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# An Assessment of the Effect of World Oil Price Shocks on Uganda's Official Development Assistance

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## Abstract

This study assesses the effect of world oil price shocks on Uganda's official development assistance using Structural Vector Autoregressive Model (SVAR). The results in this study show in-significant pass-through effect of world oil price shocks to Uganda's Official Development Assistance received in the period under the study. The policy implication in this study is that Official Development Assistance received by Uganda is independent of world oil price shocks.
**Keywords:** World oil price shocks; Official development assistance; Uganda.

## 1. Introduction

The relationship between oil price shocks and economic activity has become a center of interest to many researchers around the world and the recent decline of oil prices has even amplified the interest of many scholars in this area (Baffes *et al.*, 2015; Suleiman, 2013).

Baumeister and Kilian (2016), urged that economic models of oil markets imply that the price of oil, all else equal, depends on the state of the global business cycle and global oil production. One difficulty in forming oil price expectations is unanticipated changes in perceptions about the future scarcity of oil that affect future demand for oil inventories. Such perceptions may evolve rapidly, for example, in response to geopolitical or economic crises. This fact does not make forming oil price expectations any easier, however, because in practice these expectations can be only as accurate as our predictions of the evolution of the global business cycle.

Upon occurrence, world oil price shocks can be transmitted to the national economies with resultant effects varying from one country to another, whether it a developed or developing, oil-exporting or non-oil exporting countries.

Balcilar *et al.* (2014), argued that there are a number of transmission channels through which oil price affects output of a country. On the supply side, an increase in the oil price leads to higher input costs which can increase the cost of production of goods and services. The volume produced may consequently be affected, as firms may find it not easy in the short run to reallocate resources in order to produce the matching volume of goods and services.

The extent of the impact of oil price shocks to the aggregate output depends on the energy intensity in the production process. From the demand side, an increase in the oil price will put stress on the price level. In turn, the central bank might increase the interest rate to control inflation, which may result in a reduction in investment, and thus a decline in output. Besides, increase in oil price affects the individual consumer as it reduces the quantity of goods and services that may perhaps be purchased with the consumer's existing level of income (Balcilar *et al.*, 2014).

When negative consequences of world oil price shock strike economies, Government of developing countries often seek alternative sources of funds which may include official development assistance to stabilize their economies. This has been explained in the conceptual framework in figure 1 below in Arrow 4. The conceptual framework in figure 1 is based on the theory that oil price changes are transmitted mainly through the supply and demand side effect following the work of Jiménez-Rodríguez and Sánchez (2005), Tang *et al.* (2010), and Brown and Yucel (2002).

**Arrow 1** shows the supply side effect. On the supply side, an increase in the oil price leads to higher input costs which can increase the cost of production of goods and services. The volume produced may consequently be affected, as firms may find it not easy in the short run to reallocate resources in order to produce the matching volume of goods and services. This will eventually increase the unemployment and reduced disposable income. The extent of the impact of oil price shocks to the aggregate output depends on the energy intensity in the production process.

**Figure-1.** Transmission channels of world oil-price shocks
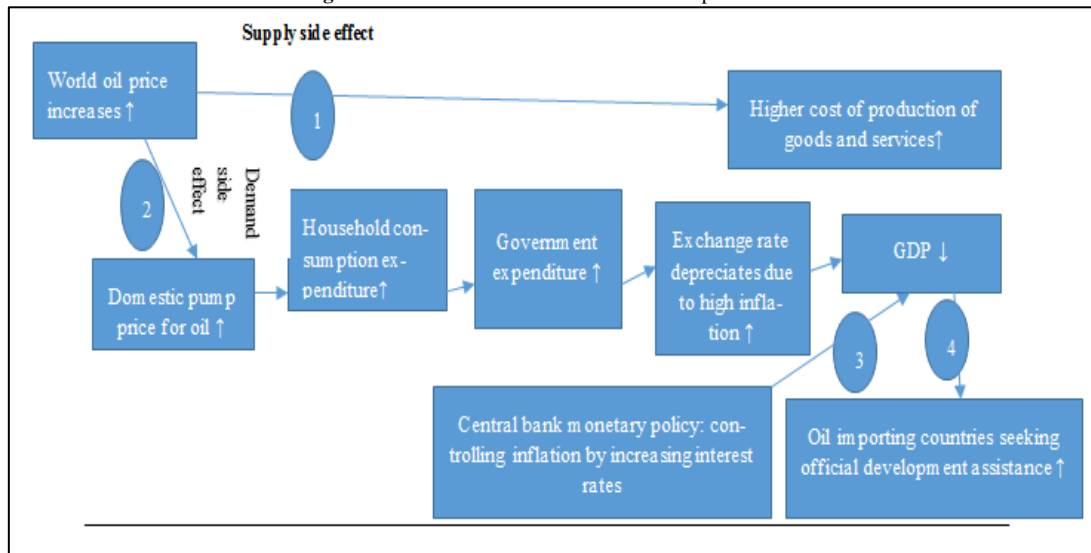
**Arrow 2** shows the demand side effect. From the demand side, an increase in the oil price will put stress on the price level including increasing inflation, increasing domestic petroleum pump prices, increasing household consumption expenditure as well as increasing Government expenditure. Exchange rate will depreciate due to higher inflation. The rise in oil prices reduces purchasing power and consumer demand in the oil-importing nations, simply referred to as a tax that is collected from oil-importing nations by oil-exporting nations (Brown and Yucel, 2002).

**Arrow 3** shows the monetary policy side. The central bank might increase the interest rate to control inflation, cost of living and producing which may result in a reduction in investment, and thus a decline in output. When the observed inflation is caused by cost shocks including oil-price increases, a tight monetary policy can worsen the long-term output by increased interest rate and decreased investment (Tang *et al.*, 2010).

**Arrow 4** indicates a new addition to the work of Jiménez-Rodríguez and Sánchez (2005), Tang *et al.* (2010), and Brown and Yucel (2002). This addition in our opinion is most applicable to both oil importing and oil exporting economies. Oil price increase is seen to affect the output of developing economies with oil-importing countries like Uganda seeking more development assistance to boost the economy, provide cheaper social services and cover the deficit in budgets. There will be likely more development assistance available in oil exporting economies as a result of increased revenue. When oil prices increases, oil-exporting countries on the other hand will seek less development assistance as a result of increased oil revenue and will tend to give/donate some part of excess income/windfall to other "needy" and "friendly" countries.

Oil price decline on the other hand will make oil exporting countries to experience uncertainly about future revenues and budget shortfall hence encouraging them not to donate more to other "needy" and "friendly" countries. Some hard hit oil exporting countries will further seek for more development assistance including loans to finance their budget deficit.

In the context of world crude oil price shocks, the study notes that world crude oil price shocks may reduce or increase a country's income depending on whether it is an oil-exporting or oil-importing country. This impact of world crude oil price shocks may arguably influence on the amount of aid to be given by a donor country and amount of aid to be received by donor-recipient countries like Uganda.

Further to note, most studies of donors suggest a combination of humanitarian and self-oriented motives lie behind the act of aid-giving, with the emphasis shifting at particular moments in time, and in relation to particular recipients and contexts (Lancaster, 2007; Lee, 1993). The study is therefore very important since Uganda is one of the donor recipient countries with growing debt. According to Bank of Uganda (2017), debt vulnerability indicators show that Uganda's debt may be moving from a level of low to moderate risk of distress.

# 2. Empirical Background

An established idea exists that stronger nations hold a particular kind of responsibility towards weaker ones (Bracho, 2015; Rist and Camiller, 2002). In Article 55 of the United Nations (UN) Charter, for instance, the functions of a post-war international order are enshrined as a commitment to the principles of international economic and social cooperation (United Nations General Assembly, 1945).

Incoming US President Harry Truman built on this statement in 'Point 4' of his inaugural speech in 1949. Extensively appreciated as the start of the modern development industry, he committed the US to tackling under-development through a national programme for poorer countries (Lumsdaine, 1993). Over time, the US actively sought to foster foreign aid as an obligation of all developed states rather than its exclusive burden. The former Marshall Plan administrator, American Paul Hoffman, was charged with selling the sponsorship of aid programmes to European countries that had sought aid from the US a decade earlier (Gulrajani and Swiss, 2017).

All bilateral donors are encouraged to meet globally agreed-upon aid targets. Most influential was the 0.7% Official Development Assistance (ODA)/Gross National Income (GNI) ratio promoted in the UN's 1969 Pearson

Commission report. Although a highly contested target (Clemens and Moss, 2005), it is widely accepted as the amount of aid that donors should be providing. Its effect has been to firmly instill in donors a sense that they have an obligation to provide concessional development finance at a certain level. Achieving the target is a quick way to assess donor generosity to the global development project; yet, very few countries ever meet the 0.7 target (Gulrajani and Swiss, 2017).

The last 25 years have seen a rapid and expansive growth of donor states (Gulrajani and Swiss, 2017). Prior research has demonstrated that new and emerging donors do not prioritise recipient states' needs as much as established donors (Dreher *et al.*, 2011). The potential consequence of new donor countries (NDCs) failing to achieve functional legitimacy is that more established counterparts downgrade their own efforts in response (Bracho, 2015). In addition, more recent studies, examining data extending to the mid to late 1990s, do though find that donor non-developmental interests remain important determinants of aid allocation, see Berthelemy and Tichit (2002); Neumayer (2002) and Feeny and Mcgillivray (2004).

While no two countries will experience the recent drop in world oil price in the same way, they share some common traits: oil importers among advanced economies, and even more so emerging markets, stand to benefit from higher household income, lower input cost, and improved external positions. Oil exporters will take in fewer revenues, and their budgets and external balances will be under pressure. Oil price fluctuation is not only one of the most important causes of many crises in oil exporting countries as a main source of government revenues, but also a main cause of fluctuation in oil importing countries as an important input in production function (Ahmed, 2018).

Moshiri (2015), urged that following an oil price increase, governments take up large social programs and investment projects, which may not contribute much to economic growth because they are often in excess of the economy's absorptive capacity leading to higher inflation. When oil prices decrease sharply, most state-backed economic activities are shut down, and many large investment projects are left unfinished, putting additional pressure on the economy. To fulfill recurrent cost commitments and to avoid social and political unrest, governments run a huge budget deficit, which is usually financed by borrowing from central banks or abroad (Moshiri, 2015).

Equally to note, according to Ahmad (2015), when the world oil price declined, Nigerian external debt increased significantly and the ratio of foreign debt to GNI reached more than 130% in 1987. Similarly, when the oil price declined in the mid-1980s and economic crisis hit the country in the mid-1990s, Indonesia's development budget also relied on the availability of foreign aid (Ahmad, 2015).

Ahmed (2018), likewise notes that, Kingdom of Saudi Arabia announced historic spending reductions in its 2016 budget aimed at controlling a deficit that came in at 376 billion riyals ($98 billion) this year, that is, around 15 percent of GDP. The moves came amidst pressures on dwindling state revenues on the back of oil prices that have hit record lows (Ahmed, 2018).This according to this study may influence the amount of aid that Kingdom of Saudi Arabia may offer.

# 3. Methodology

This section presents the methodology adopted by this study.

## 3.1. Data

The data type in this study are secondary from 1993 to 2016. The details of the data types and sources in this study are presented in table 1 below.

Table-1. Data Type and Sources

| No | Data type | Source (Published) |
|---|---|---|
| 1 | World Oil price (Spot Brent) | BP statistical review of World Energy 2017 |
| 2 | GDP for Uganda (current USD) | World Development Indicator, 2017 |
| 3 | Official Development assistance received by Uganda (constant 2015 USD) | World Development Indicator, 2017 |
| 4 | General government final consumption expenditure | World Development Indicator, 2017 |

**Sources:** Author's compilation

## 3.1.1. Description of Data

The details of the data used in the study are presented below.

## 3.1.2. World Crude Oil Price

This represents the prices of crude oil in the international market and also the external shocks to Ugandan economy and particularly the petroleum industry. It has been assumed in this study that, shocks from world oil price during this period exogenously determine the domestic petrol prices but through the exchange rate and value imported. The study used spot price Brent as a proxy to world crude oil prices since is the most applicable to the study as it is widely used as a benchmark for crude oil pricing. The quarterly data for Brent spot price was obtained from BP statistical review of World Energy 2017.

According to EIA (2014), the most widely used benchmarks are associated with crude oil that has four common qualities: stable and ample production; a transparent, free-flowing market located in a geopolitically and financially stable region to encourage market interactions; adequate storage to encourage market development; and/or delivery

points at locations suitable for trade with other market hubs, enabling arbitrage (profit opportunities) so that prices reflect global supply and demand.

### 3.1.3. Gross Domestic Product (GDP)

This captures the nature of economic activity in Uganda. It has been assumed that real GDP determines the value of oil imports, which in turn determines the pump price of domestic petroleum products. Higher domestic pump prices negatively affect the level of economic activity and might make an oil importing country like Uganda to seek more official development assistance/aid to foster higher growth. The quarterly GDP (current USD) data were obtained from the World Development Indicator, 2017.

### 3.1.4. Official Development Assistance Received by Uganda

This captures quarterly value of Net Official Development Assistance Received by Uganda (in constant 2015 USD) from 1993 to 2016. The quarterly data was obtained from World Development Indicators 2017 of the World Bank. Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent) as per World Development Indicators 2017.

In this study, it is assumed that when world oil price increases, oil-exporting economies offer more development assistances to other developing non-oil exporting economies because of their excess oil revenue and or seek less development assistance. During period of lower world oil prices, oil exporting economies may not able to give reasonable development assistance due to budget and revenue deficits and or seek more development assistance.

Oil importing countries like Uganda is assumed to seek "more" development assistance (and or receive more development assistance from oil exporting countries) during period of higher world oil price to boost its economic growth policies.

### 3.1.5. General Government Final Consumption Expenditure

General government final consumption expenditure (formerly general government consumption) represents all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security but excludes government military expenditures that are part of government capital formation.

The General government final consumption expenditure (current USD) quarterly data were obtained from the World Development Indicator, 2017.

It has been assumed in this study that, net official development assistance received by Uganda influences general government final consumption expenditure

### 3.1.6. Data Estimation Techniques

The estimation technique in this study uses time series data and E-views software to analyze the data. Various analysis have been carried out in this study, these includes; stationary, diagnostic test, Co-integration test, Structural Vector Autoregressive Model (SVAR), variance decomposition analysis, accumulated impulse responses. This study uses quarterly data set that span from 1993 to 2016. The details of these analysis are indicated below.

### 3.1.7. Stationary Test

The stationarity test in this study used regressions of time series data analyzed against a constant. These regressions were expressed as follows;

$$Y_t = \alpha + \beta.t + \varepsilon_t \qquad (1)$$

$$d(Y_i) = \alpha + \beta.t + \sum_{i=1}^{n} \lambda. dY_{t-i} + \delta.Y_{t-i} + \varepsilon_t \qquad (2)$$

The stationarity of residuals ($\varepsilon_t$) were tested. The stationarity of each individual data series in this study has been estimated using Philips Perron (PP) test and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test. The lag lengths have been selected using Schwarz Information Criterion (SIC).

### 3.1.8. Cointegration Test

Johansen (1988), test procedure has been adopted by this study to test for cointegrating relationship within endogenous variables based on Maximum Likelihood (LM) test and unrestricted Vector Auto Regression (VAR) test. Cointegration rank *r* (number of cointegrating vectors) has been tested using trace statistics and Maximum Eigen Statistics (MES). The trace statistics test null hypothesis that there are at most r cointegrating vectors against alternative of r or more cointegrating vectors, while MES test null hypothesis of r cointegrating vectors against alternative of r+1 cointegrating vectors.

### 3.1.9. Structural VAR

The structural VAR (SVAR) approach has been used in this study. The motivation for using SVAR has been because, its widely used for policy analysis and specifically its ability to analyze responses to shocks as in Chuku *et al.* (2011). When estimating SVAR, some restrictions based on economic theory are put. Under the SVAR

methodology, economic theory does play an important role in identifying and estimating the model. Once a certain identification is achieved, structural shocks can then be recovered.

### 3.1.10. Variance Decomposition

Variance decomposition analysis indicates percentage of forecast error variance due to shocks from other endogenous variables over the whole sample period. Its SVAR technique that indicates the amount of information each variable contributes to other variables in an autoregressive manner and further determines the amount of forecast error variance that can be explained by exogenous shocks. Variance decomposition has been estimated from SVAR models in this study. The results of the variance decomposition have been presented in tabular forms.

### 3.1.12. Accumulated Impulse Response Function

The accumulated impulse responses of endogenous variables captured dynamic responses of endogenous variables due to one standard deviation in structural innovation. Restrictions were imposed on the structural coefficients which allowed for a transformation process that uncovers shocks from the VAR system. The accumulated impulse responses have been estimated from SVAR models in this study. The results of the accumulated impulse responses have been presented in tabular forms.

### 3.2. Model Specification

This study uses SVAR models to investigate the effect of world oil price shocks on Uganda's Official Development Assistance.

A VAR is an n-equation, n-variable model in which each variable is in turn explained by its own lagged values, plus (current) and past values of the remaining n-1 variables.

Following Raghavan (2015), the interactions between oil and macroeconomic variables has been estimated using an SVAR model presented as follows;

$$A_0 X_t = A_1 X_{t-1} + A_2 X_{t-2} + \cdots + A_p X_{t-p} + \varepsilon_t \tag{3}$$

.

Where;

$X_t$ is a (n x 1) vector of variables, $X_t$ = (World oil price, Official development assistance, Government final consumption expenditure, Gross domestic product);

$A_i$ is a (n x n) coefficient matrix for i = 0, 1, 2, p, which capture dynamic interactions between the variables in the model;

$\varepsilon_t$ is (n x1) vector of serially uncorrelated structural shocks with properties, $E(\varepsilon_t) = 0$ and

$E(\varepsilon_t, \varepsilon'_t) = \sum$, where $\sum$ is a diagonal matrix containing the variances of the structural disturbances.

SVAR in (3) has been written as;

$$A(L)X_t = \varepsilon_t \tag{4}$$

where A(L) is a matrix polynomial in lag operator $L$ and

$$A(L) = A_0 - A_1 L - A_2 L^2 - A_p L^p$$

The reduced form VAR representation of (4) is;

$$B(L)X_t = e_t \tag{5}$$

Where $B(L) = A_0^{-1} A(L)$ and,

The reduced form errors are related to the structural disturbances by;

$$e_t = A_0^{-1} \varepsilon_t \tag{6}$$

Equation (6) has been represented as;

$$B(L)X_t = A_0^{-1} \varepsilon_t \tag{7}$$

The impulse response functions of the SVAR model has been derived from the Vector Moving Average (VMA) representation;

$$X_t = \Phi(L)\varepsilon_t \tag{8}$$

where $\Phi(L) = \left(B(L)\right)^{-1} A_0^{-1}$

Since the structural shocks, $\varepsilon_t$, has been obtained by imposing appropriate restrictions based on economic theory and stylized facts on the contemporaneous matrix $A_0$ and on the lag matrixes B(L), the effects of these shocks on domestic variables has been captured more effectively through the impulse response function given in equation (8).

Following Odongo (2013) and Ito and Sato (2007), the analysis of effect of world oil price shocks on Uganda's Official Development Assistance can be presented as follows, basing on the relationship between reduced-form VAR residuals ($e_t$) and the structural disturbances ($\varepsilon_t$);

$$\begin{pmatrix} e_t^{world\ oil\ price} \\ e_t^{ODA} \\ e_t^{Govt\ expenditure} \\ e_t^{GDP} \end{pmatrix} = \begin{pmatrix} s_{1,1} & 0 & 0 & 0 \\ s_{2,1} & s_{2,2} & 0 & 0 \\ s_{3,1} & s_{3,2} & s_{3,3} & 0 \\ s_{4,1} & s_{4,2} & s_{4,3} & s_{4,4} \end{pmatrix} \begin{pmatrix} \varepsilon_t^{world\ oil\ price} \\ \varepsilon_t^{ODA} \\ \varepsilon_t^{Govt\ expenditure} \\ \varepsilon_t^{GDP} \end{pmatrix} \tag{9}$$

The structural model is identified because the $\frac{k(k-1)}{2}$ restrictions are imposed on the matrix S as zero restrictions where k denotes the number of endogenous variables. The resulting lower-triangular matrix S implies that some

structural shocks have no contemporaneous effect on some endogenous variables given the ordering of endogenous variables.

The arrangement/ordering of variables in the specification in equation determines the structure of shocks. The first variable, world oil price has an influential effect on all other variables below it, but it is not affected by any of these variables. The second variable, official development assistance gets an impact from the first variable, world oil price.

The second variable doesn't have any impact on the first variable but it influences all other variables below it. The third variable, Government final consumption expenditure receives impact from world oil price and official development assistance received by Uganda but does not have impact them. Government final consumption expenditure finally impacts the GDP of Uganda. GDP is then ranked last and receive shocks from world oil price, official development assistance and Government final consumption expenditure.

### 3.2.1. Restrictions on Structural VAR Coefficients

Based on recursive approach, the decomposition of variance/covariance matrix of reduced form residuals was done on lower triangular matrix $\frac{k(k-1)}{2}$, where k is the number of variables. In a contemporaneous relationship of a four variables model as in this study, there are 6 restrictions $\{\frac{4(4-1)}{2}\}$ required for identification of the effect of structural shocks on endogenous variables. Restrictions are imposed on this matrix to identify structural shocks in the case where shocks do not have any contemporaneous effect on endogenous variables (Siok and Zhanna, 2008).

As in Odongo (2013), restrictions on structural VAR coefficients were imposed on the structural error vector ($\varepsilon_t$) on the basis of economic theory. To obtain economically meaningful results from the VAR system, the effect of world Oil Price Shocks on Uganda's Official Development Assistance was estimated using specification that links reduced form random errors ($et^{world\ oil\ prices}$, $et^{ODA}$, $et^{Gvot\ expenditure}$ and $et^{GDP}$) with the structural errors ($\varepsilon t^{world\ oil\ prices}$, $\varepsilon t^{ODA}$, $\varepsilon t^{Govt\ expenditure}$ and $\varepsilon t^{GDP}$).Restrictions are imposed on the structural coefficients $\beta_{2,1}$; $\beta_{3,1}$; $\beta_{3,2}$; $\beta_{4,1}$; $\beta_{4,2}$ and $\beta_{4,3}$ which guarantee that the outcome from the structural coefficients depicts the contemporaneous relationship between internal adjustments and unexpected exogenous shocks from world oil price.

Restrictions on the structural coefficients indicated in this study are imposed on initial period only because all variables in this study are permitted to freely interact with each other in all periods following the one in which innovation took place. Generally, this factorization explains the relationships between reduced shocks only in the first period, while later every shock can be affected by any other shock. This means that coefficients $\beta2,1$; $\beta3,1$; $\beta3,2$; $\beta4,1$; $\beta4,2$ and $\beta4,3$ presented in the matrix (10) are all equal to zero.

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ -a_{2,1} & 1 & 0 & 0 \\ -a_{3,1} & -a_{3,2} & 1 & 0 \\ -a_{4,1} & -a_{4,2} & -a_{4,3} & 1 \end{pmatrix} \begin{pmatrix} e_t^{world\ oil\ price} \\ e_t^{ODA} \\ e_t^{Govt\ expenditure} \\ e_t^{GDP} \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 & 0 \\ \beta_{2,1} & 1 & 0 & 0 \\ \beta_{3,1} & \beta_{3,2} & 1 & 0 \\ \beta_{4,1} & \beta_{4,2} & \beta_{4,3} & 1 \end{pmatrix} \begin{pmatrix} \varepsilon_t^{world\ oil\ price} \\ \varepsilon_t^{ODA} \\ \varepsilon_t^{Govt\ expenditure} \\ \varepsilon_t^{GDP} \end{pmatrix} \qquad (10)$$

As in Kumah and Matovu (2005), coefficients $-a_{2,1}$; $-a_{3,1}$; $-a_{3,2}$; $-a_{4,1}$; $-a_{4,2}$ and $-a_{4,3}$ on the left side of matrix (10) show the workings of internal adjustment (automatic stabilizer) due to external shocks, while the diagonal coefficients on the right hand side of matrix (10) capture the workings of external shocks due to structural innovation ($\varepsilon t$'s), represented by shocks from world oil price ($\varepsilon t^{world\ oil\ price}$), Official Development Assistance ($\varepsilon t^{ODA}$), Government final consumption expenditure ($\varepsilon t^{Govt\ expenditure}$) and Gross Domestic Product ($\varepsilon t^{GDP}$).

The matrix (10) assumes (from the point of view of automatic stabilizers) a time lag between world oil price innovations and changes in official development assistance (ODA), Government final consumption expenditure as well as Gross Domestic Price (GDP).

The matrix in equation (10) therefore shows a contemporaneous relationship between internal adjustments and unexpected exogenous shocks from world oil price.

The variance decomposition analysis and accumulated impulse response functions in this study are all estimated as per the above restrictions.

The benefit of using structural VAR specification in this study is that it solves the endogeneity problem that can occur under a single equation approach. Secondly, this technique applies restrictions on the structural coefficients that identify structural shocks from the VAR system (Odongo, 2013).

## 4. Presentation and Discussion of the Results

The results of this study are obtained from the estimates of variance decomposition and accumulated impulse response functions of endogenous variables. Details of the results are presented below.

### 4.1. Descriptive Statistics

This has been carried out in this study to find the relationship between the variables in the model specified. The details of which are indicated in table 2 below.

**Table-2.** Descriptive Statistics

|  | WOILPRICE | ODA | GDP | GOVT_EXPENDITURE |
|---|---|---|---|---|
| Mean | 50.93494 | 1.30E+09 | 1.25E+10 | 1.34E+09 |
| Median | 41.15898 | 1.33E+09 | 8.53E+09 | 1.21E+09 |
| Maximum | 116.3087 | 1.82E+09 | 2.77E+10 | 2.62E+09 |
| Minimum | 12.28203 | 7.41E+08 | 3.15E+09 | 3.32E+08 |
| Std. Dev. | 34.08838 | 3.16E+08 | 8.07E+09 | 6.37E+08 |
| Skewness | 0.607575 | -0.182310 | 0.647811 | 0.428180 |
| Kurtosis | 1.936787 | 1.670794 | 1.837692 | 2.114764 |
| Jarque-Bera | 10.42804 | 7.598947 | 12.11838 | 6.067988 |
| Probability | 0.005440 | 0.022383 | 0.002336 | 0.048123 |
| Sum | 4889.754 | 1.24E+11 | 1.20E+12 | 1.29E+11 |
| Sum Sq. Dev. | 110391.7 | 9.48E+18 | 6.18E+21 | 3.85E+19 |
| Observations | 96 | 96 | 96 | 96 |

**Source:** Author's analysis

ODA: Official Development Assistance Received by Uganda; GOVT_EXPENDITURE: Government final consumption expenditure; GDP: Gross Domestic Product; WOILPRICE: World oil prices.

The summary statistics in table 2 above indicate that normality test has been rejected in all the 4 variables at 5 percent level of significance. The non-normality could have been caused by excess kurtosis. The study proceeds with stationarity test on the variables using unit root test.

## 4.2. Test for Stationarity

The stationarity test has been carried out using Philips Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test. The summary of the stationarity test is presented in table 3.

**Table-3.** Stationary Test for Variables under Study

| Variables | PP (level) P-value | KPSS (Level) LM Stat | PP (1st Difference) P-value | KPSS (1st Difference) LM Stat | Included in test equation |
|---|---|---|---|---|---|
| Log GDP | 0.5755 | 1.2397 | 0.0037*** | 0.1754*** | Intercept |
| Log world oil price | 0.6290 | 1.0822 | 0.0003*** | 0.1582*** | Intercept |
| Log ODA | 0.3729 | 1.1814 | 0.0000*** | 0.0412*** | Intercept |
| Log Govt final consumption expenditure | 0.8688 | 0.148657 | 0.0391*** | 0.086326*** | Intercept and trend |

**Source:** Author's analysis. *** shows test statistics are significant at 5 percent level of significance

The results in table 3 show that using PP and KPSS tests, all other variables are non-stationary at levels at 5 percent level of significance. In their first difference, all the variables are stationary at 5 percent level of significance. The study proceeds to test for cointegration among the variables under study.

## 4.3. Test for Cointegration

Cointegration test has been carried out in this study to determine if there exists any long-run relationship within variables in the model specified. The results for the Johansen cointegration test carried out in the study are presented in table 4 below.

**Table-4.** Cointegration Test Results

| Trace test of: | Trace Statistics | Critical Values |
|---|---|---|
| $r \leq 3$ | 4.446362*** | 3.841466 |
| $r \leq 2$ | 16.42644*** | 15.49471 |
| $r \leq 1$ | 33.98397*** | 29.79707 |
| $r \leq 0$ | 59.29485*** | 47.85613 |
| Maximum Eigen value | Max-Eigen Statistics | Critical Values |
| Test of: |  |  |
| $r \leq 1$ | 25.31088 | 27.58434 |
| $r \leq 0$ | 17.55753 | 21.13162 |

**Source:** Author's analysis; *** denote rejection of null hypothesis at 0.05 level of significant

The results from Unrestricted Trace Statistics (UTS) in this table indicate four cointegrating vectors at 0.05 percent level of significance; while the results from Maximum Eigen Statistics (MES) in the same table also indicate no co-integrating vectors at 0.05 percent level of significance Thus; there exists a long run relationship within variables in the model specified. Even though there were cointegrating relationships within endogenous variables in

the model, structural VAR model was selected for the study because it best explains feedback effect among a set of variables (Odongo and Muwanga, 2014).

## 4.4. Diagnostic Test

Following the cointegration test carried out in this study, the study proceeds to carry out the normality test in order to determine whether the data series in this study are normally distributed or not.

Further, Autoregressive Conditional Heteroskedasticity (ARCH) test has been carried out in this study to determine whether there exists serial correlation in the variables specified in the study and finally, the study carried out AR characteristics polynomial inverse root analysis. Details of the diagnostic test carried out in this study are indicated below.

### 4.4.1. Normality Test

Normality test has been carried out in this study to determine whether the data series estimated in the study are normally distributed or not.

**Figure-2.** Normality Test Results
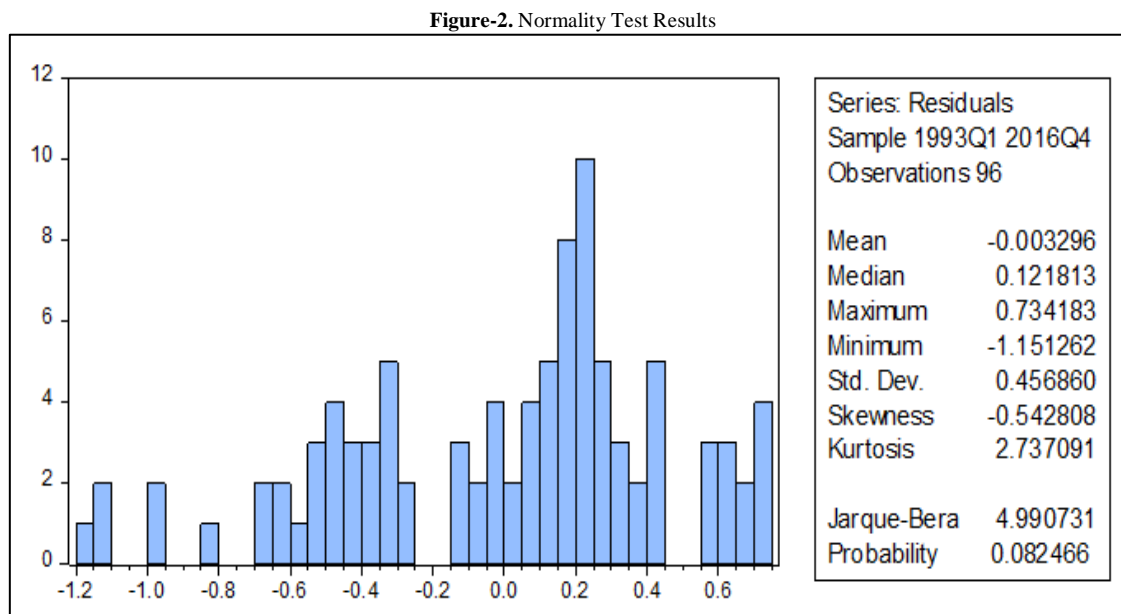


**Source:** Author's analysis

The result in figure 2 displays a histogram and descriptive statistics of the residuals, including the Jarque-Bera statistic that tests for normality. If the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic should not be significant. The reported probability in the above table, therefore, indicates that the Jarque-Bera probability of 8.24 percent exceeds the 5 percent level of significance. This study, therefore, does accept the null hypothesis of a normal distribution.

Following the normality test, this study proceeds to test for serial correlation using Autoregressive Conditional Heteroskedasticity (ARCH) test. Details of the ARCH test carried out in this study are indicated below.

### 4.4.2. Autoregressive Conditional Heteroskedasticity (ARCH) Test

The ARCH test uses autocorrelations and partial autocorrelations of the squared residuals to determine whether there exists any serial correlation in the residual of the variables in the model specified. Details of the results from the ARCH test carried out in this study are presented in table 5.

**Table-5.** Heteroskedasticity Test: ARCH

| F-statistic | 448.8669 | Prob. F(1,93) | 0.0000 |
|---|---|---|---|
| Obs*R-squared | 78.69526 | Prob. Chi-Square(1) | 0.0000 |

**Source:** Author's analysis

A small $p$-value (typically $\leq 0.05$) indicates strong evidence against the null hypothesis, meaning rejecting the null hypothesis. Under the null hypothesis of no ARCH up to order 1 in the residuals, the probability of rejecting Ho is 0.00 (table 5). At 5 percent level of significance, this study, therefore, reject the null hypothesis of no ARCH in the variables in this study.

### 4.4.3. AR Characteristic Polynomial

**Figure-3.** AR Characteristic Polynomial
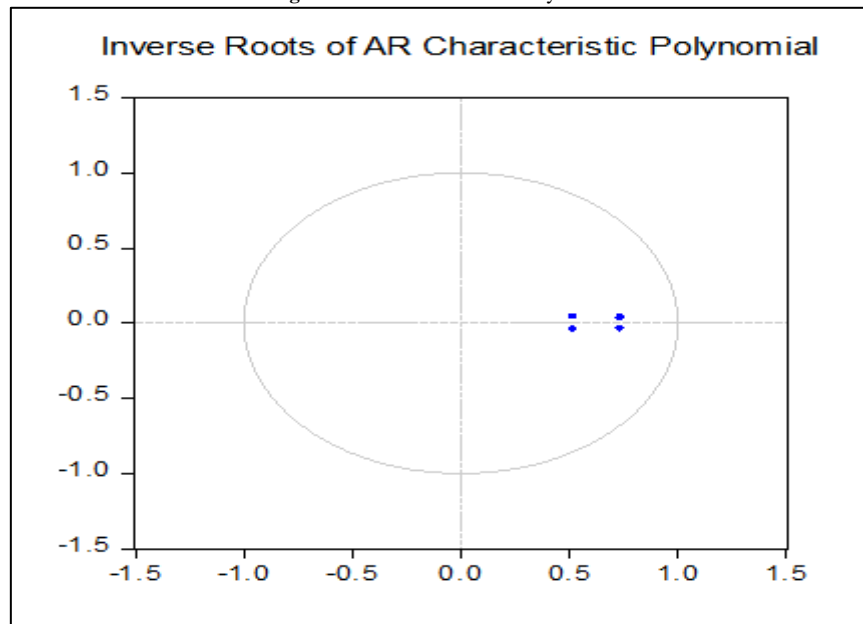


As seen in figure 3, all the roots lie in the unit circle, hence the SVAR model is stable.

## 4.5. Variance Decomposition

This section includes results for the estimate of variance decomposition of Official Development Assistance Received by Uganda, Government final consumption expenditure, GDP and world oil prices. Variance decomposition analysis has been carried out to estimate the relative importance of each endogenous variable due to world oil price shocks. The details are indicated in table 6, 7, 8, and 9 below.

**Table-6.** Variance Decomposition of Official Development Assistance

| Period | S.E. | D(LWOILPRICE) | D(LODA) | D(LGOVTEXPEND) | D(LGDP) |
|--------|------|---------------|---------|----------------|---------|
| 1 | 0.049188 | 0.895770 | 99.10423 | 0.000000 | 0.000000 |
| 2 | 0.054555 | 0.846751 | 98.66057 | 0.239961 | 0.252717 |
| 3 | 0.055900 | 1.145226 | 97.59417 | 0.684979 | 0.575625 |
| 4 | 0.056379 | 1.379052 | 96.61114 | 1.164487 | 0.845323 |
| 5 | 0.056616 | 1.491629 | 95.89910 | 1.569146 | 1.040127 |
| 6 | 0.056758 | 1.530279 | 95.42890 | 1.866889 | 1.173933 |
| 7 | 0.056847 | 1.538083 | 95.12930 | 2.068038 | 1.264578 |
| 8 | 0.056904 | 1.536960 | 94.94085 | 2.196378 | 1.325813 |
| 9 | 0.056940 | 1.535016 | 94.82287 | 2.275026 | 1.367084 |
| 10 | 0.056963 | 1.534194 | 94.74924 | 2.321814 | 1.394751 |
| Cholesky Ordering: D(LWOILPRICE) D(LODA) D(LGOVTEXPEND) D(LGDP) | | | | | |

**Source:** Author's analysis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

As per the results in table 6 above, 94.7 percent of total variation in official development assistance received by Uganda are explained by itself over the whole sample period, while 2.3 percent are explained by shocks from Government final consumption expenditure, 1.53 percent are explained by shocks originating from world oil price, and finally 1.39 percent of total variations in official development assistance received by Uganda are explained by shocks from GDP.

Following the results above, there is an insignificant pass-through effect of world oil price shocks to official development assistance received by Uganda in the period under review since quite a huge percentage of total variations in the official development assistance received by Uganda are explained by itself while only 5.3 percent are explained by shocks from other endogenous variables.

There is a likelihood for total variation in official development assistance received by Uganda in the period under study to affect the performance of Government final consumption expenditure; such that aid inflows increase is associated with the increase in Government final consumption expenditure. The variance decomposition of Government final consumption expenditure with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 7 below.

**Table-7.** Variance Decomposition of Government Final Consumption Expenditure

| Period | S.E. | D(LWOILPRICE) | D(LODA) | D(LGOVTEXPEND) | D(LGDP) |
|--------|------|---------------|---------|----------------|---------|
| 1 | 0.042948 | 0.445395 | 0.361341 | 99.19326 | 0.000000 |
| 2 | 0.053361 | 0.558555 | 0.508775 | 98.06984 | 0.862832 |
| 3 | 0.058541 | 0.697532 | 0.644892 | 96.54284 | 2.114737 |
| 4 | 0.061438 | 0.846248 | 0.756994 | 95.06916 | 3.327593 |
| 5 | 0.063145 | 0.989362 | 0.842062 | 93.83888 | 4.329701 |
| 6 | 0.064174 | 1.115887 | 0.902837 | 92.89315 | 5.088122 |
| 7 | 0.064801 | 1.220337 | 0.944319 | 92.20481 | 5.630539 |
| 8 | 0.065183 | 1.301866 | 0.971642 | 91.72332 | 6.003177 |
| 9 | 0.065415 | 1.362629 | 0.989138 | 91.39677 | 6.251467 |
| 10 | 0.065556 | 1.406203 | 1.000086 | 91.18079 | 6.412922 |
| Cholesky Ordering: D(LWOILPRICE) D(LODA) D(LGOVTEXPEND) D(LGDP) | | | | | |

**Source:** Author's analysis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

Table 7 above shows that quite a big percentage (91.2 percent) of total variations in Government final consumption expenditure are explained by itself over the whole sample period, while only 8.8 percent of the variations in itself are explained by shocks from other endogenous variables in the model. Official development assistance contributes only 1 percent of total variation in the Government final consumption expenditure.

There is a possibility for total variation in Government final consumption expenditure in the period under study to affect the performance of GDP; such that an increase in Government in final consumption expenditure is associated with the increase in GDP. The variance decomposition of GDP with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 8.

**Table-8.** Variance Decomposition of Gross Domestic Price (GDP)

| Period | S.E. | D(LWOILPRICE) | D(LODA) | D(LGOVTEXPEND) | D(LGDP) |
|--------|------|---------------|---------|----------------|---------|
| 1 | 0.026017 | 5.290398 | 3.742344 | 6.800433 | 84.16682 |
| 2 | 0.031760 | 3.856324 | 4.303134 | 9.124255 | 82.71629 |
| 3 | 0.034434 | 3.292785 | 4.589586 | 10.74970 | 81.36793 |
| 4 | 0.035849 | 3.175788 | 4.719861 | 11.77654 | 80.32781 |
| 5 | 0.036643 | 3.241383 | 4.772719 | 12.38253 | 79.60337 |
| 6 | 0.037100 | 3.356211 | 4.790958 | 12.72288 | 79.12995 |
| 7 | 0.037365 | 3.464522 | 4.795229 | 12.90666 | 78.83359 |
| 8 | 0.037520 | 3.549165 | 4.794639 | 13.00254 | 78.65365 |
| 9 | 0.037611 | 3.609364 | 4.792848 | 13.05096 | 78.54683 |
| 10 | 0.037663 | 3.649804 | 4.791140 | 13.07459 | 78.48447 |
| Cholesky Ordering: D(LWOILPRICE) D(LODA) D(LGOVTEXPEND) D(LGDP) | | | | | |

**Source:** Author's analysis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

Table 8 shows that a huge percentage (78.5 percent) of total variations in GDP are explained by itself over the whole sample period, while only 21.5 percent of the variations in itself are explained by shocks from other endogenous variables in the model. Government final expenditure contributes the highest percentage of 13.1 of the total variation in the GDP over the whole sample period.

Finally, there is a possibility for total variation in world oil price in the period under study to affect the performance of official development assistance; such that an increase in world oil price is associated with Uganda (an oil importing country) seeking more official development assistance to stabilize the economy. The variance decomposition of world oil price with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 9.

**Table-9.** Variance Decomposition of World Oil Price

| Period | S.E. | D(LWOILPRICE) | D(LODA) | D(LGOVTEXPEND) | D(LGDP) |
|--------|------|---------------|---------|----------------|---------|
| 1 | 0.071329 | 100.0000 | 0.000000 | 0.000000 | 0.000000 |
| 2 | 0.084595 | 99.20048 | 0.032266 | 0.563515 | 0.203734 |
| 3 | 0.089666 | 98.16227 | 0.063730 | 1.361083 | 0.412916 |
| 4 | 0.091837 | 97.27245 | 0.085383 | 2.100148 | 0.542018 |
| 5 | 0.092823 | 96.62728 | 0.098954 | 2.673541 | 0.600221 |
| 6 | 0.093291 | 96.19817 | 0.107374 | 3.075885 | 0.618570 |
| 7 | 0.093522 | 95.92565 | 0.112711 | 3.340722 | 0.620920 |
| 8 | 0.093640 | 95.75655 | 0.116187 | 3.507645 | 0.619620 |
| 9 | 0.093703 | 95.65266 | 0.118500 | 3.609663 | 0.619179 |
| 10 | 0.093738 | 95.58901 | 0.120055 | 3.670616 | 0.620321 |
| Cholesky Ordering: D(LWOILPRICE) D(LODA) D(LGOVTEXPEND) D(LGDP) | | | | | |

**Source:** Author's analysis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

Table 9 above shows that quite a huge percentage of 95.6 percent of total variations in world oil price are explained by itself over the whole sample period, while only 4.4 percent of the variations in itself are explained by shocks from other endogenous variables in the model.

The estimated results presented in tables 6, 7, 8, and 9 clearly show that the performance in official development assistance received by Uganda in the period under study has not been determined by world oil price neither has it been determined by Government final consumption expenditure nor GDP, but rather been determined by other operating factors in the economy. Such factors may be strategic geopolitical reasons and quality of international relations maintained by Uganda with other world economic powers.

## 4.6. Estimates of Accumulative Impulse Responses

The accumulative impulse response function for the variables in the model specified has been estimated and the results are presented in the table 10, 11, 12, and 13 below.

**Table-10.** Accumulative Impulse Response of official development assistance

| Period | D(LWOILPRICE) | D(LGOVTEXPEND) | D(LGDP) |
|--------|---------------|----------------|---------|
| 1 | -0.004655 | 0.002633 | 0.010544 |
|  | (0.00521) | (0.00460) | (0.00567) |
| 2 | -0.002777 | 0.001492 | 0.011388 |
|  | (0.00934) | (0.00762) | (0.00962) |
| 3 | 0.000476 | -0.001413 | 0.008745 |
|  | (0.01377) | (0.01161) | (0.01330) |
| 4 | 0.003313 | -0.004882 | 0.005219 |
|  | (0.01767) | (0.01563) | (0.01664) |
| 5 | 0.005308 | -0.008272 | 0.001820 |
|  | (0.02079) | (0.01922) | (0.01953) |
| 6 | 0.006527 | -0.011285 | -0.001124 |
|  | (0.02320) | (0.02228) | (0.02198) |
| 7 | 0.007165 | -0.013821 | -0.003555 |
|  | (0.02504) | (0.02486) | (0.02400) |
| 8 | 0.007416 | -0.015882 | -0.005519 |
|  | (0.02645) | (0.02706) | (0.02566) |
| 9 | 0.007432 | -0.017517 | -0.007084 |
|  | (0.02753) | (0.02894) | (0.02702) |
| 10 | 0.007317 | -0.018792 | -0.008324 |
|  | (0.02836) | (0.03056) | (0.02814) |
| Generalized Impulse, Standard Errors: Monte Carlo (100 repetitions) | | | |

**Source:** Author's analysis, ***responses exceed twice asymptotic standard errors in parenthesis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

As shown in table 10 above, there exist insignificant responses from official development assistance received by Uganda due to shocks from other endogenous variables. The estimated responses of world oil price shocks, Government consumption expenditure and GDP do not exceed the two standard error criteria of significance throughout the whole period of study. The estimated responses of the accumulative impulse response of official development assistance received by Uganda in table 10, therefore, indicate that there is an insignificant pass-through effect of world oil price shocks to official development assistance received by Uganda in the period under study.

There is a possibility for total variation in official development assistance received by Uganda in the period under study to affect the performance of Government final consumption expenditure; such that aid inflows increase is associated with the increase in Government final consumption expenditure.

The accumulated impulse response of Government final consumption expenditure with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 11 below.

As shown in table 11 below, although there are significant responses observed in the Government final consumption expenditure due to shocks from GDP, such responses are never conveyed throughout the whole sample period. The estimated responses do not exceed the two standard error criteria of significance in $7^{th}$ to $10^{th}$ period. Further, the estimated responses of world oil price shocks and official development assistance do not exceed the two standard error criteria of significance throughout the whole period as shown in table 11 below. The estimated responses in this table, therefore, indicate that the response of Government final consumption expenditure to total variations in world oil prices, official development assistance and GDP in the period under study is insignificant.

**Table-11.** Accumulative Impulse Response of Government Final Consumption Expenditure

| Period | D(LWOILPRICE) | D(LODA) | D(LGDP) |
|---|---|---|---|
| 1 | 0.002866 | 0.002299 | *** 0.010995 |
|  | (0.00483) | (0.00394) | (0.00489) |
| 2 | 0.005639 | 0.004821 | *** 0.023537 |
|  | (0.00888) | (0.00786) | (0.00893) |
| 3 | 0.008468 | 0.007300 | *** 0.035694 |
|  | (0.01350) | (0.01253) | (0.01351) |
| 4 | 0.011303 | 0.009564 | *** 0.046585 |
|  | (0.01831) | (0.01706) | (0.01860) |
| 5 | 0.014042 | 0.011531 | *** 0.055906 |
|  | (0.02291) | (0.02109) | (0.02398) |
| 6 | 0.016593 | 0.013180 | *** 0.063650 |
|  | (0.02715) | (0.02455) | (0.02948) |
| 7 | 0.018893 | 0.014528 | 0.069954 |
|  | (0.03099) | (0.02749) | (0.03500) |
| 8 | 0.020910 | 0.015608 | 0.075009 |
|  | (0.03445) | (0.02999) | (0.04047) |
| 9 | 0.022641 | 0.016461 | 0.079017 |
|  | (0.03758) | (0.03213) | (0.04588) |
| 10 | 0.024098 | 0.017128 | 0.082167 |
|  | (0.04044) | (0.03398) | (0.05122) |
| Generalized Impulse, Standard Errors: Monte Carlo (100 repetitions) | | | |

**Source:** Author's analysis, *** responses exceed twice asymptotic standard errors in parenthesis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

There is a possibility for total variation in Government final consumption expenditure in the period under study to affect the performance of GDP; such that an increase in Government in final consumption expenditure is associated with the increase in GDP.

The accumulated impulse responses of GDP with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 12.

**Table-12.** Accumulative Impulse Response of Gross Domestic Product (GDP)

| Period | D(LWOILPRICE) | D(LODA) | D(LGOVTEXPEND) |
|---|---|---|---|
| 1 | -0.005984 | 0.005577 | *** 0.006660 |
|  | (0.00280) | (0.00302) | (0.00303) |
| 2 | -0.007742 | 0.009975 | *** 0.013554 |
|  | (0.00549) | (0.00585) | (0.00550) |
| 3 | -0.007364 | 0.013243 | *** 0.019706 |
|  | (0.00835) | (0.00901) | (0.00849) |
| 4 | -0.006032 | 0.015604 | *** 0.024814 |
|  | (0.01107) | (0.01192) | (0.01188) |
| 5 | -0.004386 | 0.017291 | 0.028881 |
|  | (0.01353) | (0.01437) | (0.01541) |
| 6 | -0.002752 | 0.018493 | 0.032035 |
|  | (0.01570) | (0.01636) | (0.01893) |
| 7 | -0.001277 | 0.019353 | 0.034439 |
|  | (0.01759) | (0.01794) | (0.02235) |
| 8 | -1.42E-05 | 0.019970 | 0.036249 |
|  | (0.01925) | (0.01921) | (0.02563) |
| 9 | 0.001031 | 0.020416 | 0.037598 |
|  | (0.02070) | (0.02024) | (0.02878) |
| 10 | 0.001877 | 0.020740 | 0.038597 |
|  | (0.02199) | (0.02109) | (0.03178) |
| Generalized Impulse | | | |
| Standard Errors: Monte Carlo (100 repetitions) | | | |

**Source:** Author's analysis, *** responses exceed twice asymptotic standard errors in parenthesis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

As shown in table 12 above, although there are significant responses observed in the GDP due to shocks from Government final consumption expenditure, such responses are never conveyed throughout the whole sample period. The estimated responses do not exceed the two standard error criteria of significance in $5^{th}$ to $10^{th}$ period.

Further, the estimated responses of world oil price shocks and official development assistance do not exceed the two standard error criteria of significance throughout the whole period as shown in table 13. The estimated responses in table 13, therefore, indicate that the response of GDP to total variations in Government final consumption expenditure, world oil prices and official development assistance in the period under study is insignificant.

Finally, there is a possibility for total variation in world oil price in the period under study to affect the performance of official development assistance; such that an increase in world oil price is associated with Uganda (an oil importing country) seeking more official development assistance to stabilize the economy.

**Table-13.** Accumulative Impulse Response of World Oil Price

| Period | D(LODA) | D(LGOVTEXPEND) | D(LGDP) |
|--------|---------|----------------|---------|
| 1 | -0.006751 | 0.004760 | -0.016406 |
|   | (0.00784) | (0.00812) | (0.00782) |
| 2 | -0.012508 | 0.001337 | -0.025168 |
|   | (0.01434) | (0.01345) | (0.01409) |
| 3 | -0.016844 | -0.005163 | -0.030180 |
|   | (0.02143) | (0.02024) | (0.02091) |
| 4 | -0.019950 | -0.012266 | -0.033420 |
|   | (0.02768) | (0.02813) | (0.02786) |
| 5 | -0.022139 | -0.018866 | -0.035834 |
|   | (0.03265) | (0.03620) | (0.03453) |
| 6 | -0.023688 | -0.024550 | -0.037840 |
|   | (0.03640) | (0.04395) | (0.04075) |
| 7 | -0.024798 | -0.029242 | -0.039604 |
|   | (0.03917) | (0.05114) | (0.04646) |
| 8 | -0.025609 | -0.033013 | -0.041179 |
|   | (0.04120) | (0.05771) | (0.05171) |
| 9 | -0.026212 | -0.035991 | -0.042576 |
|   | (0.04270) | (0.06365) | (0.05651) |
| 10 | -0.026667 | -0.038315 | -0.043799 |
|    | (0.04383) | (0.06900) | (0.06091) |
| Generalized Impulse, Standard Errors: Monte Carlo (100 repetitions) | | | |

**Source:** Author's analysis, *** responses exceed twice asymptotic standard errors in parenthesis

LODA: Log of Official Development Assistance Received by Uganda; LGOVTEXPEND: Log of Government final consumption expenditure; LGDP: Log of GDP; LWOILPRICE: Log of world oil prices.

The accumulated impulse responses of world oil price with respect to other endogenous variables has been estimated in line with the above arguments and the results are presented in table 13 above. As shown in table 13 above, there exist insignificant responses from world oil prices due to shocks from other endogenous variables throughout the whole sample period. The estimated responses of official development assistance, Government final consumption expenditure and GDP do not exceed the two standard error criteria of significance in the whole period. Overall, the findings of the study contradict the school of thought which believe that world oil price shock affect a country's income and expenditure whether it's an oil importing or oil exporting country. This may further affect both the amount of aid being sought by aid receiving country as well as the amount of aid that are dispensed by donor countries.

As an example, Kingdom of Saudi Arabia announced a historic spending reductions in its 2016 budget aimed at controlling a deficit that came in at 376 billion riyals ($98 billion), that is, around 15 percent of GDP. The moves came amidst pressures on dwindling state revenues on the back of oil prices that have hit record lows (Ahmed, 2018). Equally to note, Nigeria did not borrow from external sources in huge amounts (relative to its GNI) until the late 1970s, when the world oil price started to decrease (Ahmad, 2015).

Yang and Lusignan (2010), notes that the revenues amassed by OPEC provide a big opportunity for a big role in foreign aid. So far, OPEC has stepped up and become a major player in world foreign aid for developing countries. OPEC member countries' ODA has been consistently higher than the U.N. target of 0.7%, in some countries it has been around 15%.

The ODA of the organization for economic cooperation and development (OECD) has constantly been around half of the U.N. target (Yang and Lusignan, 2010).

For example, Arab Bank for Economic Development in Africa (BADEA) associated to OPEC members, seeks to promote economic, financial, and technical cooperation between African and Arab countries. In addition, Islamic Development Bank (IsDB) also associated to OPEC members, fosters economic development and social progress in member countries and in Muslim communities in accordance with the principles of Islamic Shariah. Its membership consists of 52 countries of which Uganda is also part of it. IsDB has the authority to extend financing and raise funds in many ways and to establish special funds for specific purposes (Khusanjanova, 2011).

Generally, this study results show that performance in the official development assistance received by Uganda in the period under study has never been determined by world oil price, neither by Government final consumption expenditure nor GDP, rather been determined by other operating factors in the economy. Such factors may be strategic geopolitical reasons and quality of international relations maintained by Uganda with other world economic powers. The results of this study agree with most researchers that a combination of humanitarian and self-oriented motives lie behind the act of aid-giving, with the emphasis shifting at particular moments in time, and in relation to particular recipients and contexts as in Lancaster (2007) and Lee (1993). According to Fagernas and Roberts (2004), high levels of aid disbursement, in both the 1980s and 1990s, have occurred at times when domestic revenues were rising, suggesting that aid has not been allowed to substitute for revenue mobilization in Uganda.

## 5. Conclusion

The study assesses the effect of oil price shocks on Uganda's official development assistance in the period between 1993 and 2016 using the SVAR model. The results from the estimates of variance decomposition and accumulated impulse responses are consistent with each other. The above results indicate an insignificant pass-through effect of world oil price shocks to the official development assistance received by Uganda in the period under study. Official Development Assistance received by Uganda is independent of world oil price shocks.

## References

Ahmad, H. F. (2015). Aid and policy preferences in oil-rich countries: comparing Indonesia and Nigeria. *Third World Quarterly,* 36(7): 1349-64.

Ahmed, S. M. (2018). The impact of oil prices on the economic growth and development in the mena countries (munich personal repec archive no. 89073). Available: https://mpra.ub.uni-muenchen.de/89073/

Baffes, J., Kose, M. A., Ohnsorge, F. and Stocker, M. (2015). *The great plunge in oil prices: Causes, consequences, and policy responses.* The World Bank.

Balcilar, M., Eyden, R., Uwilingiye, J. and Gupta, R. (2014). The impact of oil price on south african gdp growth: A bayesian markov switching-var analysis (eastern mediterranean university, department of economics working paper. 15-13.

Bank of Uganda (2017). State of the economy. Kampala. Available: https://www.bou.or.ug/bou/bou-downloads/publications/StateOfEconomyReports/2017/Mar/State-of-the-Economy-report-March-2017.pdf

Baumeister, C. and Kilian, L. (2016). Forty years of oil price fluctuations: Why the price of oil may still surprise US. *Journal of Economic Perspectives,* 30(1): Available: https://www.aeaweb.org/articles?id=10.1257/jep.30.1.139

Berthelemy, J. and Tichit, A. (2002). Bilateral donors' aid allocation decisions: A three-dimensional panel analysis (world institute for development economic research, wider working paper series 123).

Bracho, G. (2015). *In search of a narrative for southern providers: The challenge of the emerging economies to the development cooperation agenda.* German Development Institute: Bonn.

Brown, S. and Yucel, M. (2002). Energy prices and aggregate economic activity: an interpretative survey. *The Quarterly Review of Economics and Finance,* 42(2): 193-208.

Chuku, C. A., Akpan, U. F., Sam, N. R. and Effiong, E. L. (2011). Oil price shocks and the dy-namics of current account balances in Nigeria. *OPEC Energy Review,* 35(2): 119–39.

Clemens, M. and Moss, T. (2005). Ghost of 0.7%: Origins and relevance of the international aid target (center for global development, working paper no. 65).

Dreher, A., Nunnenkamp, P. and Thiele, R. (2011). Are 'new' donors different? Comparing the allocation of bilateral aid between non-dac and dac donor countries. *World Develop-ment,* 39(11): 1950-68.

EIA (2014). Benchmarks play an important role in pricing crude oil. Available: https://www.eia.gov/todayinenergy/detail.php?id=18571

Fagernas, S. and Roberts, J. (2004). The fiscal effects of aid in Uganda. Odi, working and discus-sion papers. Available: https://www.odi.org/publications/1849-fiscal-effects-aid-uganda

Feeny, S. and Mcgillivray, M. (2004). Modelling inter-temporal aid allocation: A new applica-tion with an emphasis on papua new guinea. *Oxford Development Studies,* 32(1): 101-18.

Gulrajani, N. and Swiss, L. (2017). *Why do countries become donors?* : Assessing the drivers: London.

Ito, T. and Sato, K. (2007). Exchange rate changes pass through and domestic inflation: A com-parison between East Asia and Latin American countries research institute of economy (trade and industry discussion paper series no. 07-e-040).

Jiménez-Rodríguez, R. and Sánchez, M. (2005). Oil price shocks and real gdp growth: Empiri-cal evidence for some OECD countries. *Applied Economics,* 37(2): 201-28.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control,* 12(2-3): 231-54.

Khusanjanova, J. (2011). OPEC's benefit for the member countries. *Research in World Econo-my,* 2(1): Available: https://doi.org/10.5430/rwe.v2n1p14

Kumah, F. Y. and Matovu, J. M. (2005). Commodity price shocks and the odds on the fiscal per-formance: A structural var approach (imf working paper 05/171).

Lancaster, C. (2007). *Foreign aid: Diplomacy, development, domestic politics.* Uni-versity of Chicago Press: London.

Lee, W. C. (1993). Taiwan's foreign aid policy. *Asian Affairs,* 20(1): 43-62.

Lumsdaine, D. H. (1993). *Moral vision in international politics: the foreign aid regime, 1949-1989.* Princeton University Press: Princeton, N.J.

Moshiri, S. (2015). Asymmetric effects of oil price shocks in oil-exporting countries; the role of institutions. *OPEC Energy Review:* Available: https://www.researchgate.net/publication/280394383_Asymmetric_effect_of_oil_price_shocks_in_oil-exporting_countries_the_role_of_institutions

Neumayer, E. (2002). Is good governance rewarded? A cross-national analysis of debt for-giveness. *World Development,* 30(6): 913-30.

Odongo, T. (2013). *The effect of trade liberation on uganda's lint export.* PhD thesis, Makerere University.

Odongo, T. and Muwanga, J. W. (2014). Price pass-through effect within uganda's cotton in-dustry following trade liberalization. *American Journal of Economics,* 4(4): 159–70. Available: https://doi.org/10.5923/j.economics.20140404.01

Raghavan, M. (2015). The macroeconomic effects of oil price shocks on asean-5 economies (tasmanian school of business and economics, discussion paper series no.2015-10).

Rist, G. and Camiller, P. (2002). *The history of development: From western origins to global faith.* 2nd edn: Zed Books: London.

Siok, S. K. and Zhanna, K. (2008). Pass through of exchange rate into domestic prices: The case of four East Asian countries (mpra papers no.11/30).

Suleiman, M. (2013). *Oil demand, oil prices, economic growth and the resource curse: An empirical analysis.* PhD thesis, University of Surrey.

Tang, W., Wu, L. and Zhang, Z. (2010). Oil price shocks and their short- and long-term effects on the Chinese economy. *Energy Economics,* 32(1): S3–S14. Available: https://doi.org/10.1016/j.eneco.2010.01.002

United Nations General Assembly (1945). *UN Charter.* United Nations: NewYork.

Yang, R. and Lusignan, B. (2010). OPEC: An Analysis of Future Economies and Aid. *Research in World Economy:* Available: http://www.stanford.edu/class/e297a/OPEC-AnAnaly-sisofFutureEconomiesandAid.pdf