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Determinants of External Debt in Jordan: An Empirical Study (1990–2014)

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Abstract

This study aimed at investigating the major determinants influencing the external debt in Jordan during the period (1990-2014).

To achieve this goal, annual data has been used during the period study, through applying ARDL model which consist of the dependent (external debt) and independent variables (trade openness, term of trade, exchange rate, and gross domestic product per capita).

The study reviled that there is a positive statistically significant effect trade variable on the external debt in the long run, and a negative statistically significant effect for the gross domestic product per capita variable (GDPpc) on the external debt.

The study recommended that it is very important to depend on the available recourses in trading rather that depend on external debt.

Keywords: external debt, trade openness, term of trade, exchange rate, gross domestic product per capita, Jordan

1. Introduction

Public debt is a term which refers to the borrowings of public authorities in the country in order to finance their businesses due to the insufficiency of their own resources to fulfill the expense requirements of these businesses. Public debt is a global phenomenon that is acceptable to a certain extent and under certain controls. But, if the debt exceeds this extent and goes out of these controls, it would become a serious problem or turn into a crisis, leading to negative effects of large risks to public money and to the whole national economy.

External debt is considered an important, main source of financing that governments depend on to achieve developmental or other public objectives. Thus, external debt is incurred in the case of needing funds, when governments suffer from shortages of domestic savings and foreign currencies needed (Abu Siddique et al., 2015).

(Umaru et al., 2013) illustrated that debt is one of the sources of financing capital formation in any economy, where it is important for the government to borrow in order to meet the financial requirements in the case of deficit, so that it could close the resource gap between savings and investments.

Deficit, by nature, creates debt, because domestic revenues are not able to cover current and capital expenditures. On this basis, the justifications of indebtedness in Jordan are constantly to cover the deficit and for development plans. But unfortunately, the Jordanian government could not achieve the desired results in development plans, which led to the creation revenues less than the cost of borrowing.

2. Problem Statement

The external debt of a country represents the accumulation of loans used by the state as a kind of public revenue that are relied upon in order to improve the general level of the state economy.

Jordan is one of the developing countries that rely on external debt to correct economic disturbances and improve the welfare of society, but the increase of reliance on external debt leads to possible difficulties in terms of the ability to repay the debt, thus increasing the debt burden.

The problem of the study lies in that there is a lack of knowledge of the factors and determinants that lead to increase the external debt in Jordan. It is hoped that the results of this study will help in finding possible, efficient ways to reduce external debt.

3. Objectives of the Study

The study will focus on investigating the major determinants influencing external debt in Jordan for the period (1990-2014). The study objectives can be summarized as follows:

1. To investigate the impact of deficit on external debt.
2. To investigate the impact of trade openness on external debt.
3. To investigate the impact of terms of trade on external debt.
4. To investigate the impact of exchange rate on external debt.
5. To investigate the impact of gross domestic product per capita on external debt.

4. Theoretical Framework

4.1 The Definition of External Debt

Debt is based on the Latin word "debere" which is meaning (to owe). Debt has been conceptualized as the resources of money used in an organization which are not contributed to by its owners and do not in any other way belong to the shareholders Okoh (2008).

According to Udoka and Anyingang (2010). Debt divided to Domestic debt, External debt, Productive debt, and Dead weight debt.

4.2 Causes of External Debt

Countries need to borrow money for many different reasons. (Soludo, 2003) asserted that countries usually borrow form a broad for two reasons (macro-economic, finance transitory balance of payments deficits).

(Soludo, 2003) also argues that once an initial stock of debt grows over a certain threshold, servicing it becomes a burden and many countries find themselves unable to serve the debt which in turn leads to recession in both investment and growth.

Menbere (2009) emphasized that the main causes of external debt accumulation are: poverty, change in the global economic policy, Low rate of return and external factors (oil price shocks).

External debt is somehow a solution to many financial problems faced by both big and small countries, Jordan is one of many countries that have resorted to foreign debt in order to secure liquidity to cover the deficits in their budgets.

4.3 External Debt in Jordan

Jordan is a small country in the Middle East. It has a population of over 9.5 million based on the last statistics of 2016. Jordan has poor resources and a long history of chronic budget deficit and high governmental debt. Since its establishment, the Jordanian government has been heavily dependent on external financial resources and support, taking the form of official development assistance, grants, conditional and non-conditional loans (Alshyab, 2016).

Since its independence, Jordan is facing serious problems in terms of balance of payment deficit. To finance this balance of payment deficit, the country adopted to rely on external debt. Statistics indicate that Jordan has resorted to external borrowing since the financial year 1949 / 1950, when it obtained the first external loan from the British government with the sum of one million JD (Abdlhadi, 2011).

Considering the period from 1980 - 2013, the Jordanian public debt exploded in the 1990s in response to the financial crisis of 1989 and the consequent involvement in comprehensive reforms under the patronage of the international institutions. Since then and until 2000, Jordan has been mainly relying on external sources to finance its debt. After 2000, the government started diversifying its debt sources and increasing the domestic public debt component (Alshyab,2016).

Based on external debt reports of the Jordanian Ministry of Finance (2015), the outstanding of external public debt (government and government guaranteed) increased by 1541.6 million JD to reach 9571.7 million JD at the end of October 2015, which is equivalent to 35.3% of the projected 2015 GDP, compared to 8030.1 million JD or 31.6% of GDP at the end of 2014. The rise in outstanding external public debt is due to issuing Euro Bonds guaranteed by the United States of America in the value of USD 1.5 billion at the end of June. Total external debt service (government and government guaranteed) amounted to 81.8 million JD at the end of October 2015; of which 64 million JD were principal payments and 17.8 million JD were interest payments.

Table 1 illustrates the general government gross debt and the percentage change during the period (1988-2014):

Table1. General government gross debt as a percent of GDP and the percentage change during the period (1988-2014).

Year	General government gross debt Percent of GDP	Percent Change
1988	177.532	-
1989	211.573	19.17 %
1990	219.734	3.86 %
1991	200.631	-8.69 %
1992	149.749	-25.36 %
1993	136.95	-8.55 %
1994	126.287	-7.79 %
1995	114.938	-8.99 %
1996	113.829	-0.96 %
1997	106.646	-6.31 %
1998	109.708	2.87 %
1999	108.013	-1.55 %
2000	100.479	-6.98 %
2001	96.478	-3.98 %
2002	99.719	3.36 %
2003	99.644	-0.08 %
2004	91.823	-7.85 %
2005	84.308	-8.18 %
2006	76.33	-9.46 %
2007	73.77	-3.35 %
2008	60.244	-18.34 %
2009	64.775	7.52 %
2010	67.113	3.61 %
2011	70.729	5.39 %
2012	80.173	13.35 %
2013	86.678	8.11 %
2014	89.331	3.06 %

http://www.indexmundi.com/jordan/public_debt.html

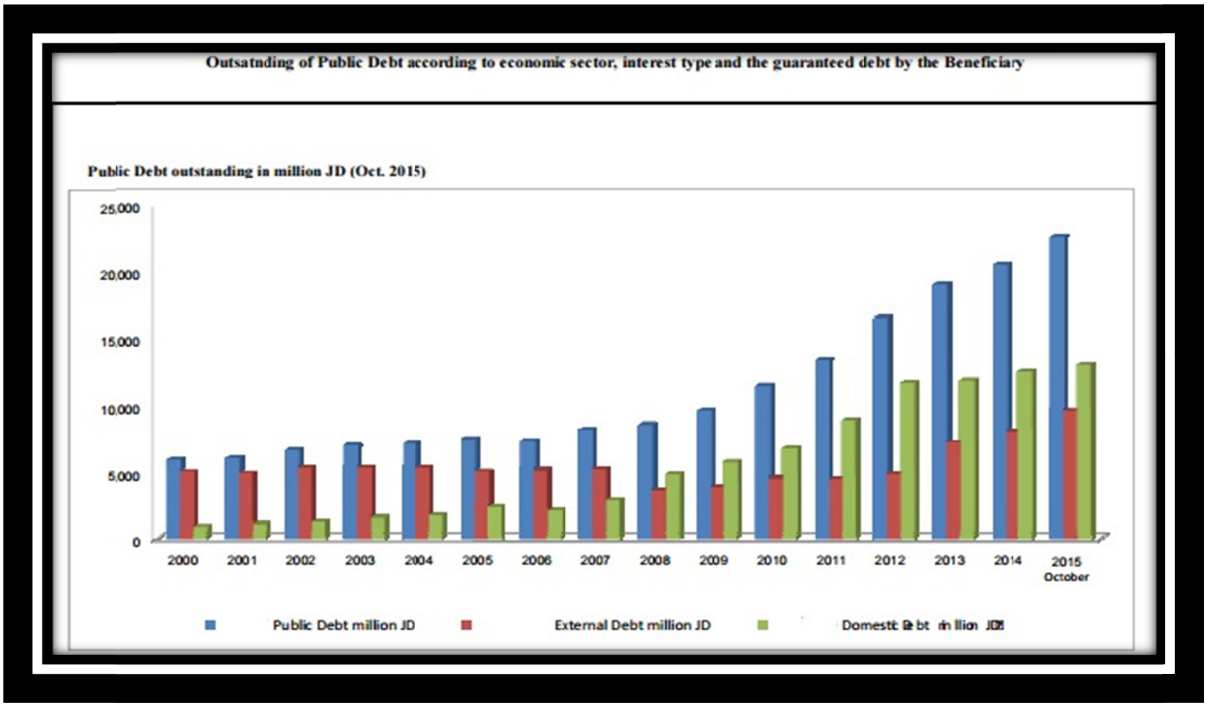

Figure 1.The outstanding of public debt according to economic sector during the period (2000-2015).

Resource: Ministry of Finance, http://www.mof.gov.jo/, Jordan

Figure 1 shows the outstanding of public debt according to economic sector, interest type and the guaranteed debt by the beneficiary.Net Public Debt amounted to 11,462 million JD in 2010 and 22,586 million JD in 2015 with an increase of almost 50%.Nominal GDP amounted to 18,762 million JD in 2010 and 27,045 million JD in 2015.

5. Literature Review

Awan et al. (2015) studied the determinants of external debt in Pakistan during the period (1976-2010), annual time series data were used to find long run equilibrium relationship while short run dynamics have been analyzed using ECM. By applying ARDL model .The results revealed that there is a positive, statistically significant relationship between the following economic variables :(fiscal deficit, nominal exchange rate and trade openness) and external debt. It is also found that there is also a positive relationship between foreign aid and external debt, but this relationship was insignificant.

The study of Bader and Magableh (2009) examined the Determinants of Public Debt in Jordan, using Johansen co-integration Test for the period (1980-2004). The study found that the saving gap, government budget deficit, real exchange rate and flow of foreign aids were the main determinants of public debt during the period study.

Kasidi and Said (2013) studied the Impact of External Debt on Economic Growth in Tanzania for the period of 1990-2010, co-integration Analysis was used in this study. The study found that there is significant impact of the debt service and external debt on GDP growth. Also the co-integration test confirmed that there is no long run relationship of the external debt and GDP.

Al- Refai (2015) examined the relationship between debt and economic growth in Jordan for the period (1990- 2013), using Cobb-Douglas production function. The results showed a positive and significant relationship between the gross fixed capital formation and domestic debt with economic growth in Jordan. Also results showed a negative and insignificant relationship between labor, external debt, and long-term external debt with economic growth in Jordan.

Ahmed et al (2015) explains the impact of external debt on economic growth in Iraq for the period (1980-2014). To achieve the objective of the study an ARDL analysis has been used through applied OLS based autoregressive distributed lag.

The results showed that there is a negative impact for the external debt on gross domestic product (GDP) in the short-run and long-run, but it was noted that this impact is bigger in the short- run than in the long-run.

Abu Siddique et al. (2015) examined the impact of external debt on economic growth in the HIPC countries during the period (1970- 2007).The study sample consisted of 40 HIPC countries and the ARDL model has been applied to reach the results.

It is found that there is a negative impact of external debt on economic growth, in the short-run as well as in the long-run, in the investigated indebted countries.

Bunescu (2014) studied the impact of external debt on exchange rate variations in Romania using time series data during the period (2005-2013). Johansen approach was applied to determine the long run- term relationship between the analyzed variables. The results revealed a statistically insignificant impact of external debt on exchange rate variations in Romania.

Benedict et al. (2014) investigated the determinants of external debt in Nigeria during the period (1986-2010). Johansen Co-integration and Error Correction Analysis were used .The results revealed the presence of a long- run relationship between external debt and the explanatory variables. The results also showed that gross domestic product, debt service and exchange rate are the main determinants of Nigeria's external debt.

Babu et al. (2014) investigated the relationship between external debt and economic growth in the East African Community during the period (1970-2010). Johansen co-integration test, have been used for data analysis. The results indicated a negative, statistically significant relationship between external debt and economic growth in the East African Community.

Atique and Malik (2012) examined the impact of domestic debt and external debt on the economic growth in Pakistan during the period (1980- 2010). In order to achieve the goals of the study, ordinary least square (OLS) approach has been used based on cointegration, unit root testing and serial correlation testing. The results revealed a negative, significant impact of domestic debt and external debt on the economic growth.

Boboye and Ojo (2012) studied the effect of external debt on economic growth in Nigeria. Ordinary least square multiple regression technique was used. The finding indicated a negative effect of external debt on the nation's income and per capita income.

5.1 Methodology, Data and Model

The study depends on the ARDL model as a methodology to achieve its goals.

Data used consist of annual observations of the dependent and independent variables during the period (1990-2014). The following equation illustrates the variables used.

$ED_t = f$ (D., TO, TOT, EXCHR, GDPpc).

Where:

ED_t= external debt, D. = deficit, TO = trade openness, TOT = term of trade, EXCHR = exchange rate, and GDPpc =gross domestic product per capita.

The logarithmic form of the variables is used. So the empirical estimating model of study is as follows:

Log ED= α_o + β_1 Log D. + β_2 Log TO+ β_3 Log TOT+ β_4 Log EXCHR+ β_5 Log GDPpc.

Table 2.Unit root test results

Variables	PP- Test		ADF-Test	
	At level	At first difference	At level	At first difference
ED	-4.209639***	-12.48692***	-4.286886***	-5.45185***
D.	-0.97701	-7.712357***	1.27582	-2.330452
TO	-1.749138	-4.105415***	-1.653605	-4.198021***
TOT	-2.520242	-5.811157***	-2.439814	-5.042482***
EXCHR	-1.775749	-4.830536***	-1.780935	-2.198325
GDP*pc*	0.804613	-4.144576***	1.048874	-1.615841

Note: *** significant at 1%, ** significant at 5%, and *significant at 10%

The results of Phillips-Perron (PP) illustrate that all the variables are stationary of the same order I(1) at 1% significance level, except the dependent variable (ED)which is stationary at level and at first difference. The results of Augmented Dickey-Fuller (ADF) test also show that the dependent variable (ED) is stationary at level and at first difference, but on the other hand the variables D, EXCHR, GDP*pc* are not stationary either at level or at first difference. The variables TO and TOT are stationary at first difference.

5.2 Wald Test

Before applying the ARDL model, Wald test (F-test) is conducted to test the existence of co-integration among the variables. The result shows that the value of F-statistic according to Wald test was (72.6452), which is larger than the tabulated value. This indicates the existence of a co-integration relationship between the variables of the study.

In the next step we used long run relationship among variables with the help of Auto Regressive Distributive Lag (ARDL) econometric model. We depend on the value of F- Statistics from Akaike information criterion (AIC) since it is greater than Schwarz Bayesian Criteria. Long run results are given in Table (2).

5.3 Long Run

Table 3.Long run coefficients using the ARDL approach at model

Estimated long run coefficients using the ARDL Approach, ARDL (2,1, 1,1,1)selected basedon Akaike information criterion			
Regressor	**Coefficient**	**Standard Error**	**T-Ratio [Prob.]**
D.	-0.040471	0.125225	-0.323183 [0.7505]
TO	0.165708	0.214649	0.771996 [0.4507]
TOT	0.533601	0.192293	2.774935*** [0.013]
EXCHR	-0.265312	0.819292	-0.323831 [0.75]
GDP*pc*	-0.099882	0.204524	-0.488364 [0.6315]

Note: *** significant at 1%, ** significant at 5% and *significant at 10%.

Table 3 shows that all the variables of the study do not have a statistically significant impact on external debt, except the terms of trade variable (TOT) which has a positive statistically significant effect at the level of (1%).

5.4 Short Run ECM

Table 4. Error correction representation for the selected ARDL model

Error correction representation for the selected ARDL model,ARDL (2,1, 1,1,1) selected based on Akaike information criterion			
Regressor	**Coefficient**	**Standard Error**	**T-Ratio [Prob.]**
D. (-1)	0.006418	0.09667	0.066392 [0.9489]
D. (-2)	0.048973	0.098825	0.495548 [0.6354]
TO (-1)	-0.294095	0.164962	-1.782805 [0.1178]
TOT (-1)	-0.01911	0.129435	-0.147639 [0.8868]
EXCHR (-1)	0.519187	0.694533	0.747533 [0.4791]
EXCHR (-2)	0.978199	0.786243	1.244143 [0.2535]
EXCHR (-3)	-0.042852	0.446879	-0.095892 [0.9263]
GDPpc (-1)	0.568652	0.343952	1.653288 [0.1423]
GDPpc (-2)	-0.779695	0.289905	-2.689486**[0.0311]
GDPpc (-3)	0.008846	0.311922	0.02836 [0.9782]
ECM (-1)	-0.836738	0.169685	-4.931119 [0.0017]

Note: *** significant at 1%, ** significant at 5%and *significant at 10%

Table 4 shows that all the variables of the study do not have a statistically significant impact on external debt, except the gross domestic product *per capita* variable (GDP*pc*) which has a negative statistically significant effect at the level of (5%) in (lag 2).

The value of ECM is -0.836738. The negative sign shows that the model is convergent towards equilibrium, whereas the value shows the adjustment speed of the model. It means that the adjustment speed of previous year's disequilibrium to current year is about 84%.

5.5 Diagnostic Tests

Diagnostic tests are conducted to make sure that there is no problem of autocorrelation and heteroskedasticity among the variables of the study. Breusch-Godfrey Serial Correlation LM test was used to observe the troubles of autocorrelation, while Breusch-Pagan-Godfrey test was used to observe the troubles of heteroskedasticity. The results were as follows:

Table 5. Diagnostic tests of model

Test Statistics	Obs R-square	F-statistic
	Long Run	
Serial correlation	4.93064 [0.2945]	0.886837 [0.4988]
Heteroscedasticity	7.672381 [0.1752]	1.701901 [0.1881]
	ECM	
Serial correlation	1.908355 [0.7526]	0.079112 [0.9835]
Heteroscedasticity	11.2786 [0.5052]	0.754373 [0.6816]

The diagnostic test from the table above illustrate no problem of serial correlation and existence of heteroskedasticity, where the value of significance probability for each of F-statistic test and Obs R-square were greater than (0.05).

5.6 Stability Test

The graphs in Figure (2) and (3) show that the model is stable, where the residual lies between the two straight lines showing 5% critical bounds, which means that if a series is excluded from the model, there is no effect on the rest of the series.

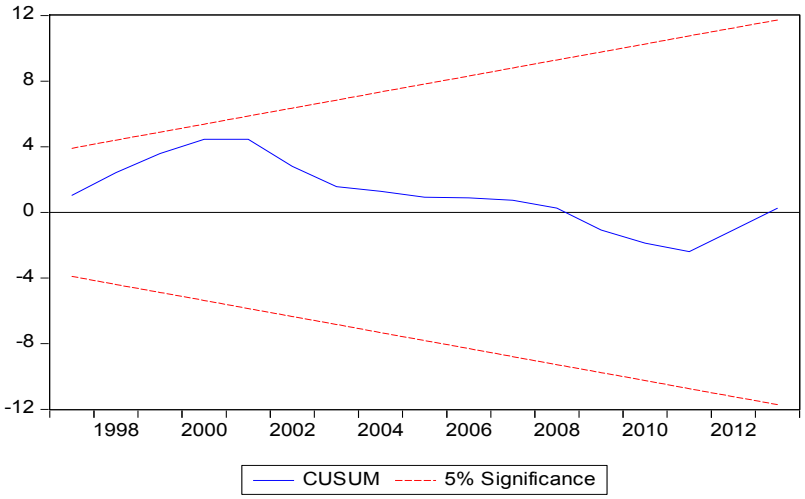

Figure 2. Cumulative Sum (CUSUM) Testfor Long run ARDL approach

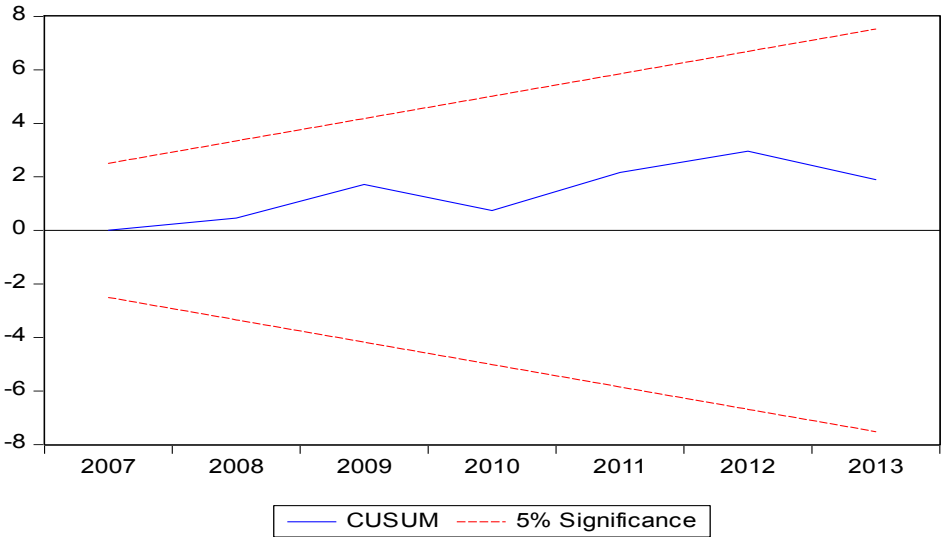

Figure 3. Cumulative Sum (CUSUM) Testfor Short Run ECM ARDL approach

6. Results

1. There is a positive statistically significant effect of terms of trade variable (TOT) on external debt in the long run, where an increase in trade by (1%) will lead to an increase in external debt by (53%) approximately. This result agreed with the study of Udoka and Anyingang (2010) who found that the terms of trade variable is one of the major determinants of external debt in Nigeria.

2. There is a negative statistically significant effect of Gross Domestic Product *per capita* variable (GDP*pc*) on external debt, where an increase in (GDPpc) by (1%) will lead to a decrease in external debt by (78%) approximately. This result agreed with the study Umaru et al. (2013) which indicated a negative relationship between external debt and economic growth in Nigeria. Also, this result agreed with the study of Abu Siddique et al. (2015) that found a negative impact of external debt on economic growth in the HIPC countries, as well as agreed with Babu et al. (2014) who found that a negative statistically significant relationship between external debt and economic growth in the East African Community.

7. Recommendations

In light of the study results, the following recommendations are:

1. It is very important to depend on the available resources in trading rather than depending on external debt.

2. It is very important to study the factors that affect the Gross Domestic Product *per capita* variable, in order to determine the factors that have a positive effect since keeping Gross Domestic Product *per capita* at a high level on this variable, leads to reduce the external debt.

3. Conducting further future studies are recommended by using other determinants of external debt.

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