

The Effect of Public Debt on the Economic Growth of Jordan

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Abstract

The aim of this study was to investigate the structure of public debt in Jordan and its impact on economic growth, over the period 1980-2012. The statistical techniques which were employed in this study included Johanson co-integration test, Vector Error Correction Model (VECM) to explore the association between domestic debt and external debt ratio of GDP as independent variables and the total debt relative to GDP as the dependent variable. Fully modified least squares (FMOLS) approach also employed in order to describe the impact of internal and external debt on economic growth. The co-integration test procedure reveals that there is one relationship; consequently an (VECM) was estimated revealing that 9% of the departure from equilibrium is cleared annually, and the results of Causality test showed that independent variables have Unidirectional relationship with the total debt as the dependent variable. Based on regression coefficient, it was found that external debt has a negative influence, and domestic debt has positive influence on economic growth. The study recommended that the external debt must be re-oriented toward invested in productive projects in order to the burden of debt service

Keyword: Public Debt, GDP, Fully Modified Least Squares, Cointegration.

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Introduction

The problem of indebtedness has emerged as one of the most important obstacles faced by developing countries because of their negative effects on economic and social development. The development plans of the developing countries were accompanied by the need to provide the necessary funding to achieve the desired development goals. However, these countries collided with a decrease in their domestic savings, high consumption rates and a lack of local investments. They resorted to providing the necessary funding to achieve the desired growth and pushing forward economic development, the coverage of domestic savings deficits through borrowing has led to a rise in public debt due to continued borrowing, as in other developing countries, Jordan suffers from structural imbalances as a result of the lack of financial and economic resources, resulting in weak production in various economic sectors, weak financial capabilities and modest export volume, which led to a chronic deficit in the trade balance. In the 1980s, the Jordanian economy suffered from economic and political difficulties, represented by a decline in remittances of workers abroad, a decline in the volume of Arab aid, simultaneous high budget deficit and balance of payments, the expansion of the use of foreign exchange reserves.

By the end of 1988, Jordan was unable to commit to its debt service as a result of these crises. The rumors about the depletion of foreign reserves and the devaluation of the exchange rate had a great effect on individuals disposing of Jordanian dinar balances and the flight of capital owners abroad, which led to the loss of the Jordanian dinar about 50% of its value from 1987. These conditions made Jordan follow a series of economic measures such as floating exchange rates, tightening monetary policies, adopting a borrowing policy to cover the shortfalls in its domestic savings, and meeting its foreign exchange needs, these crises have also led to Jordan resorting to international institutions such as the IMF and the World Bank and entered the era of economic reform programs began in 1989. As a result of these measures, loan burdens increased markedly at the end of the last century, which made the debt crisis threatens the independence and stability of the state.

The Problem of the Study

The importance of the study stems from the importance of the phenomenon of public debt whether internally or externally, because this phenomenon has an impact on the economic and political stability of the state. Where the phenomenon of public debt has become a real crisis on the economy of the state, especially as its emergence coincided with the global recession and economic crisis, which can lead to the spread of phenomena of poverty and unemployment and their direct link to issues of development and economic independence, and because the crisis is not only the size of loans, whether absolute or relative to GDP, but beyond that, because the issue of servicing these loans and the ability of the debtor state to bear the burden.

The Jordanian economy depends on external loans since the establishment of the Kingdom, which has led to an increase in the burdens of these debts, therefore, the need to study the structure of the public debt and

its impact on economic growth and the Jordanian economy, whether internal or external.

This study attempts to answer the following questions:

1. Does Jordan rely more on internal and external loans?
2. Which is more influential in economic activity, internal or external public debt?

Objectives of the study

This study aims to achieve the following objectives:

1. Studying the structure of public debt in Jordan during the period (1980-2012).
2. An indication of the extent to which internal and external public debt affects economic activity represented by GDP.

Previous studies

Many studies have addressed the issue of public debt to developing countries. Most studies have dealt with the economic impact of loans on the economic activity of the state, such as the study (Momani, 1995) aimed at identifying the causes of external indebtedness of Jordan and a statement of the size of this debt in addition to measuring the burden of these loans, as I dealt with the economic effects of foreign loans on a number of macroeconomic variables during the period (1967-1991). The study concluded that the loans did not help to achieve high growth rates and did not reduce the deficit in the trade balance. And in the study (Al-Taei and al-Ubaidi, 1997), which aimed to demonstrate the direct and indirect effects of external indebtedness on the Turkish industrial output during the period (1970-1994) and through this study the researcher found that the impact of external indebtedness on industrial output in Turkey.

Al-Hashemi (1999) examined debt in Algeria and focused on the main causes, burdens and effects of these debts on the Algerian economy during the period from 1967 to 1994. The study concluded that there is a negative impact on foreign economic at the economic and social level.

Lioha (1999) used simulations to check the impact of external debt on the economic growth of a number of countries of the African continent during the period 1974-1994 and found that external debt reduces investment and thus adversely affects economic growth.

As for (Kahira, 2007), in which the researcher tried through it to identify the main factors that led to the aggravation of the external indebtedness of developing countries, away from traditional theories. The study concluded that the fiscal and monetary policies adopted by industrialized and developed countries are reflected in the global financial activity and especially affect developing countries. As well as the study (Adepoju 2007) where it was found that the accumulation of external debt hinders economic growth in the study country Nigeria.

The Panizza-2008 study also presented alternative and modern definitions of internal and external public debt. The main outcome of the study was that the trend of internal borrowing would have a positive role in reducing sovereign risks, especially financial risks resulting from external borrowing. These findings were confirmed by the study of (Malik et al. 2010) in a study of the Pakistani economy during the period (1972-2002) that showed that the external debt service has a negative impact on economic growth.

The study of (Mohanty, Stephen, Zampolli, 2011) discussed the effects of the public debt and its economic results. A range of private data were used, including both non-financial government debt and commercial and household debt. The study found findings in support of many studies; public debt is an obstacle to economic growth, the government's public debt was about 85% of GDP and the same is not the case for other types of loans, in the view of the researcher that the countries with high debt and act quickly to address the financial problems and keep the debt size within the minimum possible.

In the study of Abdul Hadi (2013) he which dealt with the economic effects of foreign loans on the Jordanian economy for the period (1999-2011) and found a negative impact between the size of external debt and economic growth.

• Jordanian economy and indebtedness (development of debt volume in Jordan)

Jordan, like other developing countries, has relied on grants and borrowing from the World Bank or large countries such as Britain. This is due, for many reasons, including long-term political, economic, social and demographic problems which suffered as a result of the wars fought since the beginning of the second half of the last century, the lack of natural resources, and the misuse of available resources, regardless of the causes of most developing countries, such as budget deficits and distortions in the balance of payments that push countries to borrow, and borrowing can be used to finance investments for which domestic savings are not available or to absorb the purchasing power of individuals.

In the 1980s, after the crisis of inflationary recession overshadowed the Jordanian economy, economic indicators indicated Jordan's entry into the economic recession. Jordan's regional trade was affected by the

contractionary policies adopted by the countries of the region, and with limited external revenue (Of remittances from abroad and foreign aid), These conditions prompted Jordan to seek alternatives to contain the deficit through local and external borrowing , which led to accelerated debt growth during that period. (Al-Wazzani, 1997).

Table 1 shows an increase in the current balance of public debt from KD 607 million in 1980 to KD 1.8 billion at the end of 1987, an average of KD 1.2 billion during this period. It should be noted that 1987 was an indicator of the beginning of dependence on domestic loans, where growth in demand for domestic borrowing exceeded 50%.

And during 1988 and 1989, which are the main roots of the crisis of indebtedness in Jordan, where the size of public debt exceeded. 4.7 billion dinars compared to 1.8 billion dinars at the end of 1987. The year 1988 is the pivotal shift in the balance of external debt to Jordan, recording 3.8 billion dinars, this increase is mainly due to the fact that the data on the published debt figures before 1988 are limited to the civil indebtedness of government and government loans, it does not include military loans in addition to the devaluation of the dinar exchange rate of \$ 50 in 1989 from its value in 1987. (Nabulsi, 1993).

In 1989, Jordan witnessed the shock of Arab support to confront Israel after the expiration of ten years stipulated in the resolutions of the Baghdad Summit, but Jordan received only 57% of the amount agreed upon in the contract with the Arab oil countries, which led to the inability of the state to fulfilling its external obligations (Amira, 1991).

The 1989 crisis did not stop when Jordan stopped servicing its debts; even rumors were raised about the depletion of foreign reserves and concerns raised about further decline in the exchange rate which led to waves of capital outflow. Jordan reached the end of the 1980s; The negative impact began to be evident as the debt volume exceeded 230% of GDP. These data had a clear negative impact on the foreign reserves of the government which exacerbated the fiscal deficit and foreign revenues of the state 1987.

And to get out of the bottleneck; Jordan resorted to the International Monetary Fund and the World Bank and underwent a structural stabilization and adjustment program at the beginning of 1989. The first agreement, covering the period 1989-1993, Jordan did not absorb the fruits of the correction until the first Gulf crisis came to prevent the possibility of completing the economic correction program.

Jordan is the biggest affected by the Gulf crisis after its direct parties (Iraq and Kuwait) and once again the Jordanian economy is more distorted compared to the pre-adopted economic correction program, which led to Jordan's engagement with the International Fund. Several negotiations were held in the negotiations between the Jordanian government and IMF experts on Jordan's desire to adopt a second corrective program for the medium term (1992-1998) through the approval of the International Fund for Program Support under the "Credit Facilitation for 18 Months" the Fund provides SDR (44.4 million) special Drawing Rights (R.D.S) which amounts to 60% of Jordan's share with the International Fund during that period as it reached (73.9) million units (R.D.S) and how to withdraw from this loan on a quarterly basis and in six equal installments during the period of the facilitation the negotiations with the World Bank and the International Monetary Fund concluded the agreement on the second economic reform program for the period 1992-1998, which came to complete the objectives of the first program focused primarily to generate growth in GDP and reduce fiscal deficits in the budget (Jardana, 1996).

The results of the second reform program were somewhat positive. The external debt decreased by 5064 million dinars in 1990 to about 4970 million dinars at the end of 2001, an average of 5.1 billion dinars during this period, with a growth rate of about 7% during this period. Domestic debt constituted 17.9% of the total public debt, while the share of external debt was 82.1% of the total public debt.

Jordan continued its efforts to reduce the crisis by adopting policies aimed at reducing external loans and reducing the volume of debt as a percentage of GDP, the new debt law (2001), which aims to increase the flexibility of the issuance of government bonds, and determining ceilings on the balance of internal and external indebtedness (Central Bank, 2001).

On the other hand, the government has sought to focus on domestic borrowing through government bonds and permits, and to limit external borrowing to soft and long-term loans (Central Bank, 2006).

As shown in Table 1, the internal debt constituted about 41.1% of the total public debt. The external debt share was 58.9% of the total public debt. This increase is due to the increase in the balance of treasury bills and bonds within the general budget, (Central Bank, 2010).

Table (1) shows the size of the internal and external debt and the general growth rate of this debt in Jordan.

Year	Internal public debt	Growth rate of domestic debt	External public debt	Growth rate of external debt	Total public debt
1980	197.8	----	409.0	----	606.8
1981	231.7	17%	553.9	35%	785.6
1982	278.2	20%	684.3	24%	962.5
1983	314.1	13%	837.8	22%	1151.9
1984	342.7	9%	989.3	18%	1332.0
1985	374.4	9%	1097.9	11%	1472.3
1986	414.9	11%	1167.0	6%	1581.9
1987	624.4	51%	1216.0	4%	1840.4
1988	921.8	48%	3836.9	216%	4758.7
1989	995.0	8%	5409.4	41%	6404.4
1990	1037.4	4%	5064.3	-6%	6101.7
1991	1061.7	2%	4958.7	-2%	6020.4
1992	1041.5	-2%	4577.6	-2%	5619.1
1993	1143.8	10%	4229.6	-8%	5373.4
1994	1181.3	3%	4720.5	12%	5901.8
1995	966.1	-18%	4911.8	4%	5877.9
1996	994.6	3%	5164.3	5%	6158.9
1997	914.2	-8%	4998.1	-3%	5912.3
1998	1152.0	26%	5333.7	7%	6485.7
1999	1054.0	-9%	5510.1	3%	6564.1
2000	1235.0	17%	5043.5	-9%	6278.5
2001	1151.7	-7%	4969.8	-2%	6121.5
2002	1334.9	15%	5350.4	19%	6685.3
2003	1703.7	28%	5391.8	1%	7095.5
2004	1833.6	8%	5348.8	-1%	7182.4
2005	2437.1	33%	5056.7	-6%	7493.8
2006	2163.2	-11%	5186.5	3%	7349.7
2007	2946.4	36%	5253.3	1%	8199.6
2008	4911.2	67%	3640.2	-31%	8551.3
2009	5791.3	18%	3869.0	6%	9660.3
2010	6851.5	18%	4610.8	19%	11462.3
2011	8915.0	30%	4486.8	-3%	13401.7
2012	12678.0	30%	4932.4	9%	17610.4

Source: data of Central Bank of Jordan, percentages prepared by researcher.

• The development of debt volume as a percentage of GDP in Jordan

Most of the loans were made with external parties. Table 2 shows that the external debt was 35% of the GDP while the internal debt was about half of this figure, or about 17% the balance of the internal debt remained about 18% of the GDP during the period 1980-1986, while the external debt ratio increased steadily during the same period and averaged about 46%. Thus, the average public debt ratio was about 64% as a result of the Black September crisis, developed countries began to reduce the volume of aid to developing countries. This was the beginning of dependence on domestic loans. The volume of external loans was 53%, while domestic debt increased by 27% to GDP, with the beginning of the Arab crisis (the Gulf War), the Jordanian economy was clearly suffering. The size of the public debt was twice the size of the GDP during the period 1988-1991. The share of external debt was 1.84% of GDP, while the domestic debt was 39% of the gross domestic product during this period, and starting in 1992 and Jordan's entry into the stage of economic reform programs the impact of these programs on the Jordanian economy, where debt volume declined from 221% in 1990 to about 96% at the end of 2001, an average of 137.4% of GDP during this period. The internal debt represented 17.9% of the total public debt, while the share of external debt was 82.1% of the total public debt.

Table 2 illustrates the evolution of indebtedness as a percentage of GDP. It can be seen how the exchange rate crisis of the late 1980s affected the public debt ratio of GDP, which exceeded 2.03 in 1988, from only 0.80 percent In 1987, foreign debt constituted 1.63, which confirms Jordan's dependence on foreign loans during the crisis.

Table (2): shows the size of debt relating to GDP in Jordan

Year	Internal public debt /GDP	External debt / GDP	Gross public debt / GDP
1980	0.17	0.35	0.52
1981	0.16	0.38	0.54
1982	0.17	0.41	0.58
1983	0.18	0.47	0.64
1984	0.18	0.52	0.70
1985	0.19	0.56	0.75
1986	0.19	0.52	0.71
1987	0.27	0.53	0.80
1988	0.39	1.63	2.03
1989	0.41	2.23	2.64
1990	0.38	1.83	2.21
1991	0.36	1.68	2.04
1992	0.29	1.27	1.56
1993	0.29	1.09	1.38
1994	0.27	1.08	1.35
1995	0.20	1.04	1.25
1996	0.20	1.05	1.25
1997	0.18	0.97	1.15
1998	0.21	0.95	1.16
1999	0.18	0.95	1.14
2000	0.21	0.84	1.05
2001	0.18	0.78	0.96
2002	0.20	0.79	0.98
2003	0.24	0.75	0.98
2004	0.23	0.66	0.89
2005	0.27	0.57	0.84
2006	0.20	0.49	0.69
2007	0.24	0.43	0.68
2008	0.31	0.23	0.55
2009	0.34	0.23	0.57
2010	0.37	0.25	0.61
2011	0.44	0.22	0.65
2012	0.58	0.22	0.80

Source: data of Central Bank of Jordan, percentages prepared by researcher

- **Quantitative analysis of the structure of public debt in Jordan**

In order to understand the structure and structure of public debt in Jordan, Johansson's joint integration methodology and debugging will be applied. To achieve this, a series of tests will be carried out as follows:

1. Testing the root of the unit: Before starting the analysis of time economic data, the degree of time series should be tested, since many time series may not be static, however, they give high values (R2, Ft) and thus the results are misleading Spurious Regression (Attieh, 2005). Therefore, the unit root test should be performed to examine the time series dormancy. In this area, the extended decry-fuller test was used for stability. (Shewhart,2004) (Augmented Dickey-fuller).

2. Table (3) shows that the variables of the study did not settle at their level, but stabilized after taking the first difference. This gives an indication that the variables of the study are integrated from the first class (I.1).

3. Johansson's co-integration test: The application of Johansson's co-integration test, which was designed to determine the harmony between model variables. Where they are two complementary variables if they have the same length of the router, i.e., they go with time in a random upward way, for example table 4 shows the results of the Test Trace and Maximal eigenvalue test, when testing the model at $r = 0$, i.e., assuming that there is no common integrated vector between the study variables, the value of the Test Trace with the critical value of 29.79 reached 35.29 at a significant level of 10% this means that the null hypothesis that leads to the absence of a long-term integrative relationship between the variables and the acceptance of the alternative hypothesis which says that there

is a single long-term integration relationship between the variables at a significant level of 10%, this is confirmed by the maximal eigenvalue test. The maximal eigenvalue value at $r = 1$ is greater than the critical value and therefore there is a long-term balanced integral relationship that combines public debt as a proportion of GDP and domestic and external debt as a percentage of output Gross Domestic Product.

Table (3) Results of the Extended Dickey-Fuller Test (ADF)

Stability test						
Variables	Level (5%)			First difference (5%)		
	ADF Calculated value	Statistical "T"	Result	ADF Calculated value	Statistical "T"	Result
TOTAL DEBT	-1.613604	- 2.963972	Unstable	-3.377285	- 2.963972	Stable
DOM. DEBT	0.910575	- 2.957110	Unstable	-4.355948	- 2.960411	Stable
EXT. DEBT	-2.581543	- 2.960411	Unstable	-4.322867	- 2.960411	Stable
GDP	1.101716	- 2.963972	Unstable	-2.713165	- 2.621007	Stable*
TOT/GDP	-1.834093	- 2.981038	Unstable	-5.249111	- 2.991878	Stable
DOM/GDP	0.478736	- 2.957110	Unstable	-3.277377	- 2.960411	Stable
EXT/GDP	-0.003083	- 2.991878	Unstable	-5.440949	- 2.991878	Stable

* The GDP variable at the first difference stabilized at a level of significance of 10%

Table (4a): results of Test Trace

Hypothesized	Eigenvalue	Trace	0.10	Prob.**
No. of CE(s)		Statistic	Critical Value	
$r = 0$	0.445672	35.29449	29.79707	0.0105
$r \geq 1$	0.401268	17.59452	15.49471	0.0238
$r \geq 2$	0.070903	2.206275	3.841466	0.1374

Table (4b): results of Maximal eigenvalue

Hypothesized	Eigenvalue	Max-Eigen	0.10	Prob.**
No. of CE(s)		Statistic	Critical Value	
$r = 0$	0.445672	17.69997	21.13162	0.1415
$r \geq 1$	0.401268	15.38824	14.26460	0.0331
$r \geq 2$	0.070903	2.206275	3.841466	0.1374

Table (5) shows the long-term complementary relationship between the variables of the study. The ratio of external debt to GDP and the ratio of total debt to gross domestic product (GDP) they walk with each other in a random way (Ascending and descending) and that any deviation from this relationship in the short term will be corrected to return to the long-term relationship, as confirmed by the VECM test Table (5) shows that about 9% of the deviations in the dependent variable will be corrected annually. The causal relationship between the variables of the model can also be deduced. It is clear that there is a causal relationship of the independent variables towards the dependent variable as shown by the value t, while no causal relationship was shown in the opposite direction, ie, from the dependent variable towards the independent variables.

Table (5) The error correction sample (VECM) test results.

D(DOM)	D(EXT)	D(TOT)	Error Correction
-0.098531	0.063148	47058-0.0	CointEq1
[-42847.0]	[0.62581]	[-1.43978]	t- test

- **Quantitative analysis of the effect of internal and external debt on economic growth**

In order to demonstrate the effect of internal and external debt on economic growth, the fully modified ordinary least square (FMOLS) It is a way of correcting the normal lower squares method (OLS) in an attempt to get rid of second-class bias, the basic idea of this method is to obtain an unbiased and normal distribution

modality, It is mainly designed to estimate independent multivariate integration models, so that the standard model variables are single-integral (I. I).

This method also resolves the problem of simultaneous correlation between random error and independent error correction variables (KOOP, 2005). Therefore, using the FMOLS method requires first testing for stability and then testing for common integration. The results of the stability test showed that the data were stabilized at the first difference as in Table (3) which gives an indication of a common first-class integration. This result was enhanced by a joint integration test as shown in Table 6, which indicated a first-order integration, which gives a reason to test the next study model through the FMOLS method
 $GDP_t = \alpha + \beta_1 * EXT_t + \beta_2 * DOM_t + \epsilon_t \dots \dots \dots$

Table (6): Results of the Test Trace and Eigenvalue Maximum

Hypothesized	Eigenvalue	Trace	0.10	Prob.**
No. of CE(s)		Statistic	Critical Value	
r =0	0.515929	32.57913	28.49909	0.0233
r ≥1	0.325769	11.53896	14.50861	0.1804
r ≥2	0.003705	0.107650	3.283023	0.7428

Table (7a): Testing the eigenvalue Maximal Value

Hypothesized	Eigenvalue	Max-Eigen	0.10	Prob.**
No. of CE(s)		Statistic	Critical Value	
r =0	0.515929	21.04017	20.06310	0.0515
r ≥1	0.325769	11.43131	13.32380	0.1339
r ≥2	0.003705	0.107650	3.283023	0.7428

The results of the FMOLS test, as shown in Table (7a), showed both internal and external debt impact on economic growth as measured by real GDP at a significant level of 5% as the results show that foreign loans have a negative impact, thus, an increase of 1% in foreign loans will lead to a decrease in GDP by 0.13, raising questions about the aspects or areas of use of these loans. That is, have they been used in investment projects or to finance current expenditures, not to mention the burden of premiums and interest on foreign debt on economic growth, especially in an economy with scarce resources and misuse of available resources. On the other hand, the effect of domestic debt on GDP was positive, as an increase of 1% in domestic loans would result in an increase of 0.2% in GDP, which would support the economic assumption that domestic loans are transfer payments among members of the community.

Table (7b) Result of FMOLS test

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0019	-3.435480	0.038313	-0.131624	EXT
0.0007	3.802066	0.055756	0.211987	DOM
0.0000	16.83501	0.411046	6.919966	C
			0.990891	R-squared
			0.989915	Adjusted R-squared

$$GDP = 6.91996576642 - 0.131624408084 * EXT + 0.211987245465 * DOM$$

Results

The study reached some statistical results on the structure of public debt and the effect of external and internal indebtedness on economic growth as follows:

This is an alarming percentage exceeding the upper limit of 60% according to the Jordanian Public Debt Law of 2001, the external public debt (as a share of GDP) accounts for about 84% of the total public debt attributed to GDP, while domestic debt (as a share of GDP) represented 16% until the end of 2000. The period 2001-2012 witnessed an internal borrowing trend, domestic loans accounted for 85% of total loans.

There is an inverse relationship between total external debt and economic growth represented by GDP, and there is a direct correlation between total domestic debt and economic growth represented by GDP.

The increase in the size of the external debt is a financial burden on the Jordanian economy is to service these debts in installments and interest due which is an obstacle to economic growth.

These results are consistent with most of the previous studies, as in Momani (1995) and Al-Sharaa, Al-Khatib and Maayta (1991), which were applied to the Jordanian economy during different periods and found that

economic growth does not depend on loans to a high degree.

These results are consistent even with global studies, for example, the study Al Hashimi (1999), which applied to the Algerian economy, which showed that there is a negative impact of external borrowing on economic growth, as well as in studies Mohanty (2011) and the study (ARELLANO, 2009) where it concluded that public borrowing was an obstacle to economic growth.

Recommendations

- Review foreign borrowing policy, reduce loans with difficult commercial terms, rationalize borrowing rates, and link external loans to productive projects that can serve their debts without posing a burden on the national economy.

- Studying and adjusting the reality of sectorial distribution with a focus on the productive sector instead of the services sector. Continuation of the current policy will increase the problem of indebtedness by continuing and enlarging the current policy.

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