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THE EFFECT OF THE TWIN DEFICITS ON THE FOREIGN DEBT IN JORDAN: AN ECONOMETRICAL STUDY

Key Words

Twin Deficits;
Foreign Dept;
Budget Deficit;
Jordan

Abstract

This study aims to investigate the effect of the Twin Deficits, i.e., government budget deficit, and current account deficit, on the foreign debt in Jordan during the period 1977 - 2004. A five-variables cointegration analyses was employed in the study. The study used the outstanding foreign debt as the dependent variable, and a set of explanatory variables which are: budget deficit, current account balance, saving gap obtained by subtracting the net domestic saving from gross fixed capital formation, and external aid. Dicky-Fuller and Phillips-Perron Unit Root Tests were used to examine the integration order of the variables. Furthermore, the Johanson Cointegration Test was also used. In addition, and in order to consolidate the results, the dynamic relationships among variables were examined by applying the variance decomposition of foreign debt.The results of the study were found to be compatible with previous studies in this domain indicating that the four explanatory variables contribute to about 85% of the accumulated foreign debt of Jordan. The variables could be ranked according to their importance in explaining the outstanding foreign debt in Jordan as follows: the budget deficit, the current account deficit, the saving gap, and finally the size of external aid.

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Introduction

A Large foreign debt* has been one of the most serious problems facing the economy of developing countries since their independence after the Second World War. The accumulation of foreign debt is a common phenomenon of developing countries at early stages of economic development where the supply of domestic saving is low, current account payments deficits are high, and imports of capital are needed to support domestic resources. The publications of the international organizations (WB and IMF) report that foreign debt of developing countries grew from $68.4 billion in 1970 to exceed $2.43 trillion in 2003. This means, an increase of more than 3,470%. Debt service payments increased by 2,865% during the period 1970-2000 to exceed $315.2 billion by 2000.

This problem is considered one of the major obstacles to economic growth in these countries during the last three decades. Serious economic problems and imbalances in these countries aggravate the negative effects of foreign debt accumulation and decrease their ability to fulfill their obligations towards debt service. Accordingly, issues related to origin and effect of foreign debt gained the greater interest of researchers and decision makers in both developing and developed countries.

Jordan started to borrow from abroad after its independence in 1946 in unfavorable regional and international economic and political conditions. Furthermore, the mediocre natural and financial resources, the high rates of population growth, the small domestic market, and the high unemployment and poverty rates, have resulted in an economy suffering from major imbalances related to: economic growth rates, deficits in each of the trade balance, government budget, and domestic saving. These imbalances obliged Jordan to resort to foreign aid and foreign borrowing for financing the development process.

In 1950, the government of Jordan started borrowing from foreign sources to finance the development process, the chronic deficits, and to meet the increasing demand for foreign currencies. As a result, the foreign public debt grew from JD1 million in 1950 to JD5348.8 million by the end of 2004.

(*) The amount at any given time, of disbursed and outstanding contractual liabilities of a country, to non- residents, to repay principal, with or without interest, or to pay interest, with or without principal.

In spite of the high importance of the foreign debt problem in Jordan, it has not attracted enough attention of researchers. Therefore, studies on foreign debt are scarce and noticeably less frequent when compared with other economic domains. Moreover, many of the available studies focus on descriptive, rather than on quantitative analysis. Hence, the researcher hopes that this study will shed more light on this problem.

The main objective of this study is to provide a comprehensive analysis about the impact of the twin deficits on foreign public debt in Jordan. Moreover, it aims at presenting the evolution of the size of foreign debt during the period (1977-2004). The major hypothesis of this study is that: larger deficits in each of government budget and current account augment the Jordanian foreign public debt.

The methodology of study consists of two different approaches. Firstly, the descriptive approach is used to present the evolution of outstanding balance of foreign debt and debt service during the period of the study. Furthermore, a comparative analysis aiming at comparing the indebtedness of Jordan to selected developing regions and countries, is also considered. Secondly, the quantitative method is used to estimate the econometric model that has been built to find out the impact of twin deficits on foreign public debt in Jordan.

The study consists of five more sections. After presenting a review of economic literature and previous studies in *section (II)*, the evolution of the outstanding balance of foreign debt will be introduced in *section (III);* the methodology of the study is presented in *section (IV);* the empirical results are outlined in *section(V)*; and finally, the concluding remarks are provided in the *final section (VI)*.

Economic Literature and Previous Studies

According to the twin deficits theory, Corsetti and Moller (2006) argue that shocks to government budget move the foreign borrowing and the current account in the same direction. But, how do expansionary fiscal policies lead from a budget deficit, to a deterioration in the current account (CA) balance? Cavallo (2005:1-3) gives two explanations. First, when the budget deficit rises, domestic residents spend less or work longer hours to save more for paying the expected future increases in taxes. Working more hours, makes the capital stock more productive, which fosters more private investment that partially offsets the increase in private saving. Hence, the (CA) balance dete-

riorates in response to the deterioration of the government fiscal balance. Second, a reduction in capital and labor tax incites people to work harder and longer hours to take advantage of the increase of the after-tax-labor income. This behavior results in an increase in output and productivity of capital, which fosters additional investment beyond the investment caused by the tax cut itself. As a result, the (CA) balance deteriorates.

This theory does not correlate as well in the real world according to Carew (2006:1), when he reports that in the late 1980s, the USA incurred a surge in the (CA) deficit in spite of an amelioration in the budget performance during the same period. The author explains this deficit by the fact that the investment and housing boom, which sucked in imports and increased the foreign funds to pay for them, are factors which overweighed the impact of federal government borrowing. This explanation supports the effect of domestic investment on foreign debt.

Several macroeconomic studies have presented different analyses about the effect of twin deficits on foreign debt:

In his analyses of the relationship between budget deficit and public debt, *Gartner (2003)* argues that the deficit ratio which equal $\Delta B/Y$, where ΔB is the budget deficit or the change in public debt, and **Y** is income. This ratio is related to the level of public debt. In other words, the author confirms that the deficit ratio is related to the debt ratio (b), and concludes that the debt to income ratio (b), and $\Delta B/Y$ are represented by a positively sloped line when plotting $\Delta B/Y$ on vertical axis, and (b) on horizontal axis.

Borrowing from abroad for financing investment in case of budget deficit was underlined by *Mankiw (2003:414)*. He argues that budget deficit means higher consumption and lower national saving which lead to financing investment by foreign borrowing which results in a trade deficit. He adds that the budget deficit causes an appreciation of national currency which negatively affects exports and causes a large current account deficit.

The negative effects of government debt caused by the budget deficit on the economy were at the core of *Edgmand* (1983). He pointed out that the government debt results in a rise in the interest rate, which leads to a contraction effect on the investment. He concludes that a certain fraction of the public debt is for foreigners for whom the country pays interests and principals that involve transferring a fraction of the real output to other nations.

The link between the budget deficit and the rapidly rising public debt in USA was shown in the works of each of Gordon *(2003), Colander* and *Gamber (2002), Dornbusch* and *Fisher(1990)*, and Menize (2005).

In addition to financing budget deficit by foreign borrowing, *Gordon also* confirmed that excess investment over domestic saving was financed by the same way.

The role of current account deficit in increasing public debt in USA was also confirmed by *Sachs* and *Larrain (1993: 152)* who concluded that "the current account deficit during the 1980s has transformed USA from a major international creditor country to the world's biggest debtor".

A few case studies about the effect of public deficits on foreign debt in developing countries have been carried out.

In their analysis about the twin deficits hypothesis in Indonesia, Malaysia, the Philippines, and Thailand (ASEAN-4 countries), *Baharumshah et al.(2004:2)* found support for an indirect causal relationship that runs from budget deficit to higher interest rates, and higher interest rates lead to the appreciation of the exchange rate and this leads to the widening of current account deficit. The latter is transformed into higher foreign debt.

The sources of debt and debt difficulties for a group of Latin American countries were investigated by Dornbusch (1984:2), who found that external shocks; i.e., oil prices, interest rates, world recessions, and the fall in real commodities prices, cannot account by themselves for the problem. Budget deficits that accommodate terms of trade deterioration and disequilibrium exchange rates are central to a complete explanation. He concluded that, in the case of Brazil, the budget deficit is the explanation for the growth of foreign indebtedness.

The deficit in balance of payment and the tendency toward investment to stimulate economic and social development were among the factors advanced by *Alfaidi (2002)* who has tried to explain the aggravation of foreign debt in developing countries. The author ascribed the notable increase of foreign debt in Egypt to the growing budget deficit.

In his study about the foreign debt in Jordan, Almomani (1995) attributed the increase of this debt during the period (1970-1990) to various factors among which: the gap between planned investment and domestic saving, and the chronic deficit in the trade balance. It was also found that external debt absorbed a large part of the exports and national income instead of stimulating economic growth, in-

creasing domestic savings, and decreasing trade balance.

The decrease in the domestic savings that could be allocated to planned investment in Jordan was among the factors causing the rising foreign public debt reported in *Tarawneh* and *Abdalrazaq (2002)*. They 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 of Jordan.

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.

Other case studies were carried out on this topic in Jordan among which the study of S*iam (2003)* who highlighted the lack of domestic savings as one of the causes of public debt in Jordan. In addition study of *Alshara et al*. (1991) analyzed the size and composition of foreign debt, and examined how it may affect specific economic variables. This study argued that external loans positively affect investment, consumption, imports, and GNP.

From the earlier discussion, it is clear that all the economic literature and previous studies on foreign debt support the effect of deficits and domestic investment on the size of foreign debt in developed and developing countries.

Evolution of Foreign Debt in Jordan

a - A Comparative Preview:

According to the World Bank, Jordan is classified among the severely indebted middle- income countries. Turkey, Lebanon, and Brazil come in this category. Compared to other developing countries, Jordan is one of the countries that have the highest foreign debt ratios measured by total foreign debt as percentage of gross national income (GNI), and total debt service as percentage of exports of goods and services.

Table (1) shows foreign debt size and foreign debt ratios for some developing countries including Jordan during the period 2000-2003.

Regarding the total external debt as percentage of (GNI), table (1) shows that Jordan is among the highest indebted three countries in the selected group of countries: Lebanon (96%), Indonesia(90%), and Jordan about 84%.

Table 1
Foreign Debt Size and Key Ratios in Selected Developing Regions and Countries

Region or Country	Total External Debt ($ billions)				Total External Debt as % of Gross National Income (GNI) (% average for 2000-2002)	Total Debt Services as % of Exports of Goods and Services (% average for 2000-2002)
	2000	2001	2002	2003		
All Developing Countries	2,305	2,266.7	2,338.8	2,433.3	-	-
Middle East and North Africa	180.7	178.4	189.0	188.1	-	-
Sub-Saharian Africa	211.2	202.6	210.3	219.7	-	-
Turkey	117.4	113.4	131.6	-	75	48
Lebanon	9.9	12.4	17.1	-	96	43
Egypt	29.2	29.3	30.8	-	32	10
Brazil	238.8	226.4	227.9	-	48	29.4
Algeria	25.3	22.6	22.8	-	43	20
Indonesia	144.4	134.0	132.2	-	90	24
India	99.1	97.5	104.4	-	22	16
Pakistan	-	-	-	-	57	22
South Africa	24.9	24.1	25.0	-	22	12
Jordan*	7.36	7.48	7.54	7.60	83.7	21.3

Source: World Bank, 2004 World Development Indicators, and International monetary fund publications.
* For Jordan, Central Bank of Jordan, statistical bulletin, February 2006.

Concerning total debt service as a percentage of export of goods and services, Jordan comes in the sixth place in the group with a percentage of (21.3%), Turkey (48%), Lebanon (43%), Brazil (29.4%), Indonesia (24%), and Pakistan (22%).

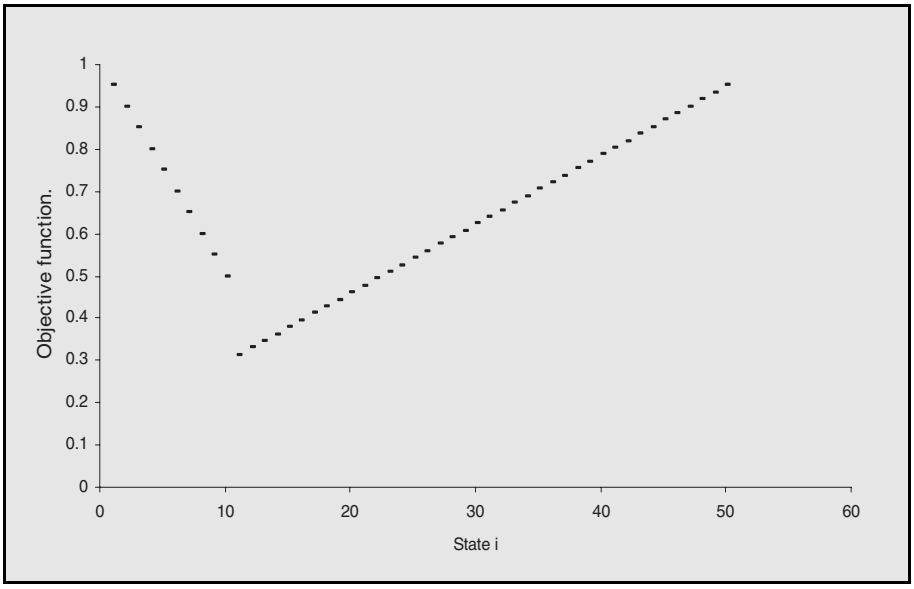
b - Evolution of Jordan's Foreign Debt:

As mentioned above, Jordan has started borrowing from abroad to finance its urgent needs in 1950. The amount of the first loan was JD1 million borrowed from Britain, the main source of foreign loans during the period (1950-1963). After that, Jordan started borrowing from Kuwait, Germany, and USA. The outstanding balance of external public debt that was used to finance the development process reached JD69 million in 1973. Since then foreign public debt started to rise rapidly to reach JD564.58 million, which consti-

tuted 81.8 percent of GDP in 1977. At the beginning of the 1980s, the outstanding balance of foreign public debt started to grow dramatically. Data in the Appendix show that the outstanding balance of external public debt witnessed a sensational increase in absolute numbers during the period (1980-2003). It witnessed a gradual increase as a percentage of GDP until 1991 where this percentage reached its maximum. Beyond that, it started to fall considerably. The outstanding balance rose from JD1323.56 million in 1980 up to JD5391.8 million in 2003, but it has declined to JD5348.8 million in 2004. As a percentage of GDP, the foreign debt constituted approximately 107% of GDP in 1980, 232.5% in 1991, 115.2 in 1995, 85.4 in 2000, and only 67.4% in 2004. This declining proportion is a positive indicator that should ameliorate the position of the Jordanian economy at both regional and international levels. Moreover, by the end of 2004, the outstanding debt declined by JD 43 million compared to its size in 2003. The foreign public debt service for the year 2004 was JD492.4 million, out of which JD381.9 million are settlements and JD110.5 million are interests. The debt service constituted 15.9 percent of the national budget and 6.2 percent of the GDP.

Figure (1) below shows the evolution of the Jordanian foreign debt as a percentage of GDP.

Figure 1
Foreign Debt as a Percentage of GDP



It is worthy to note that the successive drops 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, caused an exceptional increase in foreign debt in a short period of time (1987-1991).

Methodology of the Study

In an attempt to shed some light on the crisis of foreign debt in Jordan, it is convenient to investigate the factors assumed to affect its size; such as the national budget deficit, the current account deficit, the saving gap, and the unilateral foreign aid. The researcher assumes that these factors may play an important role in the aggravation of this crisis.

Before investigating the impact of these variables on the outstanding balance of the foreign debt, a brief description of each of them is considered.

1 - The national budget deficit (BD) may play the most significant role on foreign debt among the other explanatory variables. The national budget deficit was calculated by subtracting total domestic revenues plus external grants from total expenditures. This deficit has been fluctuating during the period of the study to reach its maximum of JD (355.6) million in the year 1998 and its minimum of JD(5.3) million in 1993 (see the appendix).

2 - The current account balance (CADS) is the negative net exports or the current account deficit. It is financed by foreign borrowing in order to cover the budget deficit and the excess of domestic investment over domestic saving (Gordon, 2003:36-37). In Jordan, the current account balance was negative during most of the period of the study. The current account balance has reached its highest deficit in (1992) and its highest surplus in the year (2003).

3 - The saving gap (SG) is measured by subtracting net domestic saving from gross fixed capital formation. This gap reached its negative maximum in the year (1992) with JD 921.6 million, but it reached its negative minimum in 1977 with JD 108.7 million.

4 - The amount of unilateral foreign aid (FA) has risen from JD 122.2 million in the year 1977 up to JD 810.9 million in 2004.

The main source of the data used in this study was the Central Bank of Jordan through its various statistical bulletins.

The econometric analysis adopted in the study is based on the following model:

$$FD = c_0 + c_1BD + c_2CADS + c_3SG + c_4FA + \mu \quad (1)$$

Where:

FD: Outstanding Foreign Debt.

BD: Budget Deficit.

CADS: Current Account Deficit or Surplus.

SG: Saving Gap.

FA: Foreign Aid.

μ: Measures the Random Error Term.

c_0, c_1, c_2, c_3 and c_4: are the parameters to be estimated.

In order to test the hypothesis of the study, the researcher has employed the time series analysis in general; the cointegration analysis in particular.

Empirical Results

(A) The Stationarity Analysis:

The integration order of the variables determines the appropriate approach of estimation. If all the variables are integrated of the same order, it is possible for these variables to be cointegrated, and the Ordinary Least Squares (OLS) approach can be applied. Otherwise, the results of the OLS could be misleading and other approaches of estimation should be considered.

To determine the order of integration of the variables, the researcher has conducted two tests:

(1) Augmented Dickey Fuller (ADF) Test:

Which examines the hypothesis ($p = 0$) versus the hypothesis ($p < 0$) in the following formula:

$$\Delta Y_t = \mu + pY_{t-1} + a_i \sum_{i=1}^{m} \Delta t\text{-}i + \varepsilon_t \quad (2)$$

In this test, the lagged difference terms are considered where their number is normally chosen empirically, i.e. enough terms could be included for obtaining serially independent error term in the equation (2).

(2) The Phillips-Perron Unit Root Test:

This test is basically a test of the hypothesis $p = 1$ in the equation:

$$\Delta X_t = \mu + \rho X_{t-1} + \varepsilon_t \quad (3)$$

The least square method is adopted to estimate formula (3) and the t-statistic of (p) coefficient is corrected for autocorrelaion in Σt.

The results of the two tests are shown in table (2). Dickey-Fuller Test indicates that FD is integrated of order (2), i.e., 1(2) considering the calculated value is higher than the critical values (all in absolute numbers) at 1% and 5% level of significance. By the same token, BD is 1(1) at 5% significance level, (CADS) is 1(1) at 1% and 5% level of significance, (SG) is 1(2) at 1% and 5% significance level, and (FA) is 1(2) at 1% and 5% significance level.

Likewise, the Philips-Perron Test shows that (FD) is integrated of order (1), i.e., 1(1) because the calculated value is higher than the critical values at 1% and 5% level of significance (all in absolute number). Likewise, (BD) is 1(1) at 1% and 5% level of significance, (CADS) is 1(1) at 1% and 5% significance level, (SG) is 1(1) at 1% and 5% level of significance, and (FA) is 1(1) at 1% and 5% significance level.

Even though the results of both tests are not similar, the main point is that the two tests affirm that the five variables are integrated to different orders, which implies that using the OLS method could lead to false results and other estimation approaches should be adopted. Therefore, the researcher has adopted the cointegration analysis.

Table 2
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
FD	-1.97	-3.71	-2.98	-1.96	-3.70	-2.98
D(FD)	-2.81	-3.72	-2.99	-4.54	-3.71	-2.98
D(FD,2)	-4.84	-3.73	-2.99	-12.35	-3.72	-2.99
BD	-2.11	-3.71	-2.98	-2.17	-3.70	-2.98
D(BD)	-3.08	-3.72	-2.99	-5.40	-3.71	-2.98
D(BD,2)	-5.70	-3.73	-2.99	-11.38	-3.72	-2.99
CADS	-1.90	-3.71	-2.98	-2.68	-3.70	-2.98
D(CADS)	-4.71	-3.72	-2.99	-5.10	-3.71	-2.98
D(CADS,2)	-4.86	-3.73	-2.99	-5.13	-3.72	-2.99
SG	-1.76	-3.71	-2.98	-2.13	-3.70	-2.98
D(SG)	-3.72	-3.72	-2.99	-6.75	-3.71	-2.98
D(SG,2)	-6.82	-3.73	-2.99	-14.97	-3.72	-2.99
FA	-2.02	-3.71	-2.98	-0.24	-3.70	-2.98
D(FA)	-2.67	-3.72	-2.99	-6.32	-3.71	-2.98
D(FA,2)	-8.35	-3.73	-2.99	-14.13	-3.72	-2.99

NOTES: D(X): the first difference of variable (X).
D(x, 2): the second difference of variable (X).

(B) The Cointegration Analysis:

In this analysis, we need to check if all variables are cointegrated, i.e., if a linear-combination of these variables is stationary. If that is the case, regression on the levels of these variables would be meaningful and we do not miss any valuable long-term information (Gujarati, 1995: 726).

The Johanson Co-integration Test, which test assumption of linear deterministic trend in the data is adopted for the purposes of this analysis.

The results of this test are displayed in table (3) below.

Table (3) shows the rejection of the null hypothesis of no cointegration at 5% (1%) significance level, and the likelihood ratio indicates the existence of one cointegrating equation at 5% significance level. These results suggest that the researcher could use the variables in their levels, so any order of differing will not be used. Therefore, the cointegrating equation from Johanson Cointegation Test could be written as follows.

$$\mathbf{FD = 2619.12 - 13.37\,BD - 6.91\,CADS}$$
$$\text{S.E} \qquad (1.97) \qquad (1.86)$$
$$\mathbf{- 5.43\,SG + 6.95\,FA} \quad \ldots\ldots\ldots\ldots (4)$$
$$(1.08) \qquad (2.19)$$

The standard errors are reported between brackets.

The cointegration equation produces the equilibrium relationship among the variables and shows that budget deficit (BD) has a negative effect on the foreign debt (FD) and is highly significant. This negative effect, as it is clear in the equation, is in reality a positive effect because the data of budget deficit is reported in negative signs (see appendix). So, the higher this deficit in negative sign is, the higher will the debt be.

The equation shows that the effect of current account balance on the

Table 3
Johanson Cointegration Test, for the variables FD, BD, CADS, SG, and FA

Eigenvalue	Likelihood Ratio	5 percent critical value	1 percent critical value	Hypothesized No. of CE(s)
0.69	73.26	68.52	76.07	None *
0.61	42.87	47.21	54.46	At most 1
0.35	18.06	29.68	35.65	At most 2
0.21	6.84	15.41	20.04	At most 3
0.03	0.86	3.76	6.65	At most 4

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

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

foreign debt is also negative and highly significant. In the same manner, one can say that the higher this deficit is in negative sign, the higher will the foreign debt be. This means that this effect is in reality positive (higher deficit in absolute numbers causes a higher debt).

The effect of saving-gap (SG) is also negative and significant. The higher this gap in negative sign is, the higher will the foreign debt be. This means that a fraction of the foreign debt has been used to finance domestic investment.

On the other hand, the effect of Foreign Aid (FA) seems to be positive and significant, which is not consistent with the assumption that foreign aid should alleviate the resort to foreign borrowing. In the case of Jordan where the economy is characterized by a severe lack of financial resources, it is possible that both foreign aid and foreign borrowing have risen together, in order to satisfy the high financial needs of development process.

Consequently, one can say that these results are generally compatible with the economic theory, and could explain a very important part of the variation of foreign debt in Jordan. The Variance-Decomposition presented below confirms these results.

(C) The-Variance-Decomposition:

In order to consolidate the results, the researcher has investigated the dynamic short-term relationship among the variables through decomposing the variances of (FD). The results of decomposing the variances of (FD) for different time periods are reported in table (4) below.

Table (4) shows that the budget deficit is responsible for explaining about 57% of the variation of FD after three-time periods, the percentage of explanation rises to about 64% after five-time periods, 63% and 61% after seven-and nine-time periods respec-

Table 4
Variance Decomposition of FD

period	S.E	FD	BD	CADS	SG	FA
1	272.38	100.00	0.000	0.000	0.000	0.000
3	862.60	24.89	56.88	7.65	3..82	6.76
5	1686.90	15.07	63.77	10.91	5.98	4.29
7	2642.97	13.15	63.46	14.95	5.71	2.72
9	3708.11	12.97	61.35	19.60	4.32	1.76

tively. On the other hand, innovations to the CADS were found to explain about 8% of the forecast error of FD after three-time periods and this percentage goes up to about 11% after five-time periods and continue to jump reaching 15%, and 19.6% after seven and nine-time periods consecutively.

The innovations to the SG, explain about 4% of the variation of FD after three-time periods, 6% after five-time periods. After that, it begins to decline to 5.7% and 4.3% after seven and nine- time periods, respectively.

Finally, the innovations to the (FA) explain about 7% of the variation of (FD) after three-time periods, but this percentage declines considerably after that to reach only less than 2% after the ninth- time period.

To conclude, it seems that the budget deficit experiences the greater effect on the foreign debt, followed by the current account deficit, the saving gap and finally by the foreign aid, respectively.

These results show that the four explanatory variables employed in this study are responsible for about 85% of the changes of foreign debt in Jordan.

Concluding Remarks

This study attempted to explain the impact of the twin deficits, i.e., the budget deficit and the current account deficit on the foreign debt of Jordan. The researcher examined all the variables used in the analysis for stationary by applying the augmented Dickey-Fuller-Test and the Phillips-Perron Unit Root Test. Both tests confirmed that all variables were integrated of different orders. Furthermore, the Johanson Cointegration Test confirmed the existence of a long-run relationship between all variables. These results are consistent with the results of many previous studies and economic literature about the effect of the twin deficits on the foreign debt. The results show that the twin deficits explain 64-80% of the variation of (FD). The budget deficit solely, explains 57-63% of this variation. So, it is clear that the effect of budget deficit on the foreign debt is much higher than the effect of current account deficit since the first may cause a current account deficit in two ways:

(a) The budget deficit means a lower national saving which leads to financing investment by foreign borrowing which results in a larger current account deficit.

(b) The budget deficit causes an appreciation of national currency which affects exports negatively and causes a larger trade deficit, and consequently a larger current account deficit.

This conclusion implies the need for the Jordanian economy to reduce

its foreign debt by achieving high growth in the GDP, while keeping debt under control. Moreover, other policies should be implemented to reduce the foreign debt burden, among which one can suggest:

(1) Cutting the unnecessary central government spending.

(2) Promoting private saving by implementing appropriate monetary and fiscal policies.

(3) Borrowing locally to repay foreign debts by issuing middle term bills even though such step may cost the Central Bank of Jordan a fraction of its foreign exchange reserves.

(4) Exploitation of the proceeds of privatization to repay the foreign debt.

(5) Repurchasing the foreign debt on the secondary financial markets at high exemption rates.

(6) Exchanging the debt for domestic investment that could be carried out by the debtors (SWAP).

(7) Limiting the tax avoidance experienced by many high- income tax payers in Jordan. This phenomenon constitutes a serious problem for Jordan, because of its negative effects on the budget revenues.

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Appendix 1
Data Used in the Study *(in JD, Millions)*

obs	FD	GDP	CADS	FA	BD	SG	(%) FD/GDP
1977	564.68	690.4	-2.5	122.2	-73.4	108.7	82
1978	787.9	795.4	-85.8	51.7	-121.3	149.7	99
1979	1005.3	982.5	-2.1	210.3	-117.4	118.6	102
1980	1323.6	1164.8	111.6	209.3	-127.8	132.7	114
1981	1550.1	1448.7	-13.7	206.3	-124.4	245.5	107
1982	1877.7	1649.9	-118.3	199.5	-131.9	366.9	114
1983	2142.2	1786.6	-141.4	197	-105.4	359.9	120
1984	2330.1	1909.7	-104.1	106.1	-190.1	383.9	122
1985	2796.2	1970.5	-99.9	187.8	-158.6	367.4	142
1986	3425.6	2240.5	-16	143.7	-310.4	261.7	153
1987	4439.5	2286.7	-118.3	127.6	-289.1	400.5	194
1988	4196	2349.5	-105.5	155.4	-332.7	334.3	179
1989	5187.1	2425.4	-104.9	261.7	-246.8	270.2	214
1990	5908	2760.9	-272.8	164.3	-181.9	765.4	214
1991	6877.5	2958	-288.1	225.2	-122.3	616.1	233
1992	5646.6	3610.5	-587.7	137.4	-13.9	921.6	156
1993	5418.7	3884.3	-446.4	163.3	-5.3	818.9	140
1994	5353.9	4358.3	-279.2	175.5	-50.5	698.1	123
1995	5430	4714.7	-179.8	182.8	-73.9	613.3	1.15
1996	5235	4912.2	-157.4	247.0	-40.8	651.8	1.07
1997	5208.3	5137.5	20.8	205.0	-331.2	543.7	1.01
1998	5401	5609.8	15.5	203.0	-355.6	600.7	0.96
1999	5746.8	5767.3	287.1	198.5	-223.6	388.2	1.00
2000	5222.8	5989.1	42.1	391.2	-203.8	629.3	0.87
2001	5303	6339	-2.9	433.4	-224.3	694.0	0.84
2002	5350.5	6698.8	256.3	491.9	-275.9	425.0	0.80
2003	5391.8	7052	682.7	937.4	161.4	306.0	0.76
2004	5348.8	7938	-127.1	810.9	152.3	281.5	0.67

Source: Central Bank of Jordan, Statistical Bulletins, Various Issues.
- Percentages are calculated by the researcher.

Abbreviations:

FD: Outstanding Foreign Debt.

GDP: Gross Domestic Product.

CADS: Current Account Deficit/ Surplus.

BD: Budget Deficit.

SG: Saving Gap.

FA: Foreign Aid.

الملخص

أثر العجز المزدوج على الدين الأجنبي الأردني: دراسة قياسية

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تهدف هذه الدراسة بشكل أساسي إلى البحث في أثر العجز المزدوج، أي عجز كل من الموازنة الحكومية و الحساب الجاري على حجم المديونية الأجنبية للأردن خلال الفترة ١٩٧٧ – ٢٠٠٤. و لتحقيق هذا الهدف تم استخدام طريقة التكامل المشترك بخمسة متغيرات هي: الرصيد القائم للدين العام الأجنبي بوصفه متغيراً تابعاً، وأربعة متغيّرات مفسّرة، وهي: عجز الموازنة الحكومية، ورصيد الحساب الجاري، وفجوة الادخار معبراً عنها بالفرق بين التكوين الرأسمالي الثابت الإجمالي والادخار المتاح الصافي، وحجم المساعدات الخارجية. ولاختبار جذر الوحدة تم استخدام أسلوبين هما: اختبار ديكي – فولر الموسع، واختبار فيليبس – بيرون، وذلك بهدف اختبار درجة تكاملية المتغيرات المستخدمة في الدراسة. كما تم استخدام طريقة جوهانسن للتكامل المشترك في التحليل. وبهدف دعم نتائج الدراسة تم إجراء دراسة التفاعل الديناميكي بين المتغيرات باستخدام تحليل مكونات التباين. وتشير نتائج الدراسة التي تطابقت مع نتائج دراسات سابقة إلى أن المتغيرات المستقلة الأربعة السابق ذكرها تتسبب في ما يزيد على ٨٥٪ من الرصيد المتراكم لمديونية الأردن للخارج، وكان الأثر الأكبر من بين هذه المتغيرات لعجز الموازنة، يليه – وبنسبة قليلة نسبياً – عجز الحساب الجاري، ثم فجوة الادخار، وأخيراً حجم المساعدات الخارجية.

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