 5.3%, compared to 3.8% in the periods when debt ratio of output exceeded 80.2% and less. The results of the study showed that there is an inverse relationship between NED and EG represented by the GDP. The study results showed correspondence to the study of Al-Habashneh et al., (2015) of increasing the size of public debt to critical ratios, the study results showed compatibility with study by Al-Adayleh et al., (2015), and the study by Abed Al-Hadi, (2013) which declared that there is an inverse relationship between NED and EG. The results of the study also coincided with the study by Al-Nuwairan and Bani Khalid, (2017) that Jordanian economy achieved positive growth in all the years of the study.

This study contributes to the existing literature on NPD, comparing the growth effects of NED and NDD components. NED may be associated for developing countries, with lower costs, but it may increase the helplessness of a country to external shocks and reduce its foreign reserves. NDD may inspire the development of the domestic financial markets but may crowd out domestic private investment and lead to credit rationing.

### 8.2. Recommendations

The most important recommends in this study as follows:

1. Reconsidering the policy of external borrowing and limiting loans with difficult commercial conditions and rationalizing borrowing rates and linking NED to productive projects that enable them to service their debts without being a burden on the national economy.
2. Re-working again with Public Debt Law of 2001 to control borrowing and the necessity of addressing some imbalances in the balance of payments and interest in the foreign trade sector.
3. Increasing incentives to attract foreign direct investment to reduce the resort to borrowing.
4. Giving priority for economic policies to stimulate EG and amending NPD law so that the ceiling of NPD ratio to the gross and inactive GDP, which is specified by 60% without scientific support, raised up to 80%.
5. Stopping borrowing as much as possible for the purposes of budgeting and relying on grants and aid for a period of time no less than two or three years to give the GDP a chance to grow beyond NPD by a large and clear difference.
6. Asking international community, governments and financial institutions, to write off part of Jordanian debt, especially NED, as a price for Jordan to bear the consequences of political crises in the region, which Jordan has no role in.
7. Capitalizing part of NPD using any available financial instruments.
8. Rescheduling debts to extend repayment periods, reduce interest rates, and most importantly obtain grace periods.

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