

An Enquiry into the Main Determinants of Public Debt in Jordan: An Econometric Study

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ABSTRACT

The high public debt in Jordan, along with its servicing burden, is clearly hindering the government's efforts to achieve higher and sustained economic growth rates. Both central government domestic debt (DD) and the outstanding balance of external public debt (ED) have increased dramatically during the period 1980-2005 in spite of the government debt management policies and privatization. The determinants of public debt should be analyzed in order to determine the key players in public debt accumulation. In this study, the chronic government budget deficit, the savings gap, the size of foreign aids, and the real exchange rate are examined for their role on debt accumulation. The results are in harmony with expectations. The government budget deficit, savings gap and real exchange rate significantly affect ED, but real exchange rate is the most effective. These factors, don't only decrease the government's ability to repay the debt service of the outstanding balance of public debt but also create an additional demand for new domestic public loans. Motivating domestic savings and controlling the fiscal position may help to slow down debt accumulation and debt burden. Finally, stability of the value of the Jordanian Dinar is a must if the government intends to break the unplanned growth in public debt.

Keywords: External Debt, Internal Debt, Jordanian Economy.

1. INTRODUCTION

Large public debt (external and domestic) has been the most critical economic crisis faced the majority of the developing countries since their political independence after the World War II. This crisis has intensified in the 1970s, since when it has been considered one of the major obstacles to economic growth in debtor countries. Deep-rooted economic problems and structural imbalances in these countries augmented the negative effects of public debt accumulation and decreased their ability to repay the debt service. Accordingly, issues such as development determinants, and effects of public debt, gained an exaggerate interest of policy makers, decision makers, and researchers in both developing and developed countries, but less in Jordan who has a long history with indebtedness.

Since it gained its political independence in 1946, Jordan started to build its economy in unfavorable

regional and international economic and political circumstances. These circumstances, accompanied with limited natural and financial resources, high rates of population growth, limited domestic market, and high unemployment and poverty rates, have created an economy suffering from low economic growth rates, deficits in the trade balance and government budget, and large public debt, in addition to other structural imbalances in the components of the economy. The origin of public debt in Jordan goes back to 1950 when the Government of Jordan resorted to borrow from external sources in order to finance the development process and the chronic deficits on one side, and to meet the increasing demand for foreign currencies on the other. Total public debt (TPD) reached JD7,523 million (domestic debt is JD2,467 million and external debt is JD5,056.7 million) at the end 2005 from JD1 million in 1950. Such huge public debt numbers must strike the sight of economists in order to explain the development in TPD and find out the main key players in TPD accumulation which are the major goals of this study. After presenting the developments of TPD during the period (1980-2005) in Section 2, we present the literature review and previous studies in Section 3 and the model

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framework in Section 4. The estimation methods and results are presented in Section 5. A conclusion is

provided in the final section.

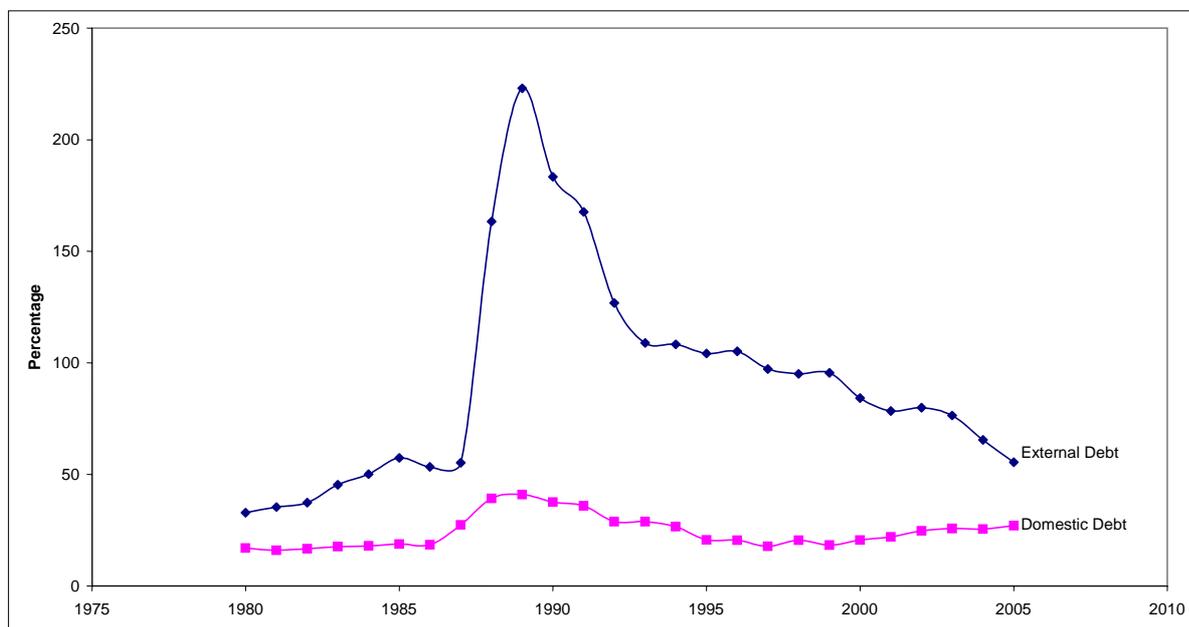


Figure 1. Ratio of Public Debt to GDP (1980-2005)

2. DEVELOPMENT OF PUBLIC DEBT IN JORDAN

Jordan has started to rely on external public debt to finance urgent needs in 1950. An amount of JD1 million—the first loan—was borrowed from Britain, the main source of external loans during the period (1950-1963). After this period, Jordan started to borrow from Kuwait, Germany and the United States. The outstanding balance of external public debt, that has been used to finance the development process, reached JD69 million in 1973 since when it started to accumulate notably to reach JD309 million - 46 percent of Gross Domestic Product (GDP) - in 1979. Since the beginning of the 1980s, the outstanding balance of external public debt started to grow dramatically. Data in the Appendix1 show that the outstanding balance of external public debt and central government domestic debt witnessed a large increase during the period (1980-2005). The outstanding balance of external public debt rose from JD382.7 million at the beginning of the period to JD5056.7 million at its end, at an average annual growth rate of 10.3 percent. It is worthy to mention that the successive drop in the value of the Jordanian Dinar from \$2.963 in 1987 to \$2.673, \$1.748, and \$1.511 in 1988, 1989 and 1990 respectively, made the outstanding balance of external debt to double

more than four times in less than four years (1987-1990). As a ratio of the GDP, the outstanding balance of external public debt constituted 33 percent of the GDP in 1980, but this ratio jumped to 223 percent in 1989 then it started to decline to reach 56.1 percent in 2005 (See Figure (1)). Central government domestic debt added up to amount JD197.8 million in 1980 then reached JD2467 million in 2005, at an average annual growth rate of 10.1 percent. As shown in figure (1), central government domestic debt constituted 17 percent in 1980 and reached its maximum level of 41 percent in 1989, and then this ratio started to decline to reach 27.4 percent in 2005. In the last few years, the outstanding balance of external public debt witnessed a decrease because the government resorted to depend on local sources. Total public debt (external and domestic) went up from JD580.5 million (49.8 percent of GDP) in 1980 to JD7523.7 million (83.5 percent of GDP) in 2005, at an average annual growth rate of 10.25 percent. It is useful to mention that over the period under study, the ratio of central government domestic debt to total public debt varied between (15-34) percent and the average of domestic debt /external debt ratio was 1 to 3.76. The external public debt service in 2005 was JD421.9 Million (12.6% of the government budget in 2005).

3. ECONOMIC LITERATURE AND PREVIOUS STUDIES

Economic theories clearly explain the general key factors of debt accumulation. *Sachs and Larrain (1993:722)*, for example, divided these factors into two sets that are external and internal. External factors include high interest rate, while the trade balance and exchange rate policies are among the internal factors. *Alfaidi (2002)* also attributed the aggravation of external public debt in developing countries to internal and external factors. Tendency toward investment to stimulate economic and social development, inefficient utilization of loans, capital flight, and Balance of Payment (BOP) deficit are the main internal factors. External factors include high interest rates charged and the decrease of oil and other raw materials prices. Countries accumulate debt whenever they run a budget deficit. The standard debt accumulation equation states that the change in stock of debt is equal to the budget deficit (*Compos, et al., 2006*). *Sachs and Larrain (1993:152)* pointed out the role of current account deficit caused by budget deficit in increasing public debt. They stated that "*the current account deficits during the 1980s have transformed USA from a major international creditor country to the world's biggest debtor*". *Sachs and Larrain (1993:338)* also explained the effect of budget deficit on domestic debt accumulation and stated that "*borrowing from domestic residences is one of the short term methods used to finance fiscal deficit. Such method allows the government to sustain a deficit with out reserve losses or increase in money supply. But it increases deficit over time since interest payments add to expenditures*". Similarly, *Alfaidi (2002)* clearly ascribed the notable increase of external public debt in Egypt to the growing budget deficit. In line with *alfaidi (2002)*, *Sachs and Larrain (1993)*, economists such as *Colander and Gamber (2002)*, *Dornbusch and Fisher (1990)*, *Gordon (2003)*, *Gartner (2003)* and *Menize (2005)* confirmed the important role of budget deficit in public debt accumulation. In addition to financing budget deficit by foreign borrowing, *Gordon (2003:36-37)* showed that excess investment over domestic saving is also financed by foreign borrowing as well. In his analysis of the relationship between budget deficit and public debt, *Gartner (2003:372-383)* argued that the deficit ratio is positively related to debt/income ratio. Borrowing from abroad for financing investment in case of budget deficit was also underlined by *Mankiw*

(2003:414). He argued that budget deficit means higher consumption and lower national saving which lead to financing investment by foreign borrowing which results in trade deficit. He added that budget deficit causes an appreciation of national currency which negatively affects exports and causes a larger current account deficit. The sources of debt and debt difficulties for a group of Latin American countries were investigated by *Dornbusch (1984)*, who found that, in the case of Brazil, the budget deficit is the explanation for the growth of its foreign indebtedness. *Saleh and Harvie (2005)* considered public deficits and debt as one of the most challenging issues and major sources of deepening crisis for the Lebanese economy. They confirmed the role of budget deficit in debt accumulation since borrowing from external and local sources is the main method of budget funding in Lebanon.

In spite of the gravity of public debt problem in Jordan, it hadn't take enough attention of researchers. Studies on public debt are few and noticeably less frequent when compared with those relating to other economic problems such as unemployment and poverty. Moreover, most of the available studies present descriptive rather than quantitative analysis. For example, *Alshara et al. (1991)* analyzed the size and composition of external public debt and examined its affect on specific economic variables such as private consumption, public consumption, gross investment, gross tax revenues, direct tax revenues, indirect tax revenues, imports, Gross National Product (GNP), and disposable income. They reported that external loans positively affect consumption, investment, imports and GNP. In his paper, *Almomani (1988)* examined the impact of foreign capital (loans and aids) on the balance of trade in Jordan. He found that foreign capital couldn't help in decreasing trade deficit. In another paper, *Almomani (1995)* presented the status of external debt and enquired into the ability of the Jordanian economy to serve its external public debt and investigated the impact of external public debt on economic growth, domestic savings, investment, consumption, and trade balance. He attributed the evolution of external debt during the last two decades to the gap between planned investment and domestic saving, the increase in interest rate and decrease in the grace period, the chronic deficit in the trade balance and the increase in price of oil in the first half of the 1970s. It was also found that external debt absorbed large part of the exports and national income instead of stimulating

economic growth, increasing domestic savings and decreasing trade balance. *Siam (2003)* highlighted the possible causes of public debt and reviewed the governmental efforts toward reducing the outstanding balance public debt. He also provided a descriptive analysis of the relationship between public debt on one side and money supply and local liquidity, tools of monetary policy, interest rate, domestic savings, and exchange rate on the other.

Tarawneh and Abdalrazaq (2002) aimed to define the future trend of external public debt and to estimate the period needed to rely on self-sources of fund to pay debt services. They found that the trend of external public debt tends to be increasing due to the decrease in the domestic savings and inefficiency in using capital. Finally, a positive and direct relationship between the budget deficit and the rise in public debt in Jordan was emphasized by *Fanek (2005)* who underlined that the volume of Jordan's public debt rose during the period (2000-2004) by 15.4%, at an annual average of (3%), which is the same percentage of deficit in the budget as a ratio of (GDP). He concluded that deficits are translated into debt, JD1 for JD1, unless there is some kind of debt write-off or using the privatization proceeds to repay debt. It is noteworthy that all the reviewed studies concerning public debt in Jordan have totally focused on external public debt rather than domestic public debt. The role of government budget deficit and savings gap in debt accumulation was described while none of the studies examined the effect of real exchange rate and foreign aid. They also lack a thorough quantitative analysis of the determinants of total public debt (external and domestic) in Jordan.

This study aims at rectifying some of the previous shortcomings by presenting the developments in total public debt and its determinants in Jordan. Particularly, it presents the changes in the size of total public debt during the period (1980-2005) and explains how these changes were affected by economic disturbances. Moreover, economic variables such as government budget deficit, savings gap, foreign aids, and real exchange rates are examined for their effect on total public debt. Thus, an econometric model is built to perform this examination. In order to achieve its nominated objectives, this study uses two different, yet Complementary, methodologies. Firstly, the descriptive method is used to present the changes in outstanding balance of external public debt and central government domestic debt over the period under study (1980-2005). Secondly, the quantitative

method is used to estimate the econometric model that has been built to find out the main determinants of public debt.

4. MODEL FRAMEWORK

Analysis in the previous section stressed the role of government budget in public debt accumulation. But it is not an easy task to explain precisely the other determinants. Analyzing sources and uses of public loans may help doing so. Developing countries usually borrow in order to finance economic, and social development process. In other words, these countries borrow in order to finance consumption, investment and imports activities in averages that exceed the levels of national output, domestic savings and exports which may aggravate the imbalances in the trade balance and government budget. Additional loans are needed to deal with these imbalances.

In this research, the overall balance of the government budget, the real exchange rate, the foreign aids, and the saving gap are examined for their effect on public debt as shown in the equations (1-3):

$$\text{Log}(ED) = \alpha + \alpha_1 \text{Log}(RER) + \alpha_2 \text{Log}(BD) + \alpha_3 \text{Log}(FA) + U \quad (1)$$

$$\text{Log}(DD) = \beta + \beta_1 \text{Log}(BD) + \beta_2 \text{Log}(FA) + \beta_3 \text{Log}(SG) + U \quad (2)$$

The total public debt can be represented by the equation (3) as an identity:

$$TPD \equiv ED + DD \quad (3).$$

Where:

TPD	: Total Public Debt (external and domestic)
DD	: Central Government Domestic Debt
ED	: Outstanding Balance of External Public Debt
SG	: Saving Gap
RER	: Real Exchange Rate
FA	: Foreign Aid
BD	: government Budget Deficit /Surplus
δ, α, β	: Parameters to be estimated
U	: Error Terms

Prior to presenting the estimation results, the following notes should be recognized:

1. Real Exchange Rates of the JD against the \$US are calculated using the following formula (base year is 2000):

$$RER_{\$/JD} = ER_{\$/JD} \times \frac{P_J}{P_{US}}$$

Where:

$RER_{\$/JD}$: Real Exchange Rate between the Jordanian Dinar and \$US

$ER_{\$/JD}$: the Nominal Exchange Rate between the Jordanian Dinar and \$US,

P_J : the Consumer Price Index in Jordan

P_{US} : the Consumer Price Index in USA.

The RER of the JD against the US\$ was used instead

of the nominal rate because it reflects the real burden of debt service of external public debt. A fall in the RER which is called real depreciation of the JD means a fall in the repayment power of the JD. Moreover, the RER takes into consideration the effect of the domestic and US price levels on the outstanding balance of external public debt. Developments in RER are shown in *figure (2)*.

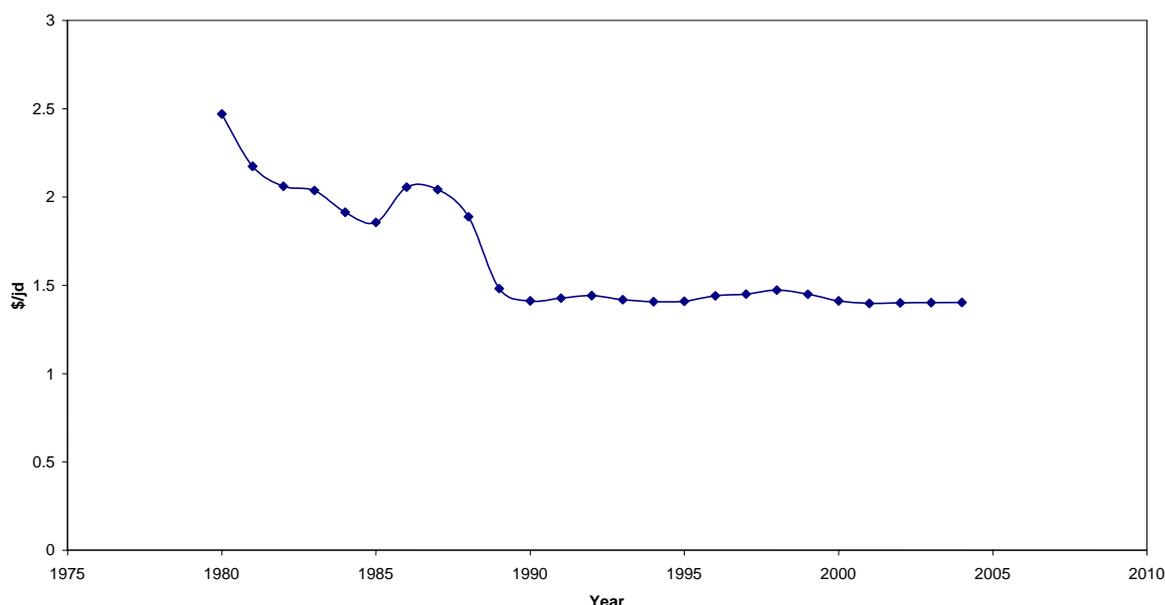


Figure 2. The Real Exchange Rate of the Jordanian Dinar

2. The central government budget deficit was obtained by subtracting total revenues from total expenditures.
3. The Savings Gap is used to express the difference between Domestic Savings and Gross Fixed Capital Formation. This gap reached its maximum in the year (1992) with JD 921.6, whereas it reached its minimum in 1980 with JD132.7 (see appendix 1). Since domestic savings are not satisfied, other sources of fund –public loans- are usually used.
4. The size of unilateral Foreign Aid (FA) has jumped from JD 122.2 million in the year 1977 up to JD 810.9 million in 2004. We assume that this aid affect inversely the volume of public debt.

In Principle, one can assume an important relationship between the overall balance of the government budget, real exchange rate, the amount of foreign aids, and saving gap on one hand and the public debt (external and total) on the other hand.

5. ESTIMATION METHOD AND RESULTS

The integration order of the dependent and independent variables determines the appropriate method of estimation. If the entire variables are found to be integrated of the same order, it is possible for these variables to be co-integrated and Ordinary Least Squares (OLS) approach can be applied. Otherwise, the results of the OLS could be misleading and other approaches of estimation should be used.

In order to determine the order of integration (the stationarity) of the variables, the researchers have conducted two tests: Augmented Dickey Fuller (ADF) Test, and the Phillips-Perron Unit Root Test.

The results of the two tests are shown in Table 1. Dickey-Fuller Test indicates that $\log(ED)$, is integrated of order (2), i.e. $I(2)$ considering the calculated values (in absolute values) are higher than the critical values (in absolute values) at 1%, and 5% significance levels. By the same token, $\log(BD)$ and $\log(SG)$ are $I(1)$ at 1% and 5%

levels of significance, and log (FA) and log(RER) are I(1) at 5% level of significance as well. Nevertheless, log (DD) seems to be higher than I(2). The results of Phillips-Perron Unit Root Test indicate that log (ED), log(BD), and log(FA) are integrated of order (1), i.e. I (1) because

the calculated values (in absolute values) are higher than the critical values at 1% and 5% significance levels. By the same manner, log (DD) is I(2) at 1% and 5% significance level. Finally, log (RER) is I (1), and log (SG) is I (0), both at 5% significance level.

Table 1. Stationarity Analysis Results

Variables	Dickey-Fuller Unit-Root-Test (DFURT)			Phillips-Perron Unit-Root-Test (PPURT)		
	Calculated value	1% critical value	5% critical value	Calculated value	1% critical value	5% critical value
Log(ED)	-2.73	-3.75	-3.00	-2.89	-3.73	2.99
D(Log(ED))	-2.15	-3.77	-3.00	-4.56	-3.75	-3.00
D(Log(ED),2)	-4.71	-3.79	-3.01	-11.39	-3.77	-3.00
Log(DD)	-2.17	-3.75	-2.99	-2.34	-3.73	-2.99
D(Log(DD))	-1.53	-3.77	-3.00	-1.96	-3.75	-3.00
D(Log(DD),2)	-2.99	-3.78	-3.01	-4.09	-3.77	-3.00
Log(BD)	-2.40	-3.75	-2.99	-2.27	-3.73	-2.99
D(Log(BD))	-4.29	-3.77	-3.00	-4.61	-3.75	-3.00
D(Log(BD),2)	-7.14	-3.79	-3.01	-8.17	-3.77	-3.00
Log(FA)	-0.87	-3.75	-2.99	-0.21	-3.73	-2.99
D(Log(FA))	-3.55	-3.77	-3.00	-6.97	-3.75	-3.00
D(Log(FA),2)	-6.80	-3.79	-3.01	-16.66	-3.77	-3.00
Log(RER)	-1.63	-3.75	-2.99	-2.38	-3.73	-2.99
D(Log(RER))	-3.69	-3.77	-3.00	-3.61	-3.75	-3.00
D(Log(RER),2)	-4.38	-3.79	-3.01	-5.24	-3.77	-3.00
Log(SG)	-2.23	-3.75	-2.99	-3.17	-3.73	-2.99
D(Log(SG))	-4.05	-3.77	-3.00	-6.07	-3.74	-3.00
D(Log(SG),2)	-6.79	-3.79	-3.01	-12.37	-3.77	-3.00

Note: **D (X)**: the first difference of variable (X), and **D (x, 2)**: the second difference of variable (X).

Table (2a)
Johanson Cointegration Test: (Series: log(ED), log(BD), log(FA), and log(RER))

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.893245	75.18957	47.21	54.46	None**
0.447125	23.73167	29.68	35.65	At most 1
0.353394	10.10134	15.41	20.04	At most 2
0.003165	0.072921	3.76	6.65	At most 3*

**denotes rejection of the hypothesis at 5% (1%) significance level

L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Given that the results of the two tests are not completely identical; it is clear that all variables are integrated to different orders, which means that OLS method of estimation is not recommended and other approaches of estimation should be adopted. Thus, the co-integration analysis is adopted in this study.

The Co-Integration Analysis:

This analysis aims to verify whether the four independent variables are co-integrated or not. In other words; whether the linear combination of these variables

is stationary. If yes, the regression on the levels of the variables would be significant and any important long-run information will not be missed (Gujarati, 1995, p.726). An important and empirical test for co-integration is Johanson Co-integration Test. This test assumes a linear deterministic trend in the data. The application of this test has produced the results displayed in tables (2a, and 2b):

As it appears in Tables (2a, 2b,) above, the results indicate the rejection of the null hypothesis of no co-integration at 5% (1%) significance level and the likelihood

ratio (L.R) test confirms the existence of one co-integrating equation at 5% significance level. Referring to these results, the researchers could use the variables in their levels; so any order of differencing will not be used.

Therefore, the co-integration equations obtained from this test could be written as follows:

$$\text{Log}(\text{ED}) = 12.49 + 0.153 \text{Log}(\text{BD}) - 0.355 \text{Log}(\text{FA}) - 6.95 \text{Log}(\text{RER}) \quad (4)$$

$$(0.031) \quad (0.081) \quad (0.232)$$

$$\text{Log}(\text{DD}) = -10.70 + 0.31\text{Log}(\text{BD}) + 2.22 \text{Log}(\text{SG}) + 0.41 \text{Log}(\text{FA}) \quad (5)$$

$$(0.078) \quad (0.241) \quad (0.154)$$

Equation (4) presents the following results:

1. All explanatory variables have significant effect on the outstanding balance of external public debt (ED).
2. As expected, the government budget deficit is found to have a positive and significant effect on ED, while the size of foreign aids and real exchange rate has a negative and significant effect.
3. The values of the three parameters are higher in this equation.

Equation (5) presents the following results:

1. Both of saving gap and government budget deficit are found to have a significant positive effect on the central government domestic debt. This indicates that the government tends to borrow from local sources to finance its budget deficit. In addition, the increase in the saving gap increase the government need for more fund.
2. The positive effect of (BD) and (SG) is reasonable, but the positive effect of (FA) is not compatible with the theory; but it seems that both foreign aid and domestic borrowing have increased together, in order to satisfy the high financial needs of development process.
3. The RER was excluded from explanatory variables in equation (5).

By summing up the previous results, we find that government budget deficit, the saving gap, real exchange rate and flow of foreign aids were the major determinants of public debt during the period (1980-2004).

Table (2b)
Johanson Cointegration Test: (Series: log(DD), log(BD), log(FA), and log(SG))

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.729197	56.27319	47.21	54.46	None**
0.425142	26.22681	29.68	35.65	At most 1
0.410689	13.49327	15.41	20.04	At most 2
0.056220	1.330836	3.76	6.65	At most 3*

*(**)denotes rejection of the hypothesis at 5% (1%) significance level

L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Table (3a)
Variance Decomposition of log (ED)

Period	LOG(ED)	LOG(BD)	LOG(FA)	LOG(RER)
1	100.0000	0.000000	0.000000	0.000000
4	36.02	3.81	3.84	56.32
7	22.09	1.99	2.89	73.02
10	18.12	2.09	7.98	71.81

Table (3b)
Variance Decomposition of log (DD)

Period	LOG(DD)	LOG(BD)	LOG(SG)	LOG(FA)
1	100.0000	0.000000	0.000000	0.000000
4	41.56	13.10	43.01	2.33
7	20.20	13.25	64.28	2.28
10	18.69	17.22	63.77	4.82

The Variance- Decomposition:

In order to obtain more solid results, the researchers

have attempted to investigate the dynamic short-term relationship among the variables through decomposing

the variances of $\log(ED)$, and $\log(DD)$ on one side, and finding the impulse responses of these variances to shocks to $\log(BD)$, $\log(FA)$, $\log(RER)$, and $\log(SG)$ on the other. The results of decomposing these variances are shown in tables (3a, 3b, and 3c):

Table (3a) indicates that $\log(BD)$ explains about 3.8% of the variation of $\log(ED)$ after four time periods and it declines after that to stabilize at 2%. The innovation to the foreign aid $\log(FA)$, were responsible to explain only 3.84% of the forecast error of the (ED) after four time

periods, 2.89% after seven time periods, and goes up to about 7.98% after nine time periods. By contrast, the innovation to the (RER) explains a bit more than 56% of the variation of (ED) , and more than 70% after that. It seems that the impact of the innovation of the (RER) on the external public debt which constitute 66%-85% of the total public debt during the period of study is very important. This result is expected given the depreciation of the JOD against the \$US after the economic crisis of 1989 in Jordan.

Appendix (1)
Public Debt, Government Budget Deficit, Real Exchange Rate, Saving Gap, and Foreign Aid (1980-2004)

Year	Central Government Domestic Debt	Outstanding Balance of External Public Debt	Total Public Debt	Government Budget Deficit	Saving Gap	Foreign Aids	Real Exchange Rate
Million JD							\$/JD
1980	197.8	382.7	580.5	127.8	132.7	209.3	2.470571
1981	231.7	512.8	744.5	124.4	245.5	206.3	2.173912
1982	276.2	616.6	892.8	131.9	366.9	199.5	2.06166
1983	314.1	811.2	1125.3	105.4	359.9	197	2.036394
1984	342.7	957.5	1300.2	190.1	383.9	106.1	1.914291
1985	370.4	1130.5	1500.9	158.6	367.4	187.8	1.856077
1986	414.9	1261.6	1676.5	310.4	261.7	143.7	2.055854
1987	624.4	3836.9	4461.3	289.1	400.5	127.6	2.042644
1988	921.8	3836.9	4758.7	232.7	334.3	155.4	1.88877
1989	995	5409.4	6404.4	246.8	270.2	261.7	1.481393
1990	1037.6	5064.3	6101.9	181.9	765.4	164.3	1.411634
1991	1061.7	4958.7	6020.4	122.3	616.1	225.2	1.42696
1992	1041.5	4577.7	5619.2	13.9	921.6	137.4	1.441363
1993	1118.2	4229.6	5347.8	5.3	818.9	163.3	1.41899
1994	1155.6	4720.5	5876.1	50.5	698.1	175.5	1.407741
1995	975.4	4911.8	5887.2	73.9	613.3	182.8	1.40946
1996	1006.4	5164.3	6170.7	40.8	651.8	247	1.440832
1997	914.2	4998.1	5912.3	331.2	543.7	205	1.450776
1998	1152	5333.7	6485.7	355.6	600.7	203	1.472859
1999	1054	5510.1	6564.1	223.6	388.2	198.5	1.450099
2000	1235	5043.5	6278.5	203.8	629.3	391.2	1.412
2001	1397	4969.8	6366.8	224.3	694.0	433.4	1.397719
2002	1656	5350.5	7006.5	275.9	425.0	491.9	1.400916
2003	1815	5391.8	7206.8	161.4	306.0	937.4	1.401955
2004	2082	5348.8	7430.8	152.3	281.5	810.9	1.402944

Source: Central Bank of Jordan, Yearly Statistical Series (1964-2004).

Finally, table (4b) indicates that $\log(BD)$ explains in average about 13% of the variation of $\log(DD)$, and $\log(FA)$ is responsible to explain only about 3% of the (DD) on average, Whereas the most important effect on the domestic public debt is caused by the saving gap (SG) which is responsible to explain 43% of the variation of (DD) after four time periods. This percentage rises to 64% on average, after that.

Hence, the researchers can affirm that the real exchange rate experiences the greater effect on the

external debt in Jordan, followed by the foreign aid and the budget deficit, respectively. Whereas the saving gap experiences the biggest impact on the domestic public debt, followed by the budget deficit, and the foreign aid, respectively. These results show that the three explanatory variables: (RER) , (BD) , and (FA) used in this study are responsible of about 62-82% of the changes of external public debt in Jordan. On the other hand, the study also shows that the three explanatory variables: (SG) , (BD) , and (FA) explain 58-85% of the variation of

the domestic public debt in the country.

6. CONCLUSIONS

The high and increasing public debt, along with its servicing burden, is clearly hindering the country's big efforts to achieve higher and sustained economic growth rates. This burden implies the necessity to studying the assumed determinants of this high public debt in Jordan. Thus, this study aimed to examine how external debt, and domestic debt, response to changes in some explanatory variables. It was found that real exchange rate, the financial position of the government and the size of foreign aids significantly affect the outstanding balance of

external debt, but real exchange rate is the most effective among all explanatory variables. The significant effect of (RER) is expected, especially after the depreciation of the JD caused by the economic crisis of 1988. The chronic government deficit has two effects. It doesn't only decrease the government's ability to repay the debt service of the outstanding loans but also creates additional demand for new public loans. This study also shows that the increase in savings gap plays a key role in domestic debt accumulation since the government resorts to borrow to finance it. The variables (RER), (BD), and (FA) are responsible for about 62-82% of the changes of external public debt in Jordan.

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