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The Impact of External Debt on Economic Development in Sudan (1970-2011): An Empirical Investigation

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Abstract: ***This study empirically investigated the relationship between external debt and economic development of Sudan. The study covered the period from 1970 to 2011 and adopted empirical investigation and causality research approach. Data on economic development were used in establishing the relationship and the degree of significance. Regression technique was used in order to establish the nature and degree of the relationship between the variables. The study found that GDP per capita, government final consumption, exports can improve with external debt borrowing; while gross domestic saving, imports(in the first period) in the country will be reduced with external debt borrowing; although not significantly. The imports in Sudan will simultaneously reduce when more external debt are borrowed as established by the study. The study, therefore, inferred that external debt in Sudan has made both positive and negative contribution to the economic development of the country during the period covered by this study.***

Keywords: External debt, GDP per capita, gross domestic saving, model, imports, exports, Sudan.

1. Introduction

External debt (or foreign debt) is an outstanding loan that one country owed to creditors outside the country. The debtors can be the government, corporations or private households. The debt includes money owed to private commercial banks, other governments, or international financial institutions such as the International Monetary Fund (IMF) and World Bank (WB). The debt may be comprised of fees for goods and services or outstanding credit due to a negative balance of trade. Total external debt can be a combination of short-term and long-term liabilities.

There have been various definitions in research that underline the external debt and economic development relationship but the most common one is the debt overhang. Many have called it the debt overhang paradox. Krugman (1988) defined debt overhang as a situation where "the expected present value of future country transfer is less than the current face value of its debt". His debt overhang hypothesis instigated a number of works aiming to test its relevance against the experience of many low income countries.

Many studies on the external debt problem have focused mainly on the development of the magnitude and trends of the external debt in the low-income countries, and have then been followed by other studies which have examined the debt burden indicators and severity of the debt problem. However, more recently scholars have concentrated on investigating the impact of the external debt stock and total debt service on economic development.

It is the objective of every government to improve the standard of living of its citizenry and promote economic growth and development of the country. Due to the scarcity of resources, countries depend on each other to foster economic growth and achieve sustainable economic development. The necessity for governments to borrow in order to finance a deficit budget has led to the development of external debt. External debt is one of methods through which countries finance their deficits and carry out economic projects that are capable of increasing peoples' standard of living and promote sustainable economic development. It is an important resource needed to support sustainable economic growth.

Theoretical and Literature Review

Many of the previous studies discussed the impact of external indebtedness on Economic variables, and the results of these different studies, some come to a positive relationship, others found that there is an inverse relationship. The debt overhang and crowding out hypotheses have become increasingly significant research topics. In what follows we will touch briefly on some of these current studies due to their relevance to this work.

Though there are many studies on external debt and its impact on economic growth (see Ayadi, 2008; Fosu, 2007; Hunt, 2007; Clements, Bhattarchanya & Nguyen, 2003), most of those studies concentrated on the servicing of the debt and the significance of accumulated interest payment effects on economic growth of debtor countries. Some studies were also carried out to investigate the application and management of the debt.

External debt is widely believed to enhance economic growth and development (Osinubi & Olaleru, 2006; Hirschman, 1958). That is the basic reason why the debt is usually borrowed in the first place. Both developed and developing nations seek for external debt to boost their economic performance (Kletzer & Wright, 1999; Eaton & Gersovitz, 1981). Available statistics have shown that the United States of America is the biggest debtor country in the world but yet the country enjoyed significant economic growth and development taken the global financial meltdown aside (Blakely & Leigh, 2009). Sudan has been utilizing the external debt to the extent that the debt becomes so huge to water down substantial part of the country's revenue. Despite

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the increasing nature of the debt stock, until the recent decline due to debt cancellation and relief, the economic development of Sudan is not encouraging especially looking at the economic development in terms of its basic components such as employment creation and poverty reduction.

Studies on external debt revealed divergent views on the implication of external debt to the debtor country. Audu (2004) studied the impact of external debt on economic growth and public investment in Nigeria. His study concluded that debt servicing pressure in Nigeria has had a significant adverse effect on the growth process of the country. He added that Nigeria frequently diverts resources to take care of pressing debt service obligations instead of being allocated to the development of infrastructures that would improve the well-being of the citizenry. Osinubi & Olaleru (2006) examined how the use of budget deficits as an instrument of stabilization leads to the accumulation of external debt with the attending effects on growth in Nigeria between 1970 and 2003. Their study concluded that if debt-financed budget deficits are operated in order to stabilize the debt ratio at the optimum sustainable level debt overhang problems would be avoided and the benefits of external borrowing would be maximized.

Lyoha (1999) used simulation approach to verify the external debt impact on economic growth in sub-Saharan African countries for the period from 1970 to 1994 and found that the external debt is working on investment reduction and thus adversely affect the economic growth, while the Karagol (2002) has researched into the nature of the relationship between external public debt service and economic growth in Turkey for the period from 1956-1996, where he used the multi co-integration technique, and found that there is an inverse relationship between external public debt and economic growth in the long term.

On the other hand Schclarek (2004) did not find any evidence that external public debt affects the productivity of the production elements, but he found in developing countries that the high rate of economic growth is linked to lower rates of external public debt and not the private external debt ratios. This was confirmed by Adepoju et al. (2008), where they found that external debt accumulation hinders economic growth in Nigeria, as well as the Malik et al. (2010) found that external debt and debt service have a negative impact on economic growth in Pakistan during the period from 1972 to 2002. These results are similar to the results of Hamid study and others (2008) which concerned with the study of foreign debt, equity capital and manpower to Pakistan's economic growth for the period 1976-2003 the impact, while the Jayarman et al. (2008) emphasized that the rise in the flow of aid and foreign debt has clearly contributed to the rise economic growth rates in the six countries of the Pacific States during the period 1970-2003.

Butts (2009) also confirmed on the existence of a causal relationship between economic growth and public external debt in 13 countries out of 27 countries of Latin America and the Caribbean during the study period from 1970 to 2003.

A study has been prepared in the National Planning Institute, Egypt (1985) that the variables of inflation and exchange rate have a significant statistical effect on foreign debt through their impact on the balance of payments and the rate of terms of trade.

Another study confirmed the existence of a direct correlation between the increase of external debt and high inflation rates in the debtor countries and the findings of his researcher Mohammed Samir (2012) in his study " the problem of external debt and its impact on economic development in the Arab countries".

Abdulhadi (2013), aimed to detect the relationship between the external public debt and economic growth in Jordan during the period from 1990 to 2011, where he found that there is a direct correlation between the external public debt and economic growth, as well as there is an inverse relationship between the external public debt service and Economic Growth

But Riad (1995) in his study of the Jordanian foreign debt causes and economic results has been shown to him through the analysis of the impact of external debt on the rate of growth in gross domestic product, and the impact of foreign loans to domestic savings, investment, consumption, and trade balance, exports, imports, the analysis showed the following results: that foreign loans contributed to the increase in the deficit in the trade balance, and by increasing imports greater than exports by. The marginal effect of withdrawals foreign loans to gross domestic product in general was low. Foreign loans have a negative impact on savings. Also that the effectiveness of foreign lending in advancing the process of economic development largely depends on how the use of these loans, and demonstrated that the loans did not contribute to the reduction of the deficit in the trade balance, but it may deepened and contributed to inflate it, and this is confirmed as he said, by Jordan's inability to increase export capacity through borrowing, which led to the incident in trouble with the inability to pay the premiums and benefits.

Aodat Nagy (2005) has pointed out that the external debt will lead to a reduction of the national currency exchange rate, which leads to the financing of the national products at the lowest prices abroad and import with highest possible cost. This is reached in his study "external indebtedness of developing countries and their impact on the economies of debtor countries."

This is also reached by Nagmeldin (2002) in his study " the impact of foreign loans on economic development in Sudan", where he proved that the external debt is inversely associated with the exchange rate and directly proportional to the rate of inflation as it positively affects consumption, exports, imports. But Muhammad Azeem (2011) found in his study of the impact of external debt on economic growth in Sudan, during 1970-2010 that GDP is directly associated directly the external debt, while the exchange rate is inversely associated with the external debt

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The Models and the Method

The theories attempt to test empirically links between external debt and the basic components of economic development namely GDP per capita, government general consumption, exchange rate, inflation, exports, imports in Sudan over the period of (1970-2011). To achieve the goal of this paper in the light of the nature and importance of the concepts and in order to answer the questions of the paper and knowledge in all its aspects, and test the validity of the assumptions in the light of what is available to us from the data, the paper relied on inductive approach by extrapolation of studies, research and books of Arab and foreign periodicals, which has in the field of foreign debt in the theoretical side

As for the practical side, the paper has adopted statistical analysis approach, both descriptive and inferential (quantitative approach) and that by describing the beginnings of external debt and its evolution over the study period, taking advantage of the data that was collected from relevant agencies such as the Central Bank of Sudan, the World Bank and others, adopted Search regression technique to determine the impact of external debt on macroeconomic variables such as gross domestic product per capita, GDPPC, Government final consumption GOVFC, Gross domestic saving GDSAV, Official exchange rate OEXRT, Inflation INFL, exports and imports EXPRT IMPRT.

The study has been able to develop models to detect in order to assess the impact of external debt on the performance of the Sudanese economy, measured by using the variables (GDP per capita, Gross domestic savings, Government final consumption, Inflation, Official exchange rate, exports and imports). Also cointegration model been developed to detect the presence of long-term equilibrium relationship between the variables of the study, in addition to error correction model ECM.
The model will describe the relationship between the following variables, that is:

$$Y = f(X_i) \quad \ldots\ldots\ldots\ldots\ldots (1) \text{ or,}$$

$$Y = a + Bx_i + \eta \sum V_i \quad \ldots\ldots\ldots\ldots\ldots (1.1)$$

Where: Y ≡ the dependent variable, the performance of the Sudanese economy, measured by using the variables:

- GDP per capita, (GDPPC)
- Gross domestic savings,(GDSAV)
- Government final consumption,(GOVFC)
- Exports, EXPRT)
- Imports, (IMPRT)

X ≡ the independent variables (explanatory variables), which represents:

- External Debt (EXTD).

V_i : Control variable includes:

- INFL, GDPPC, OEXRT, EXPRT, and IMPRT.

Accordingly seven models will be constructed as follows:

- The first model represents the effect of EXTD on GDPPC:

$$GDPPC = a_0 + \beta_1 EXTD + \beta_2 EXPRT + \beta_3 INFL + \varepsilon_{it} \qquad t = 1,2,3 \qquad [1]$$

- The second model represents the effect of EXTD on GDSAV:

$$GDSAV = a_0 + \beta_1 EXTD + \beta_2 GDPPC + \beta_3 INFL + \varepsilon_{it} \qquad t = 1,2,3 \qquad [2]$$

- The third model represents the effect of EXTD on GOVFC:

$$GOVFC = a_0 + \beta_1 EXTD + \beta_2 GDPPC + \beta_3 OEXRT + \varepsilon_{it} \qquad t = 1,2,3 \qquad [3]$$

:

- The forth model represents the effect of EXTD on EXPRT:

$$EXPRT = a_0 + \beta_1 EXTD + \beta_2 GDPPC + \varepsilon_{it} \qquad t = 1,2,3 \qquad [6]$$

- The last model represents the effect of EXTD on IMPRT:

$$IMPRT = a_0 + \beta_1 EXTD + \beta_2 GDPPC + \varepsilon_{it} \qquad t = 1,2,3 \qquad [7]$$

The specification of above system is consistent with previous studies and it can help us for the identification of the channels through which external debt affects the performance of the Sudanese economy, measured by the above variables. For more elaboration for the relation between social protection, human capital and growth we consider to use Granger causality as proposed by Engle and Granger (1969), and check the stationarity and if there is presence of unit root in the series, the most famous of the unit root tests are the ones derived by Dickey and Fuller and described in Fuller (1976) , also Augmented Dickey-Fuller (ADF) has been mostly used within a Vector auto regression (VAR) model which is an econometric model used to capture the evolution and the interdependencies between variables, generalizing the univariate AR models. Sims advocates the use of VAR models as a theory-free method to estimate

Economic relationships, thus being an alternative to the "incredible identification restrictions" in structural models .

Data

Data plays a prominent role in the process of scientific research, not least on the importance of data from the scientific research of our time in various forms of knowledge has been based and mainly on the data available for the studied phenomenon, and this is what made the developed countries of the world take over vital data collection process special attention due to the fact that this process simply represent the cornerstone of any research process. All variables over the period cover (1970-2011) are from World Economic Development Database, and UN statistics; published by IMF, WB, and UN. The data of inflation and official exchange rate from annul reports; Central Bank of Sudan, Ministry of Finance and National Economy (MoFNE), and Central Bureau of Statistics (CBS)Sudan;

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2. Empirical Estimates

2.1 GDP per capita and external debt

Table 1 presents the regression results of different equations estimated to explain the effects of external debt on the gross domestic product per capita in Sudan for three periods (1970-1990) , (1990-2011) and (1970-2011).. All specifications, the coefficients on external debt over the period under consideration appear significant in the second and third period, 1990-2011, 1970-2011, and insignificant in the first period, (1970-1990). The coefficients in all periods are positive indicating a direct relation between external debt and gross domestic product per capita. In the first period, the overall estimated external debt have a positive impact on GDP per capita, with a coefficient of 0.17which means that a 1% change in external debt will lead to 17% change in GDP per capita at that period. In the second period the coefficient is relatively bigger indicating that a 1% increase in external debt will lead to about 36% in increase in GDP per capita in that period. In the last period, (1970-2011) a 1% increase in external debt will lead to about 16% in increase in GDP per capita. These results support the hypothesis that external debt has a positive impact on the country's GDP per capita.

The results show that the models over the three periods is significant, square R 0.45, 0.68, and 0.52 respectively. This means that a considerable proportion of the variation in GDP is explained by these relationships, other things remain equal.

285 to 50%, which means that a considerable proportion of the variation in Gross domestic saving is explained by these relationships, other things remain equal.

Table 1: The Effects of External Debt on gdp per capita in Sudan (1970-1990), (1990-2011) and (1970-2011)

Dependent Variable: GDP per capita

Variable :DL(GDP PC)	*1970-1990*	*1990-2011*	*1970-2011*
C	0.023846	0.025549	0.058665
	(0.394754)**	(0.654777)**	(1.834740)**
DL(EXDT)	0.170039	0.365207	0.172821
	(0.778371)**	(2.494980)**	(2.054803)**
R-squared	0.449284	0.678981	0.515584
Adjusted R-squared	0.346024	0.625478	0.476307
S.E. of regression	0.131754	0.133586	0.136519
Sum squared resid.	0.277748	0.321216	0.689587
Log likelihood	14.38897	15.27687	25.57084
Durbin-Watson stat	1.180302	2.129357	1.726243
Mean dependent var	0.057873	0.042055	0.056573
S.D. dependent var	0.162924	0.218285	0.188649
Akaike info criterion	-1.038897	-1.025170	-1.052236
Schwarz criterion	-0.839751	-0.826799	-0.885058
F-statistic	4.351024	12.69049	13.12689
Prob(F-statistic)	0.020154	0.000108	0.000005

Source: Own calculation based on E-views
*Notes: ** t-values significant at 1% and 5% level of significance*

2.2 Gross Domestic Saving and External Debt

Table 2 reports the regression results of different equations estimated to explain the effects of external debt on the gross domestic saving in Sudan for three periods (1970-1990) , (1990-2011) and (1970-2011).. All specifications, the coefficients on external debt over the period under consideration appear significant with and without expected signs. In first and third periods from 1970-1990, 1970-2011, the overall estimated external debt have a negative impact on gross domestic saving, while it has a positive impact on gross domestic saving in the second period (1990-2011), this might be attributed to the fact that this period includes a period of prosperity in Sudan in which the country started to export oil. It reports that an increase in external debt by 1% will lead to an increase in gross domestic saving by about 9% in his period. On the other hand in the first and third period, (1970-1990) and (1970-2011), we notice that an increase in external debt by 1% will lead to a decrease in gross domestic saving by 69% and 63% respectively.

The results show that the overall significance of the models in the three periods is good with square R ranges between

Table 2: The Effects of External Debt on Gross Domestic Saving in Sudan (1970-1990), (1990-2011) and (1970-2011)

Dependent Variable: Gross Domestic Saving

Variable : DL(GDSAV)	**1970-1990**	**1990-2011**	**1970-2011**
C	0.058361	0.156333	0.036452
	(-1.276489)**	(-1.430525)**	(-6.104021)**
DL(EXDT)	-0.690749	0.094413	-0.635207
	(-2.529136)**	(1.927808)**	(-0.633404)**
R-squared	**0.276480**	**0.589717**	**0.494658**
Adjusted R-squared	0.079596	0.038109	0.152271
S.E. of regression	1.164350	0.622423	0.849843
Sum squared resid.	23.04710	7.360802	27.44485
Log likelihood	-29.79685	-19.17304	-49.94791
Durbin-Watson stat	1.906615	1.877035	2.151984
Mean dependent var	0.067015	0.201726	0.099053
S.D. dependent var	1.213653	0.634633	0.923018
Akaike info criterion	3.279685	2.015731	2.582825
Schwarz criterion	3.429045	2.164509	2.708208
F-statistic	1.821551	1.415993	4.592456
Prob(F-statistic)	**0.191968**	**0.011711**	**0.016354**

Source: Own calculation based on E-views
*Notes: ** t-values significant at 1% and 5% level of significance*

Government Final Consumption and External Debt

Table 3shows the regression results of different equations estimated to explain the effects of external debt on government final consumption in Sudan for three periods (1970-1990), (1990-2011) and (1970-2011).. All specifications, the coefficients on external debt over the period under consideration appear significant, unless that one in the third period, which is a bit insignificant, with and without expected signs. In second and third periods from 1990-2011, 1970-2011, the overall estimated external debt have a positive impact on government final consumption while it has a negative impact on government final consumption in the first period (1970-1990), and it reports that an increase in external debt by 1% will lead to a reduction in government final consumption by approximately6% in his period. On the other hand in the second and third period, (1990-2011) and (1970-2011), the results show that an increase in external debt by 1% will lead to an increase in gross domestic saving by 14% and 1% respectively.

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Expenditure is explained by external debt, other things remain unchanged. The results show that the overall significance of the models in the three periods is good with high square R which means that a considerable proportion of the variation in government final consumption is explained by this relationship, in the second and third period, it's 65% and 59% respectively, while in the first period it's 68%, meaning that 68% of the variation in government final consumption

Table 3: The Effects of External Debt Government Final Consumption in Sudan (1970-1990), (1990-2011) and (1970-2011)
Dependent Variable: GOVERNMENT FINAL CONSUMPTION

Variable : DL(GOVFC)	1970-1990	1990-2011	1970-2011
C	-3.07E+08	-7.26E+09	-1.29E+09
	(-2.267476)**	(-3.177660)**	-5.470558)**
DL(EXDT)	-0.058096	0.140399	0.012980
	(-3.180328)**	(2.655492)**	(0.647869)**
R-squared	0.684862	0.654903	0.587057
Adjusted R-squared	0.647786	0.618577	0.565323
S.E. of regression	0.172780	0.171848	0.182578
Sum squared resid.	0.507503	0.561100	1.266719
Log likelihood	8.361088	9.141239	13.10494
Durbin-Watson stat	1.534259	2.143545	1.694852
Mean dependent var	0.024270	0.085349	0.067251
S.D. dependent var	0.291133	0.278253	0.276927
Akaike info criterion	-0.536109	-0.558294	-0.492924
Schwarz criterion	-0.386749	-0.409516	-0.367540
F-statistic	18.47227	18.02850	27.01119
Prob(F-statistic)	0.000055	0.000041	0.000000

Table 4: The Effects of External Debt Export in Sudan (1970-1990), (1990-2011) and (1970-2011) Dependent Variable: Export

Variable :DL(EXPRT)	1970-1990	1990-2011	1970-2011
C	2.80E+08	-7.75E+09	-3.04E+09
	(3.217378)**	(-1.799679)**	(-5.732032)**
DL(EXDT)	-0.013297	0.325730	0.031855
	(-1.134238)**	(2.117642)**	(2.705634)**
R-squared	0.593016	0.641495	0.555453
Adjusted R-squared	0.547796	0.935337	0.805989
S.E. of regression	1.42E+08	1.14E+09	1.59E+09
Sum squared resid.	3.65E+17	2.48E+19	9.85E+19
Log likelihood	-422.4371	-488.4548	-947.8715
Durbin-Watson stat	1.930707	1.856022	1.812637
Mean dependent var	6.86E+08	3.92E+09	2.38E+09
S.D. dependent var	2.12E+08	4.49E+09	3.61E+09
Akaike info criterion	40.51781	44.67771	45.27960
Schwarz criterion	40.66703	44.82649	45.40372
F-statistic	13.11390	152.8796	86.16402
Prob(F-statistic)	0.000306	0.000000	0.000000

Source: Own calculation based on E-views
Notes: ** t-values significant at 1% and 5% level of significance

Imports and External Debt

Table 5 shows the regression results of different equations estimated to explain the effects of external debt on imports in Sudan for three periods (1970-1990) , (1990-2011) and (1970-2011).. All specifications, the coefficients on external debt over the period under consideration appear insignificant, unless that one in the first period, which is a bit insignificant, with and without expected signs. As gross domestic saving, government final consumption, and exports, in second and third periods from 1990-2011, 1970-2011, the overall estimated external debt have a positive impact on imports while it has a negative impact in the first period (1970-1990), and it reports that an increase in external debt by 1% will lead to a reduction in imports by approximately 2.5% in his period. On the other hand in the second and third period, (1990-2011) and (1970-2011), the results show that an increase in external debt by 1% will lead to an increase in imports by 37% and 6% respectively.

The results show that the overall significance of the models in the three periods is good with high square R which means that a considerable proportion of the variation in imports is explained by this relationship, in the second and third period, almost 62% of the variation in imports is explained by external debt, while in the first period it's 50% of the variation that is explained by external debt.

Source: Own calculation based on E-views
Notes: ** t-values significant at 1% and 5% level of significance

Exports and External Debt

Table 4 shows the regression results of different equations estimated to explain the effects of external debt on exports in Sudan for three periods (1970-1990) , (1990-2011) and (1970-2011).. All specifications, the coefficients on external debt over the period under consideration appear insignificant, unless that one in the first period, which is a bit insignificant, with and without expected signs. In the second and third periods from 1990-2011, 1970-2011, the overall estimated external debt have a positive impact on exports while it has a negative impact in the first period (1970-1990), and it reports that an increase in external debt by 1% will lead to a reduction in exports by approximately 1% in his period. On the other hand in the second and third period, (1990-2011) and (1970-2011), the results show that an increase in external debt by 1% will lead to an increase in exports by 32% and 3% respectively.

The results show that the overall significance of the models in the three periods is good with high square R which means that a considerable proportion of the variation in government final consumption is explained by this relationship, in the second and third period, it's 64% and 56% respectively, while in the first period it's 59%, meaning that 59% of the variation in government final consumption expenditure is explained by external debt, other things remain unchanged

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Table 5: The Effects of External Debt Imports in Sudan (1970-1990), (1990-2011) and (1970-2011)
Dependent Variable: Imports

Variable :DL(IMPRT)	**1970-1990**	**1990-2011**	**1970-2011**
C	2.56E+08	-1.45E+10	-2.24E+09
	(0.934570)**	(-3.257877)**	(-4.565385)**
DL(EXDT)	-0.025327	0.371218	0.060021
	(-0.686681)**	(2.887234)**	(2.805634)**
R-squared	**0.497457**	**0.614698**	**0.625516**
Adjusted R-squared	0.441619	0.916771	0.806055
S.E. of regression	4.48E+08	1.18E+09	1.47E+09
Sum squared resid.	3.61E+18	2.66E+19	8.48E+19
Log likelihood	-446.5064	-489.2193	-944.7325
Durbin-Watson stat	1.944928	1.747011	1.895316
Mean dependent var	1.29E+09	4.40E+09	2.93E+09
S.D. dependent var	6.00E+08	4.10E+09	3.35E+09
Akaike info criterion	42.81014	44.74720	45.13012
Schwarz criterion	42.95935	44.89598	45.25424
F-statistic	8.908906	116.6583	86.19996
Prob(F-statistic)	**0.002044**	**0.000000**	**0.000000**

Source: Own calculation based on E-views
Notes: ** t-values significant at 1% and 5% level of significance

External Debt, GDP Per Capita and Other Variables co integration

In the first stage, the order of integration was tested using the ADF unit root test. Table 3 reports the results of the unit root tests. The ADF statistics for the External Debt, GDP per capita, Gross Domestic Saving, Government Final Consumption, Exports and imports do not exceed the critical values (in absolute terms). However, when we take the first difference of each of the variables, the ADF statistics are higher than their respective critical values (in absolute terms). Therefore, we conclude that these variables are each integrated of order one or I(1). The next step is to test whether the stationary variables are co integrated or not.

Table 3: ADF Unit Root Test of Stationarily

Variable	level		First Difference	
	Test Statistic	Critical Value	Test Statistic	Critical Value
EXDT	-1.506137	-2.9358	-3.607885	-2.9378
GDPPC	0.622077	-2.9358	-3.058102	-2.9378
GDSAV	1.872113	-2.9358	-4.814512	-2.9378
GOVFC	0.354864	-2.9358	-3.289201	-2.9378
EXPRT	2.003189	-2.9358	-3.870891	-2.9378
IMPRT	-0.379945	-2.9358	-5.369186	-2.9399

All the variables are stationary at their first differences and 5% level of significance

3. Conclusion

In this paper we have investigated the effects of external debt on economic development for the Sudan; covering the period (1970-2011). The overall estimated external debt have a positive impact on GDP per capita, government final consumption, the overall estimated external debt have a positive impact on government final consumption while it has a negative impact on government final consumption in the first period (1970-1990), and it reports that an increase in external debt by 1% will lead to a reduction in government final consumption by approximately 6% in his period. On the other hand in the second and third period, (1990-2011) and (1970-2011), the results show that an increase in external debt by 1% will lead to an increase in gross domestic saving by 14% and 1% respectively. However, in first and third periods from 1970-1990, 1970-2011, the overall estimated external debt have a negative impact on gross domestic saving, while it has a positive impact on gross domestic saving in the second period (1990-2011), this might be attributed to the fact that this period includes a period of prosperity in Sudan in which the country started to export oil. . It reports that an increase in external debt by 1% will lead to an increase in gross domestic saving by about 9% in his period. On the other hand in the first and third period, (1970-1990) and (1970-2011), we notice that an increase in external debt by 1% will lead to a decrease in gross domestic saving by 69% and 63% respectively. As gross domestic saving, government final consumption, and exports, in second and third periods from 1990-2011, 1970-2011, the overall estimated external debt have a positive impact on imports while it has a negative impact in the first period (1970-1990), and it reports that an increase in external debt by 1% will lead to a reduction in imports by approximately 2.5% in his period. On the other hand in the second and third period, (1990-2011) and (1970-2011), the results show that an increase in external debt by 1% will lead to an increase in imports by 37% and 6% respectively.

The main challenge for the Sudanese policy makers is to realize that the best practices are the activities undertaken according to general policy guidelines and the debt management legal framework, so as to attain the lesser possible cost and the highest yield of external debt

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