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## The Mediating Role Of Economic Openness On The Relationship Between Foreign Direct Investment, And Economic Growth: A Case Study Of Sudan (1980-2014)

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### Abstract

The purpose of this paper is to investigate the mediating role of economic openness (EO) on the relationship between, foreign direct investment (FDI) and economic growth (EG) in Sudan. The results of employing standard approach estimator shown that economic openness is partially mediate the relationship between FDI and economic growth during the period (1980-2014), FDI has no direct effect on output growth. Instead, the effect of FDI is depended on the degree of economic openness of Sudan. Therefore, Sudan government has to encourage economic policies, which eliminate foreign trade restrictions.

**Keywords:** foreign direct investment, economic openness, economic growth, standard approach.

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### 1- Introduction

Impact of Foreign Direct Investment (FDI) on growth has become debatable issue in recent year's .Increasing interest of researchers and the shift of emphasis among policymakers to encourage attracting more FDI inflows. Since 1980s, many countries have lifted a lot of the restrictions on foreign capital flows ( Azman-Saini,2009). As a result, an international inflow of FDI increases from \$57 billion in 1982 to about \$1271 billion in 2000. In fact, in the past few decades the rate of growth of world FDI has exceeded the rates of growth of both world trade and Gross Domestic Product (GDP) growth (UNCTAD report, 2002).

Recent literature shown that FDI inflows bring a lot of advantages to the host country , yet studies on the FDI-growth relationship have reported conflicting results. Some studies have found that FDI exerts a positive growth effect on the recipient countries, while others have discovered no such evidence or even a negative effect on growth (Gorg and Greenaway ,2004). Thus, the question of how the inflows of FDI has direct effects on growth rate of GDP is still become a matter of investigation.

In recent literature, the absorptive capacity of the host countries appears to be the key explanation for the weak (or conflicting) FDI-growth relationship. The argument is that the growth effect of FDI may not be strong in countries with low (or poor) absorptive capacity. In other words, host countries must have certain qualities which allow them to absorb the benefits linked to FDI flows. Apart from this important finding, several intervening factors

which are important for FDI spillovers have been identified in the past literature, and they include factors such as the quality of human capital, the market size, the development of financial markets and the degree of economic openness (Azman saini w.nw ,2009)

Existing empirical evidence , in contrast with the more settled theoretical evidence ,shows mixed or interaction effects about the relationship between FDI and Economic growth through a mediating other factors rather than within itself. In an effort to further understand the nature of the FDI-growth nexus; this paper emphasizes the importance of economic openness in mediating FDI spillovers. Our argument is simply based on the fact that the low degree of economic openness can limit the firms' (or nation's) ability to absorb and internalize new technology. In this paper, we utilize the index of economic openness (EOP) provided by the IMF economic indicators& Penn table database, to establish the potential link between EOP and growth. The EOP index is measure by, total value of export as a percentage of GDP (UNCTAD,2002) .

The importance of this index associated with emergency of globalization and free trade policies in addition to the increased competition in international market ,and the appearance of information economy led many countries to construct macroeconomic policies to attract inflow of foreign capital , It is well known that EOP and competitive market provides greater opportunities for entrepreneurs to try out new ideas. It also encourages firms to engage in risky ventures such as FDI-related activities, in search of higher returns for their investment.

In short, there are strong reasons to believe that countries with higher levels of EOP have greater absorptive capacity and are more likely to benefit from FDI inflow(Azman.Sairni.w.nw). In addition to examining a new aspect of absorptive capacity, this paper contributes to the present literature by applying Standard Approach estimation procedures to analyse the mediating role of Economic Openness to estimate the effect of FDI , on Economic Growth in Sudan. It departs from the existing studies by using one country data analysis rather than the dynamic panel data technique. To the best of the authors' knowledge all of the existing studies on absorptive capacity have relied mainly on the cross-section estimation technique. In this paper, we employ a more advanced dynamic panel econometric technique that formally addresses country-specific effects and simultaneity bias.

The paper at first provides a brief review of the literature, and then outlines the model specification and the methodology. In addition interpret and reports the empirical results, Conclusions and recommendations.

## 2- Theoretical Framework and Literature Review

The concept of Foreign Direct Investment is explained by number of scholars , we choose the World Bank definition as “ investment made to acquire a lasting management in an enterprise operating in a country other than that of the investor”.According to Hayami and Todaro (2003) the contribution of FDI to the development of a country are widely recognized as filling the gap between planned investment and domestically saving ability (www.antiesays.com). There is conflicting evidence in the literature regarding the question as how, and to what extent, FDI affects economic growth. FDI may affect economic growth directly because it

contributes to capital accumulation, and the transfer of new technologies to the recipient country. In addition, FDI enhances economic growth indirectly through a direct transfer of technology and, augments the stock of knowledge in the recipient country through labor training and skills improvement, new management practices and organizational arrangements (adibl.blogspot.com).

Theoretically, however, in the context of either neo-classical or endogenous growth models, the effects of FDI on the economic growth of the receiving country differ in the recent growth models from their conventional complements. The conventional economic growth theories are being augmented by discussing growth in the context of an open rather than a closed economy (Journal-archives20, website) and that is what this paper is rely on.

Moreover, most studies generally indicate that the effect of FDI on growth depends on other factors such as the degree of complementarities and substitution between domestic investment and FDI.

Buckley et. al, (2002) argue that the extent to which FDI contributes to growth depends on the economic and social factors in the recipient country. As such Countries with high rate of savings, open trade policy and high technological levels will gain from increasing FDI inflow to their economies. However, FDI may have negative effect on the growth prospects of the recipient economy if resulted in a substantial reverse flows in the form of remittances of profits, and dividends and/or if the multinational corporations (MNCs) obtain substantial or other allowances from the host country.

The other theme of empirical research of FDI-growth relationship concentrated on identifying determinants of FDI flow and analyzing the effects of these determinants on the attractiveness of the host country. Two sets of factors are frequently cited. The first set includes the size of the recipient market, relative factor prices, and balance of payments constraints (Bhasin et al., 1994; Love and Lage-Hidalgo, 2000; Lipsey, 2000). The second set includes institutional factors such as degree of openness and trade policies, legislative environment and law enforcement (Lee and Mansfield, 1996), and the degree of economic and political stability (Bajorubio and Sosvilla-Rivero, 1994; Lipsey, 1999), abibl.blogspot.com).

We take a somewhat different route. Rather than presuming the causal relationship between FDI and economic growth, our research tries to test for the mediating role of Economics Openness to workout wither it stimulate or revers the relationship between economic growth and FDI. We examine the existence of such mediatio using econometric techniques that are suitable for country specific data analyses. We follow Baron and Kenny (1986) in using Standard Approach Theory for testing for mediating variable .

On the other hand, during the last decade a number of interesting studies of the role of foreign direct investment in stimulating economic growth has appeared. De Mello (1997) in his study, lists two main channels through which FDI may be growth enhancing. First, FDI can encourage the adoption of new technologies in the production process through technological spillovers. Second, FDI may stimulate knowledge transfers, both in terms of labour training

and skill acquisition and by introducing alternative management practices and better organizational arrangements.

A survey by OECD (2002) underpins these observations and documents that 11 out of 14 studies have found FDI to contribute positively to income growth and factor productivity. Blomström *et al.*(1994) argue that FDI has a positive growth-effect when a country is sufficiently rich in terms of per capita income. Balasubramanyam *et al.* (1996) emphasize trade openness as being crucial for acquiring the potential growth impact of FDI([www.eefs.eu](http://www.eefs.eu)). Borenztein *etal.* (1998) find that FDI raises growth, but only in countries where the labour force has achieved a certain level of education.

Alfaro *et al.* (2004) draw attention to financial markets as they find that FDI promotes economic growth in economies with sufficiently developed financial markets. However, when Carkovic and Levine (2002) estimate the effects of FDI on growth after controlling for the potential biases induced by endogeneity, country-specific effects, and the omission of initial income as a regressor , they find that, FDI has no impact on long run growth. Bende-Nabende (1998) investigated the data from 5 south east Asian countries, and found a positive direct link between FDI and Economic Growth([www.eco.ku.dk](http://www.eco.ku.dk)) .

Likewise, the investigation by UNCTAD(1999) , found FDI has both positive and negative on Economic Growth depending on the variables that were entered in the equation .

Other studies often find that FDI does not boost Economic Growth, for example, Aitken and Harrison (1999) find no evidence that FDI accelerate economic growth, this is at least at micro-level. Moosa (2002) surveys the theories of FDI , identifying the implied explanatory variables in the process , as well as the variables that cannot be readily related to any of these theories ( [www.grips.ac.jp](http://www.grips.ac.jp)) .

Recent empirical studies have considered different combinations of these variables with mixed results. Chakabarti (2001) put forward some examples to illustrate this point; as follows, (a) Most of the studies reporting a significantly negative coefficient on the wage rate (labour cost) combine it with the growth rate, inflation and trade deficit. Those reporting a positive coefficient combine wages with taxes and openness . (b) The growth rate has been found to have a significantly positive effect on FDI if it is combined with inflation, trade deficit and wages . (c) Tariffs have a positive effect on FDI if they are combined with the growth rate and openness, but they produce a negative effect when combined with wages . (d) The real exchange rate produces a positive effect when it is combined with openness, domestic investment and government consumption. When domestic investment is excluded, the effect becomes negative.

Hence, there is a big question mark on the reliability of the results of existing studies, particularly their strength and sensitivity to model specification (the variables included in and excluded from the underlying regression equation). In this study we use the technique of standard approach which is designed specifically to deal with such problem. Notwithstanding, few studies analyzes the causal relationship between FDI , Economic Growth and Openness in Sudan has been done , fore example , Ahmed.M.Khater (2012) in his paper examines the

causal relation between FDI ; economic growth and openness in Sudan, his analysis based on Granger Causality ; the results indicated that FDI exert an independent influence on economic growth and there is unidirectional causality running from FDI to economic growth(Lian-Lina,and Haiying ma,2010).

Thus the present study take different stream in both the techniques and the method of analysis which will employ .Yagoub.A.Gangia (2006) study the impact of various investment policies and programs in order to assess its impacts on FDI inflows to the Sudan ; he found that the investment climate in Sudan has been improved and the inflow of FDI has rabidly increased ; although there were much obstacles has remained to be removed(Yagoub.A.Gangia ,2006).

### 3- Foreign Direct Investment in Sudan: opportunities and challenges

Sudan macroeconomics indicators since its independence in 1956 , showing that , Sudanese economy depends mainly on foreign Aids obtained from different countries , Sudan classified among top 10 recipients of development assistance, during 1970s and 1980s the large inflows of foreign aids to Sudan was mainly received from IMF and WB, as a result the country fall on trap of indebtedness , which was estimated to about more than 40 billion USA dollar([www.merit.unu.edu](http://www.merit.unu.edu)).

Nevertheless since 1990s ,there was noticeable drop in the inflow of foreign aid ,therefore Sudan looked for alternative sources of foreign financing from emerging donors , mainly China , because of china's increasing economic interests in Sudan , as such China increased foreign aid to Sudan which accounted for 58% of total contracted loans and grants over the period (2005-2007).Notwithstanding, during 1970s and 1990s the structure of Sudanese economy characterized by small share of industrial sector, particularly manufacturing, and high share of agriculture and services sectors in GDP.

The share of agricultural sector in GDP increased from 30.3% in 1970 to 49.8% in 1990 , then declined to 31.1% during 2000s(S.Mohammed Nour,2013), this trends is applicable to industrial sector. In 1999 Sudan began exporting oil and since then, has become increasingly depends on oil exports to the extent that, the economy has turned in to an oil dependent economy. Since 1999 the implementation of macroeconomic policies reform in addition to the contribution of oil to Sudan economy, Sudan has moved from a low income economy in to a lower medium income economy according to WB classifications.

The trends on FDI policies and program in Sudan is much diverts depending on the objectives of the government developmental programs , for instance in 1974, the government implemented the development and promotion of industrial investment in order to attract investors , through tax incentives , the policy was extended in 1980 in to the encouragement of investment Acts which provided customs , tax and other benefits to the investors to increase the FDI inflows .

Referring to UNCTAD country profile concerning Sudan ,there were more than 12 national bilateral and multilateral instruments implemented extended from 1970 to 2010, aiming to regulate the activities of foreign direct investors in order to make the Sudan's investment climate more attractive .As a result, FDI is sharply and steadily increased since 1999, due to starting production and exporting oil, and huge amount of foreign capital in the form of FDI invested in this sector. During the period 2001-2004, the foreign direct investment

(FDI) inflow to Sudan almost increased from \$574 million in 2001 to \$1.5 billion in 2004(Assam A.& Magdy,2008).

According to 2005 World Investment Report issued by the United Nations Conference on Trade and Development. Among Arab countries, Sudan came in third in attracting foreign direct investments. The performance of the Sudanese economy in attracting investments is truly impressive as the country jumped from the 6 place in 2000 to the 18 in 2004 on the UNCTAD's Inward FDI Performance Index(arabnews.com).

It is obvious that till the mid 1997 FDI was less than 500 million dollar, but since 1998 it began to increase with low rate, till the year 2004, from which it began to rise sharply and steadily. Accordingly, it is apparently that there is consistency in the trend and attitude of GDP growth rate and trend of increase in FDI, with respect to GDP growth rate in Sudan it fluctuated from 1.7% during 1982-1989 to 7.3% during 1999-2007. The mean value was about 4.9 percent for the whole period 1982-2007, which is influenced by low growth rate in eighties.

The mean low rates during the execution of the Structural Adjustment Programs SAPS in 1980,s were 1.7 percent compared to 7.3 during the oil era. For example there is a huge increase during the last four years (2004-2007), which are 9.1%, 8.3%, 9.3% and 10.2% respectively(World Bank report,2009). They are considered among highest rates in the world. The fluctuation of economic growth during 1980s, indicate large level of instability in economic growth process for that period.

The GDP growth for the period 1982-2007., indicated clearly that the growth process in Sudan has been fluctuating all the time with increasing attitude. To sum up, the above results show that the objective of raising the GDP growth has not been achieved despite the introduction of the ( SAPS) in 1980/1981. Moreover, the levels of the standard deviations in 1980s, suggest that the SAPS failed to produce more stability in the economy. When we compare the SAPS in the 1990s with the SAPS in the 1980s we find high and stable growth in the former(Assam A.& Magdy,2008)

#### 4- Methodology and Data:

The model of analysis constructed by employing Eviews software program, with respect to the following steps

##### 4-1 Testing for Stationary - Unit Root Test

Before employing empirical analysis techniques it is useful to test for the existence of stationary in the series under study, most common used is the Augmented Dickey Fuller (ADF) test , to test for unit roots. In order to model the variable in a manner that captures the inherent characteristics of its time-series. . The simple form of the DF test could be expressed as:

$$\Delta y_t = \delta y_{t-1} + \mu_t \quad (1)$$

DF test equation with a constant:

$$\Delta y_t = \alpha + \delta y_{t-1} + \mu_t \quad (2)$$

DF test equation with a constant and trend:

$$\Delta y_t = \alpha + \beta_t \text{trend} + \delta y_{t-1} + \mu_t \quad (3)$$

Where:  $y_t \equiv$  the variable under study,  $\mu_t \equiv$  random variable,  $\mu_t \sim (0, \sigma)$ , the null hypothesis is that  $\delta = 0$  and alternative hypothesis  $\delta < 1$

The ADF test equation is shown below:

$$\Delta y_t = \alpha + \beta_t + (p-1) y_{t-1} + \sum \phi_i y_{t-1} + \gamma_t \quad (4)$$

where  $\Delta = 1 - L$   $y_t$  is a macroeconomic variable such as GDP or FDI;  $t$  is a trend variable;  $a_t$  is a white noise term. The null hypothesis is  $H = 0$ ,  $\rho = 1$  and  $y_t$  is said to possess the unit root property if one fails to reject  $H_0$  (econ.ucsd.edu).

#### 4-2 Standard Approach theory

After the running of unit root test, the Standard Approach will be employed to assess the mediating effects between the variables. The theory starts with an observed relationship between an independent variable  $X$ , and a dependent variable  $Y$ . then, the theory argues that  $X$  might not cause  $Y$ . Rather,  $X$  affects another variable  $M$ .  $M$  in turn, affect  $Y$ . Therefore,  $M$  mediates the relationship between  $X$  and  $Y$  (tourism.wu.wien.ac.at).

A theory might not predict that the entire effect goes through  $M$ . If it does, then Path  $c$  will take the value zero, and the theory predicts full mediation. If the entire effect does not go through  $M$ , then Path  $c$  will be nonzero, and the theory predicts partial mediation. To test for mediating variables, the commonly applied method requires estimating three regression equations using ordinary least squares (OLS) (e.g., Baron & Kenny, 1986). Returning to the approach described by Baron and Kenny (1986), the first step is to regress  $Y$  on  $X$  to determine if this relationship exists. This is represented by the following regression equation:

$$Y = \alpha_0 + cX + \varepsilon_0 \quad (1)$$

Referring to equation 1,  $Y$  is the dependent variable of interest,  $X$  is the independent variable of interest,  $c$  is a coefficient estimate of the effect of  $X$  on  $Y$ ,  $\alpha_0$  is a coefficient estimate of the intercept, and  $\varepsilon_0$  is the regression error term. If  $c$  is statistically different from zero, then the test of whether the effect is direct or mediated can proceed. To do this, two regression equations are estimated. The first establishes whether there is a relationship between  $X$  and  $M$  by estimating the following regression equation and testing if the coefficient  $a$  is different from zero.

$$M = \alpha_1 + aX + \varepsilon_1 \quad (2)$$

In Equation 2,  $\alpha_1$  is the estimate of the intercept, and  $\varepsilon_1$  is the regression error term. If a significant relationship between  $X$  and  $M$  exists, then the final step is to assess whether  $X$  still affects  $Y$ , once controlling for the effect of  $M$  on  $Y$ . To make this assessment, the following regression equation is estimated:

$$Y = \alpha_2 + c'X + bM + \varepsilon_2 \quad (3)$$

If  $b$  is statistically significant, then given that  $a$  is statistically significant in Equation 2, the interpretation is that  $M$  mediates the relationship between  $X$  and  $Y$ . Then the estimate of  $c'$  is assessed. If  $c'$  is non-significant, then the interpretation is that  $M$  fully mediates the relationship between  $X$  and  $Y$ . If  $c'$  is statistically significant, then the interpretation is that  $M$  partially mediates the relationship between  $X$  and  $Y$  (J.m.shaver, 2005).

## 06- Empirical Results :-

Referring to the above mentioned regression equations and the utilization of the data which obtained from World Bank development indicator, the following test were carried out.

### 6-1 Unit-Rote Test.

The stationary of each of the variable is displayed in the following table, based on Augmented Decky- Follwer (ADF) Techniques.

**Table (6-1) Display the Unit-Rote test results**

| variables | ADF  | Critical values at 5% | Sig.  | level                      |
|-----------|------|-----------------------|-------|----------------------------|
| FDIt      | 9.06 | 2.96                  | 0.000 | 1 <sup>st</sup> difference |
| GDPt      | 5.94 | 2.95                  | 0.000 | 2 <sup>nd</sup> difference |
| OPENT     | 9.92 | 2.94                  | 0.000 | 2 <sup>nd</sup> difference |

Source: researcher own calculation employing Eviews software program

The estimated ADF test show that , FDIt is stationary at 1<sup>st</sup> difference ,were ADF value is greater than the critical value at 5% degree of significant, while GDPt and OPENT variables stationary at 2<sup>nd</sup> difference as it appeared in table (6-1), this results supports our previous discussion ,that macroeconomic policies in Sudan has failed to bring about large changes in GDP growth or promotion of export during the period of the study.

### 6-2 Co-integration Test.

Following Alamedin A.Bannaga ,2005 technique we employing Engle and Granger (1987) approach thus, co-integration test is conducted , to ensure the existence of long- run relationship between the variables , the results shown in the following table :

**Table (6-2) Co-integration test**

| relation   | ADF   | Critical value at 5% | integration | Prop. |
|------------|-------|----------------------|-------------|-------|
| FDIt-GDPt  | 4.541 | 2.967                | Level       | 0.001 |
| FDIt-OPENT | 4.440 | 2.967                | Level       | 0.002 |
| GDPt-OPENT | 4.652 | 2.968                | level       | 0.000 |

**Source:** researcher own calculation employing Eviews software program

The long-run test indicates three co-integrated equations at 5% level of significant, this result implies that the residuals are stationary which mean there is co-integration between the variables, thus the trends between these variables will continue in the future.

### 6-3 Correlation analysis

The variables included in the model can be classified as stock and flow variables, stock variables represent GDPt and OPENT(Azman-Sarini,2009) , the GDPt data obtained from World Bank Pent-table during the period 1980-2014 at Sudanese SD currency units , the same procedure applied for OPENT series, while FDIt classified as flow variable . After testing for stationary of these variables, the correlation between the three is obtained which summarized in the following table:

**Table (6-3) Average correlation between the variables of interest**

| variable | FDIt | GDPt | OPENT |
|----------|------|------|-------|
| FDIt     |      | 0.95 | 0.46  |
| GDPt     | 0.95 |      | 0.39  |
| OPENT    | 0.46 | 0.39 |       |

**Source:** researcher own calculation employing Eviews software program

Table (3-6) shows the average correlation the variables , the results indicated that FDIt and GDPt are highly correlated (  $r = 0.95$ ) which mean the two variable has causal relationship, the correlation between OPENT and the other variables GDPt and FDIt shows relatively weak correlation (  $r = 0.46$  ,  $r = 0.39$ ) respectively , this is due to the weak forward and backward linkages and low volume of transaction between Sudan and other countries in the field of foreign trade .

#### 6-4 Standard Approach Analysis

To determine the mediating variable the standard approach is employed, the first step is to establish relationship between FDIt and GDPt , then proceeding to test for the existence of such relationship , table (6-4) summarizes the results of OLS estimates :

**Table (4-6) OLS results , effect of Foreign Direct Investment on Economic Growth.**

| A- OLS estimates of $FDIt = \alpha_0 + cGDPt + \varepsilon_0$ (1980-2014)                  |               |        |        |
|--------------------------------------------------------------------------------------------|---------------|--------|--------|
| parameters                                                                                 | Co-efficients | t.test | Prop.  |
| $\alpha_0$                                                                                 | -2814.517     | -4.292 | 0.0002 |
| c                                                                                          | 2.446         | 5.775  | 0.000  |
| $R^2$                                                                                      | 96%           |        |        |
| F.statistics                                                                               |               |        | 0.000  |
| B- OLS estimates of $OPENT = \alpha_1 + aGDPt + \varepsilon_1$ (1980-2014)                 |               |        |        |
| parameters                                                                                 | Co-efficients | t.test | Prop.  |
| $\alpha_1$                                                                                 | -2.677        | -.0218 | 0.828  |
| a                                                                                          | 0.016         | 2.134  | 0.041  |
| $R^2$                                                                                      | 82%           |        |        |
| F.statistics                                                                               |               |        | 0.000  |
| C- OLS estimates of $FDIt = \alpha_2 + \acute{c}GDPt + bOPENT + \varepsilon_2$ (1980-2014) |               |        |        |
| parameters                                                                                 | Co-efficients | t.test | Prop.  |
| $\alpha_2$                                                                                 | -294.352      | -5.461 | 0.000  |
| $\acute{c}$                                                                                | 2.444         | 6.241  | 0.000  |
| b                                                                                          | 5.482         | 0.650  | 0.020  |
| $R^2$                                                                                      | 96%           |        |        |
| F.statistics                                                                               |               |        | 0.000  |

Source: researcher own calculation from Eviews software program

Concerning the testing of mediating variable , table (4-6) ,part A show that the co- efficient of independent variable GDPt is different from zero (  $c = 2.446$ ), then we proceed to test for mediating relationship between the variables. Part( B) summarizes the result of equation b which indicates the existence of significant relationship between FDIt and OPENT, since (  $a = 0.016$ ) is significant and different from zero at 5% level .

Controlling for the effect of  $OPEN_t$  on  $GDP_t$  we obtain equation c , since b is significant it imply that  $OPEN_t$  mediate the relationship between the two variables, but the results show  $c = 2.444$  is significant at 5% level , indicating that  $OPEN_t$  is partially mediate the relationship between  $FDI_t$  and  $GDP_t$  .This results clearly indicated that  $FDI_t$  has indirect effect on  $GDP_t$  in Sudan, its only through a mediating variables one of them is degree of economic openness .

The co-efficient of  $OPEN_t$  is positive and statistically significant, this coincide with the study conducted by De haan et al(2006),who concluded that  $OPEN_t$  has crucial rule on economic growth and in the encouragement of inflow of  $FDI_t$ .

## 7- Conclusions and policy implications

Many studies has investigated the effect of FDI on economic growth. But, empirically has produced conflicting conclusions. Recent studies shown that, the absorptive capacity of the recipient countries appears to be the key explanation for this uncertainty.

The main purpose of this paper is to investigate a new aspect of absorptive capacity, namely economic openness. Specifically, this paper assesses whether the marginal impact of FDI on growth depends on the degree of economic inward and outward financial and trade relationship between Sudan and the rest of the world. Using time series data over the 1980-2014 period, and employing of Standard Approach technique we obtain three important results from the previous discussions.

First, as in earlier studies, we find that FDI has no direct impact on output growth. Second, economic openness is found to be an important determinant for long-run growth for the Sudan. The positive but weak correlation (direct link) between economic openness is expected, since foreign market constitute only small amount of economic activities in Sudan. Finally, the impact of FDI on growth is depended on the level of economic openness, which in turn partially mediating the relationship between the two variable . This is an important result as it suggests that economic openness is an important element of the nation's absorptive capacity but it has been somewhat ignored in earlier studies.

In this respect, policymakers should construct economic policies aimed at attracting inflow of more FDI versus those that seek to improve the level of economic openness. The economic policies which directed towards attracting FDI should go hand in hand with policies that aim at promoting better international economic activities as more foreign economic interaction in term of export and import is likely to bring greater advantages.

However, the reforms can be difficult process and requires long-term political and administrative commitments. It may be politically difficult in the short run but the long-run economic benefits can be tremendous to the country.

Despite these important findings, this study is not without limitations. One limitation is that the mediating variable in our specification, forces the impact of FDI on growth to increase (or decrease) simultaneously with level of economic openness, However, certain level of economic openness is required before FDI can have any impact on host country ,but to some extent it may not attainable. Second limitation concerning with data which has some variation

in terms of its values and variable measurements. Finally we suggest further study which includes other variables such as market size, economics freedom as mediating the relationship between Foreign Direct Investment and Economic Growth.

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**Appendix1**

Dependent Variable: FDIT1

Method: Least Squares

Date: 07/12/15 Time: 09:39

Sample (adjusted): 1980 2014

Included observations: 34 after adjustments

Convergence achieved after 18 iterations

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.  |
|--------------------|-------------|-----------------------|-------------|--------|
| C                  | -2814.517   | 655.6172              | -4.292927   | 0.0002 |
| GDPT2              | 2.446544    | 0.423585              | 5.775805    | 0.0000 |
| AR(1)              | 0.738299    | 0.193347              | 3.818524    | 0.0007 |
| R-squared          | 0.966698    | Mean dependent var    | 599.2000    |        |
| Adjusted R-squared | 0.964231    | S.D. dependent var    | 940.2065    |        |
| S.E. of regression | 177.8184    | Akaike info criterion | 13.29404    |        |
| Sum squared resid  | 853723.0    | Schwarz criterion     | 13.43416    |        |
| Log likelihood     | -196.4106   | F-statistic           | 391.8790    |        |
| Durbin-Watson stat | 1.760724    | Prob(F-statistic)     | 0.000000    |        |
| Inverted AR Roots  | .74         |                       |             |        |

**Appendix2**

Dependent Variable: OPENT3

Method: Least Squares

Date: 07/13/15 Time: 23:54

Sample (adjusted): 1980 2014

Included observations: 34 after adjustments

Convergence achieved after 8 iterations

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.  |
|--------------------|-------------|-----------------------|-------------|--------|
| C                  | -2.677329   | 12.24883              | -0.218578   | 0.8286 |
| GDPT2              | 0.016329    | 0.007651              | 2.134088    | 0.0421 |
| AR(1)              | 0.813889    | 0.099822              | 8.153380    | 0.0000 |
| R-squared          | 0.834518    | Mean dependent var    | 23.66300    |        |
| Adjusted R-squared | 0.822260    | S.D. dependent var    | 9.574699    |        |
| S.E. of regression | 4.036618    | Akaike info criterion | 5.723331    |        |
| Sum squared resid  | 439.9457    | Schwarz criterion     | 5.863451    |        |
| Log likelihood     | -82.84996   | F-statistic           | 68.07986    |        |
| Durbin-Watson stat | 1.694463    | Prob(F-statistic)     | 0.000000    |        |
| Inverted AR Roots  | .81         |                       |             |        |

**Appendix3**

Dependent Variable: FDIT1

Method: Least Squares

Date: 07/13/15 Time: 23:56

Sample (adjusted): 1980 2014

Included observations: 34 after adjustments

Convergence achieved after 14 iterations

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.  |
|--------------------|-------------|-----------------------|-------------|--------|
| C                  | -2941.352   | 538.5786              | -5.461323   | 0.0000 |
| GDPT2              | 2.444631    | 0.391675              | 6.241480    | 0.0000 |
| OPENT3             | 5.482446    | 8.422688              | 0.650914    | 0.0508 |
| AR(1)              | 0.690262    | 0.188917              | 3.653783    | 0.0011 |
| R-squared          | 0.967226    | Mean dependent var    | 599.2000    |        |
| Adjusted R-squared | 0.963444    | S.D. dependent var    | 940.2065    |        |
| S.E. of regression | 179.7631    | Akaike info criterion | 13.34472    |        |
| Sum squared resid  | 840184.1    | Schwarz criterion     | 13.53155    |        |
| Log likelihood     | -196.1708   | F-statistic           | 255.7703    |        |
| Durbin-Watson stat | 1.797922    | Prob(F-statistic)     | 0.000000    |        |
| Inverted AR Roots  | .69         |                       |             |        |