

# A GOVERNMENT FISCAL POLICY AND ECONOMIC GROWTH UNDER VOLATILE OIL PRICES: A CASE STUDY OF KINGDOM OF SAUDI ARABIA (1990-2016)

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**Abstract:** Fiscal policy in Kingdom of Saudi Arabia facing a lot of challenges under volatile oil prices, both in the long-term and short-term, in the long-term for the achievement of fiscal sustainability, and in the short-term for obtaining macroeconomic stability and sound fiscal planning. The fall international oil prices, since the mid 2008 has brought to the fore a different questions- whether the Kingdom can sustain spending levels reached in the previous years as much as to keep positive rate of economic growth? Study use yearly data that span between 1990-2016; OLS method employed to estimate non-linear econometric model in order to examine the impact of selected fiscal policy variables on long-term economic growth under volatile oil prices. The regression results shows that lag current expenditure has positive and significant impact on GDP growth, nevertheless human capital and oil price volatility performed greater positive and significant impact on GDP growth, while capital accumulation deserve negative impact on long-term economic growth, but capital expenditure shows weak positive impact in economic growth. The study recommended the important of reallocating the accumulated financial surplus in to efficiently and more productive sectors.

**Keywords:** economic growth, fiscal policy and oil price volatility.

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## 1. INTRODUCTION

Saudi Arabia economy classified as one of the largest twenty economies in the world;and the largest economies in the the middle east ,produces about 2.5% of the Arab Gross Domestic Product GDP<sup>1</sup>.Its also considered the largest producer and exporter of petroluim liguid in the world,in the year 2014 Saudi Arabia GDP is estimated about 2431.8 billion Riyal Saudi (RS), out this value petroluim sector share about 40%.The fall of global oil prices produced many challenges for the Saudi Arabia economy to maintain long-term fiscal eguilibrium and meeting future obligations. Among others obstecales decouples spending from oil revenues ; creating permanent sorces of income is becoming a debatable issues for policy makers and economic planners .Although development planning in Saudi Arabia covering a wide and various sectors, as a part fiscal planning for development can give merit to our study.Historically ,the first development plan in 1970 regarded as the first serious attempts ,were the government started a series of five years plans that continues up to day,the first three

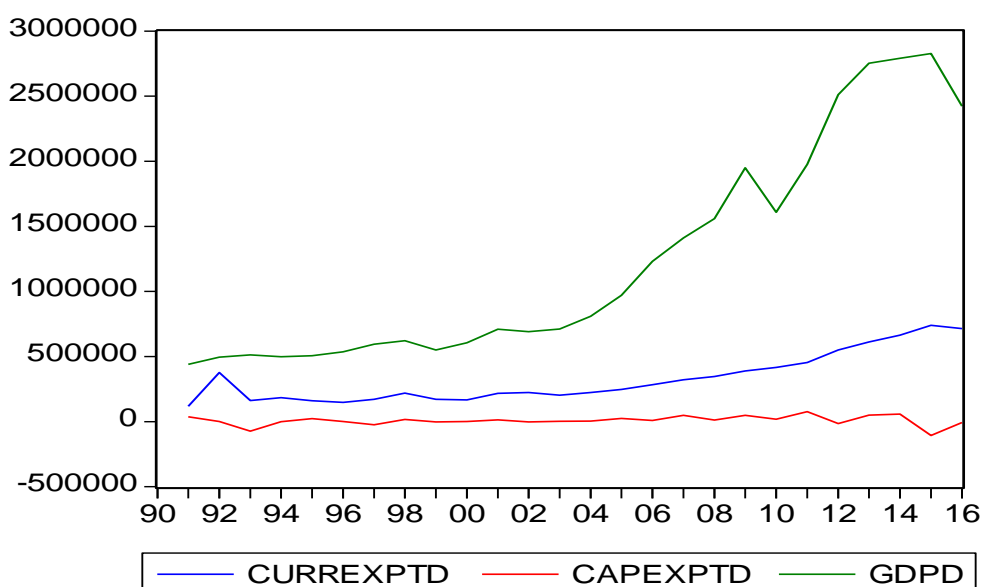
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<sup>1</sup> - Eid.G.Ashraf(2014),Budgetary institutions, fiscal policy and economic growth: the case of Saudi Arabia.p22.

development plan extended from(1970-84) focus was in financing both capital and current expenditures,the fifth development plan(1885-1989) were oil revenue was significantly declined as the global price for oil slumped ;which lead to decline in government spending. The sixth development plan (1990-1994) the government strategic plan focused on development of human resourses . The seventh development plan(2000-2004) also prioritized human capacity development; the eighth development plan(2005-2009) total government expenditures was about 230.4 billion u.s of which 56% was allocated to human capital development<sup>2</sup> ; the ninth development plan(2010-2014) it's a continuation of development approach adopted by the Kindom through out the past four decades.

Figure(1-1) shows the historical development path for current expenditure and capital expenditure in relation to GDP, as a reflections of various five years economic development plans which implemented during the period 1970-2016. As can be seen in the figure ,both current expenditure and capital expenditure are exhipt fluctuation up to 2008;then current expenditure was increased at higher rate than capital expenditure,as a result of increases in international oil prices,but again the figure shows decline in all three variables after year 2016. This trends riases many challenges for the Saudi,s economic development planners as; how to performs macroeconomic stability? as such, as to maintain sustainable economic development .

**Figure(1-1) Gross Domestic Product ;Current Expenditure and Capital Expenditure Relationship.**



**Source:** Researcher own calculation based on data obtained from Saudi Arabia Monetary Agency( SAMA)

The government objectives and implemitation mechanisms rest upon basic principles and well established rules, that emphasize the keenness of the kingdom to realize comperhansive, balance and sustainable economic and social development , for the economic development objectives; the plan aims at achieve annual growth of GDP about 5.2% at constant price of 1999<sup>3</sup>. Notwithstanding predictions of future oil prices is became very dificult if not impossible.fiscal policy is a key element of Saudi Arabia,s macroeconomic policy, because of the importance of capital and current expenditure for meeting the growing needs of public survices. Statistics shows that capital expenditure increased from 36567 billion SR in 1990 to about 257,453 billion SR in 2016 represent about 14% increases, while current expenditure increases from 118303 billion SR to about 705,345 billion SR by the end of year 2016 representing about 17% increases<sup>4</sup>. These growing of government spending faced with declining in GDP growth through out theses years, GDP growth declined from 15.19% in 1990 to only about 2.23% during fiscal year 2016, this trends is expected to continue in the fiscal year 2017<sup>5</sup>. Although many factors might be responsible for discouraging economic growth, emphasis in this study is

<sup>2</sup> - Saad A.Alshahrani(2014),Economic Growth and Government Spending in Saudia Arabia; an empirical investigation”p.12

<sup>3</sup> - Brief Report on the Ninth Development plan (2014)

<sup>4</sup> - Saudi Arabia Monetary Agency(sama) annual reports (2014-2016)

<sup>5</sup> - Saudi Arabia ,Ministry of Economic and Planning reports(2010-2014)

given to various government spending categories in addition to other selected fiscal indicators such as oil prices as a control variable, capital accumulation and human capital as the main variables that affect GDP growth in Saudi Arabia .

## 2. EMPIRICAL LITERATURE REVIEW

To explain the effects of fiscal policy on economic growth, two important models have to be considered, the Neoclassical model and the Endogenous growth model. The Endogenous model classified the fiscal policy into distortionary and non-distortionary taxation, and productive expenditure and non-productive expenditure as instrumentals which have different effects on growth<sup>6</sup>. Referring to the neoclassical model, Diamond (1965) in overlapping generation version examined the dynamic effects of fiscal policy. He argued that fiscal policy can only affect the rate of growth during the transition to steady states; while the endogenous growth model tends to transform the temporary growth effects of fiscal policy into permanent growth effects (see, Stockey and Rebelo, 1993). Within the impact of government spending on economic growth, it is important to realize that their impacts depend on the fact that, if productive or unproductive government spending, for instance Barro & Sala-i. (2014) and others stated that, as among productive government spending include e.g. investment in education and human capital, spending on defense, infrastructure or health care unproductive government spending are mainly social security contributions. In endogenous growth literature, capital accumulation yields a direct permanent growth and has indirect growth effects by increasing the efficiency of private capital<sup>7</sup>. Aschauer (1989) stresses the importance of distinguishing between government consumption expenditure and government capital accumulation such as infrastructure, this empirical result shows that the government capital stock has a positive impact on productivity growth. On the other hand, human capital is regarded as one of the main drivers of long-term growth. Lucas (1988) analysis of the endogenous growth model shows that human capital contributes to growth directly as an input in production activities, and indirectly by promoting technical progress with positive externalities, as a result expenditure on education and health care could have significant impact on output growth (Heckman & Klenow 1997). On the other hand, oil price volatility which is regarded as a control variable has an indirect effect on growth through changes in government revenues and expenditures, as a result the management of fiscal policy faces a lot of challenges and puts many restrictions on their economic growth, the implications to this can be explained in the following points; (1) the oil price volatility can be transmitted to the economic growth through fluctuations in government revenues (2) in a downturn governments did many adjustments to avoid immediate spending cuts; but a larger adjustment at a higher cost could be inevitable (3) a fiscal consolidation in response to a permanent negative oil shock, which aims to put fiscal policy on a sustainable path would adversely affect growth leading to an unsustainable path<sup>8</sup>. (4) oil exporting countries tend to have higher borrowing capacity during boom times. Empirical data shows that the United Arab Emirates took important measures to diversify its fiscal revenue base and to contain expenditures by the mid 1990s; Kuwait in contrast has had a less diversified economy by the end of 1990, the composition of government spending has shifted towards a growing share of wages, benefits and transfers<sup>9</sup>. Nigeria and Venezuela on the other hand experienced similar boom-bust fiscal policy characteristics and very large swings in overall deficits, mainly driven by oil price developments. In the case of Indonesia was more successful in preserving budget and economy against the shock in oil prices. Given this context, we develop a comprehensive fiscal policy and growth model to analyze the impact of fiscal policy on growth in the Kingdom of Saudi Arabia, this work can contribute to public policy literature in two ways; it explores a forecasting model for fiscal planning in KSA, and provides evidence to support the Endogenous Growth Model that fiscal policy promotes economic growth.

## 3. PREVIOUS STUDIES

Various studies of the relationship between fiscal policy and growth were conducted. Amany. A. Elanshy (2010) investigates the effects of the highly volatile oil prices and the resulting fluctuations in government revenues on economic growth in oil exporting countries, found that higher oil prices have a fairly small long run positive effect on growth; Nikos Benos (2009) his results provide some support for the critical model of endogenous growth; the main findings are, public expenditures on infrastructure exert a positive impact on growth, expenditure on human capital and social protection do not have a significant effect on per capita growth; Rudolf Malec & Janku (2015) found that government

<sup>6</sup> - Nikos Benos (2009) "fiscal policy and economic growth; empirical evidence from European Union countries" p.22

<sup>7</sup> - IMF, staff reports, 2015

<sup>8</sup> - Amany. A. Elanshy (2010) "oil prices and economic growth in oil-exporting countries" p.43

<sup>9</sup> - IMF, reports various years 1990.

expenditure has positive impact on growth in the countries with lower fiscal transparency, and has negative impact in the countries with higher fiscal transparency; William.E & Sergio Rebelo (1993) their main finding are there is strong association between the development level and the fiscal structure, fiscal policy is influenced by the scale of the economy and investment on transport and communications is consistently correlated with growth, while the effect of taxation are difficult to isolate empirically; Benagaya Djelloul (2014), stated that the correlation pattern between the per-capita gross domestic and the categories of budgetary revenues reveals a link of positive causality between the economic growth and fiscal revenues; farther more, the effect of taxation are difficult to isolate empirically<sup>10</sup>. The correlation patterns between the real growth rate of GDP and the categories of budgetary revenues reveals a link of negative causality between the economic growth and fiscal revenues in Romania; Eric M.&Jonathan.S (1992)found that balanced budget increase in government spending and taxation is predicted to reduce output growth rate; Nana. K & Akosah (2014) the study found that the fiscal policy to be unstable in the 1990s relative to stabilizes after words, also the study reveals that the recent fiscal policy (since2006) seems to be confouted with tremendous fiscal pressures in addition, the economic growth-debt link was found to be weak ,though debt appears to adversely affect economic growth; Cheryl.C and Tracey.L (2005) found that ,although Europe and Central Asia promote international trade and integration and significant decline in poverty, yet ECA countries still face daunting challenges in public finance such as reducing the burden of taxation and expend employment opportunities;

Landau (1983) found a negative relation between public consumption as share of GDP and growth per capita, while Kormendi-Meguire (1985) using cross-section/time- series data for 47 countries found no statistically significant relation of the same variables for the post-World War II period. Barro (1989), found that government consumption decreases per capita growth, while public investment does not affect growth. Other studies conducted during 1990,s are; Levine-Renelt (1992) found that most results from earlier studies on the relationship between long-run growth and fiscal policy indicators are fragile to small changes in the conditioning set. Easterly-Rebello (1993) used cross-section data for 100 countries for 1970-1988 and panel data for 28 countries for 1870-1988. They found that public transportation, communication and educational investment are positively correlated with growth per capita and aggregate public investment is negatively correlated with growth per capita, although they admitted that many fiscal policy variables are highly correlated with initial income levels and fiscal variables are potentially endogenous. Roberto.J&Francisco(2015) their main finding is that, as the relative economic importance of oil exports and crude oil price fluctuations has a positive relationship and highly significant effect on the level of economic activities in Latin American Countries ;Micheal s& Juan(2009) found that the sharp fall in oil prices since med-2008 has brought to the fore a different question ,whether oil exporters can sustain spending levels reached in previous years ;Joseph A & Festus .O (2014) employed Impulse Response Functions they found that ,gross investment respond more effectively to oil price volatility ; however the response of fiscal deficits, real GDP and money supply are less effective ; Khalid A. Alsweilem (2015) He argued that, the reform policies on fiscal stands will contribute significantly to meeting Saudia Arabia's growing long-term fiscal challenges, without imposing unbearable short-term reductions in spending ; Ashraf.G(2015) the study examine the impact of government expenditures on non-oil private GDP per-capita , he found that ;although Saudia government uses a conservative oil price when estimating oil revenues, government expenditure in general and capital expenditure in specific, is still procyclical and the long-run relationship between government expenditure and GDP per-capita is positive and significant ; Saad A. Alshahrani & Ali. J (2014) their main finding is that , while private domestic and public investment as well as health care expenditure, stimulates growth in the long-run, openness to trade and spending in the housing sector can also boost short-run production. From the above desertations one can observed they are varied with respect of coefficient signs and statistical significance. As aresult of the absence of a generally accepted theoretical framework in most of empirical studies, wich can help us to test the statistical significance of the postulated fiscal and non-fiscal determinants of growth and avoid bias that empirical results possibly suffer. Also the unappropriate classification of expenditures as productive/unproductive is regarded as short coming of the theoritical framewrok. Another problem of most empirical studies of growth and fiscal policy concerns the misspecification of the growth equation in relation to the government budget constraint. In this study, we take the above problems into account and refine existing research, disaggregating government spending, searching for evidence that is robust to changes in specification and estimation method.

<sup>10</sup> - Laura O.&Julian .B(2010) “ The Correlation Between Fiscal Policy and Economic Growth.*E62,H22*

#### 4. DATA AND ECONOMETRIC METHODOLOGY

To analyze the impact of government fiscal policy on economic growth in Saudi Arabia, we follow Rudolf&Janku(2015) model in their study of Organization of Cooperative and Economic Development(OCED) countries, the model can be developed by deviding government spending in to capital expenditure(productive) and curent expenditure( non-productive), which strictly enable to identify which effect of government spending previals, to assess the government effectiveness in managing fiscal policy under oil price volatility.It is important to include yearly changes in oil prices;since it has great implication in fiscal stands and in the economy of the Kingdom.On the other hand capital accamultion approximated by the proportion of real investment to GDP ,which regarded as the main variable that responsible for economic growth, other variable such as Human Capital(HAC) and Capital Accomulation(Capacc) has influencial role in productivity .the study cover the period 1990-2016 ,which witinsed wide range of oil price fluctuations caupled with many restrictions on fiscal policy, to face the future economic challenge of the government.Eviews version 21 softwere program is employed to test for statistical significant of the variables based on Ordinary Least Squire methods(OLS), were the endogeniety problems within the variables can be elliminated. The data on fiscal variables and GDP growth is obtianed from two sources, the Saudi Arabia Monetary Agency(SAMA) and Ministry of Economic and Planning statistics during the specified period of the study. Hence the variables included in the model can written in to a mathematical formula shown in the following equation:

$$GDP_g = \alpha + \beta_1 humcap_t + \beta_2 capacc_t + \beta_3 currexp_t + \beta_4 capexp_t + \beta_5 oilprice_t + u_t^{11} \dots\dots\dots 1$$

Where:

$GDP_g$  : Stand for annual gross rate of Gross Domestic Product

$humcap_t$ : Human Capital

$capacc_t$  : Capital Accomulation

$currexp_t$  : Government Current Expenditure

$capexp_t$  : Government Capital Expenditure

$oilprice_t$  : Yearly Oil Prices

$\beta_1 ; \beta_2 \dots ; \beta_n$  : the coeffecients

$u_t$  : Error Terms;

$t$  : 1990-2016

Before evaluating the impact of fiscal policy on economic growth ,the stationarity of time series is necessary to be tested to ensure the existance of a single root, and all models can be also estimated by, to test for overall significantness. Augmented Dickey-Fuller (ADF) technigues is employed.

#### 5. EMPERICAL ANALYSIS

Refering to Worldwide Government Indicators (WGI) which emerged from World Bank long-term research program, presented six dimension of governance out of them this study relay on partial index "Government Efficiency"<sup>12</sup>, this index reflect the perception of public services guality;the level of public services independence on political pressure;the quality of formulating and executing economic policy and the trustworthiness of governments. The study employed an Econometric Model derived from Rudolf&Manku endeginous growth model(2014), the individual variables of the analyzed model are; $GDP_t$ -gross domestic product per resident expressed in SR as dependent variable ,  $Currexpt$ -Current Expenditure no(general public services,defence,recreation, culture ...ect), $Capexpt$ -capital expenditure includes among others spending on(education,health , social security , housing and community), $Humcapt$ - human capital approximated by number of students enlored yearly to higher studies program ,  $Capacct$ - capital accomulation measured by yearly total government investment in public sectors and  $Oilpricet$ -yearly international oil price volatility per parel.

<sup>11</sup> - The econometrics model follow Rudolf&Janku(2015) model,but the model is further modified by utilizing data from a single country rather than panel data and total government spending is devided in to ,current expenditure and capital expenditure.

<sup>12</sup> - Kaufmaan.D.A,Kraay and Mastruzzi (2010.World Bank Working Paper,No.5430

**5-1- Unit Root Test:**

In order to test for stationarity of the variables to avoid spurious regression results, we employed Augmented-Decky fuller (ADF), the results presented in the following table:

**Table (5-1) Stationarity Test of the study variables**

Variables	Coefficients	ADF	P.value	Statistics
Capacct	-0.68	3.44**	0.019	Level
Capexpt	-0.06	5.16**	0.003	Level
Currexpt	-1.34	9.46**	0.000	1 <sup>st</sup> difference
Humcapt	-6.95	4.70**	0.001	2 <sup>nd</sup> difference
Oilpricet	-0.97	4.66**	0.001	2 <sup>nd</sup> difference
GDPt	-0.85	4.10**	0.004	1 <sup>st</sup> difference

**Source:** Researcher Own Calculation from result of Eviews version. 21

From the above table, the results of ADF test shows that only Capacct and Capexpt are stationary at the level as a result we can reject the null hypothesis of having unit root and the mentioned variables are stationary at the level; while current expenditure and gross domestic product stationary after first difference, but human capital and oil price has no unit root at second differences all statistic significant are taken at 5% level, therefore the regression can run and the significance of the relationship can be tested. In the first step, all variables included in the model showed insignificant relationship and the appearance of multi-colinearity, because D.W is less than 2.00, therefore log transformation of the data employed to run non-linear model in addition the an Adjustment co-efficient (AR<sub>1</sub>) introduced, as a result the overall model became statistically significant

**5-2 Econometrics Results of Impact Fiscal Variables on Economic Growth(1990-2016)**

Estimation of the model of impact fiscal policy in economic growth in Kingdom of Saudi Arabia were made by OLS method after making suitable adjustment of the data and correction of the model to get rid of spurious results. The main results is displayed in the following table:

**Table (5-2) Impact of Fiscal Policy on Economic Growth in Saudi Arabia(1990-2016)**

Variables	Co-efficient(t.statistics)	Economic Verification		Prob.
		theory	results	
Capacct	-0.053(5.98)***	+	-	0.02
Capexpt	0.003(1.61)***	-/+	+	0.24
Currexpt	0.075(12.33)***	+	+	0.02
Humcapt <sup>13</sup>	0.433(8.85)***	+	+	0.01
Oilpricet <sup>14</sup>	0.515(24.82)***	-/+	+	0.00
Adjusted R <sup>2</sup>	0.99			
D.W	1.9			

**Source:** Researcher Own Calculation from result of Eviews version. 21

<sup>13</sup> - Human capital has direct effect on long-term growth, as input in production activities or indirectly by promoting technical progress with positive externalities.

<sup>14</sup> - Oil Price has indirect effect on growth through changes in government total revenues and expenditures

Table(5-2) represent the results of econometrics analysis of fiscal policy impact on economic growth in Saudi Arabia during the period (1990-2016), the result shows that ; the model as a whole is statistically significant at 5% level of significant with the coefficient of determination at 99%. The impact of current expenditure is positive and statistically significant and it is in harmony with the result of Ashraf.G.Eid(2015) and Ghazi.A.Johary(2010), this result is expected since all development plan of Saudi Arabia concentrated on human development to enhance capacity building rather than capital expenditure which witnessed further cuts recently, the result also coincide with with endogenous growth theory hypothesis that current expenditure has positive impact on long-term economic growth; notwithstanding current expenditure share is relatively small (only about 7%) impact on economic growth, this result may explain inefficiency of current expenditure allocation and weakness of government supervision and planning. With respect to impact of Human Capital on growth, the result is shows positive impact which in accordance with theoretical assumption and statistically significant at 5% level which support Lucas(1988) finding. Capital Expenditure variable on the other hand entered in the model, but the regression result shows insignificant relationship though the sign is positive , this result is inevitable since capital expenditure is subjected to spending cut during the period of low oil revenues, for example the government of Saudi Arabia decreases its capital expenditure gradually from 23.7% of GDP in 1985 to about 4.2% of GDP in 2002 and to less than this ratio in 2016<sup>15</sup>, due decreases in oil prices. Saudi Arabia usually attempts to reduce budget deficits by cutting government expenditures rather than applying expenditure tax. Capital Accumulation shows significant positive impact on long-term growth, the result opposed endogenous growth theory, this result can be explained in two different ways, firstly in many oil exporting countries<sup>16</sup>, at boom times where financial surplus used to finance unproductive investment activities as a result it can show negative impact on economic growth, secondly Capital Accumulation has non-linear effect on economic growth with respect to oil price shocks , because the size of negative large cut in capital accumulation would be greater than the negative effect of the shock . Oil Price Volatility shows significant positive impact on long-term economic growth, this result partially support the theoretical assumption, which state that oil price volatility can effect growth positively ,if government authority and economic planners react positively , by reallocating financial reserve fund that accumulated during the periods of high oil price in to productive economic activities, otherwise if the reserves not optimally allocated to finance projects that increase the productivity ,then the oil price volatility would negatively effect economic growth.

## 6. CONCLUSION AND POLICY RECOMMENDATIONS

To summarize the findings, human capital and oil price volatility shows greater impact on GDP growth compared to the other three variables. This result support the theoretical assumption of endogenous growth model and it is expected, since past and present development planning in Saudi Arabia concentrated on human development to enhance capacity building , on the other hand oil price volatility effect economic growth positively , which mean that the government of Saudi Arabia react positively to high fluctuation of international oil prices; but unfortunately the policy of spending cuts implemented in the expenses of capital accumulation, because the financial surplus is directed to finance unproductive investment activities as a result capital accumulation shows negative impact on long-term economic growth. The study recommend the important of diversification of economic activities to reduce oil revenue dependency , encouragement of private sector and put more emphasis on economic planning, close supervision and more appropriate allocation of financial resources between the productive sectors.

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<sup>15</sup> -Budget Equilibrium Program(2020), Kingdom of Saudi Arabia Vision(2030).p12

<sup>16</sup> - Oil Exporting Countries, generally refers to the top ten net oil exporting for which oil and gas amount for more than 40% of total exports they are, Algeria ,Iran, Kuwait ,Libya ,Nigeria ,Norway, Russia ,Saudi Arabia ,Unit Arab Emirate and Venezuela.

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## APPENDIX - A

Dependent Variable: LGDPD

Method: Least Squares

Date: 06/19/17 Time: 14:01

Sample (adjusted): 1992 2014

Included observations: 9 after adjustments

Convergence achieved after 6 iterations

$$LGDPD=C(1)+C(2)*LCURREXPTD+C(3)*LCAPACCD+C(4)$$

$$*LOILPRICETD+C(5)*LHUMCAPTD+C(6)*LCAPEXPTD$$

$$+[AR(1)=C(7)]$$

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	6.088636	0.493791	12.33038	0.0065
C(2)	0.075855	0.012227	6.204040	0.0250
C(3)	-0.053414	0.008926	-5.983998	0.0268
C(4)	0.515791	0.020774	24.82857	0.0016
C(5)	0.433562	0.048942	8.858624	0.0125
C(6)	0.003446	0.002134	1.615158	0.2476
C(7)	0.849320	0.038788	21.89647	0.0021
R-squared	0.999969	Mean dependent var		13.94183
Adjusted R-squared	0.999875	S.D. dependent var		0.576550
S.E. of regression	0.006439	Akaike info criterion		-7.201561
Sum squared resid	8.29E-05	Schwarz criterion		-7.048164
Log likelihood	39.40703	Durbin-Watson stat		1.890781
Inverted AR Roots	.85			