Commodity Price Shocks And Macroeconomic Performance In Sub-Saharan Africa

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ABSTRACT

This study investigated the relationship between commodity price shocks and output growth in Sub-Saharan African countries using panel data which covered the period between 2005 and 2017. Data for the study were sourced from the World Development Indicators (WDI). Data base of the World Bank, The IMF'S International Financial Statistics (IFM) and Publications of Central Banks of various countries selected. The study employed Generalized Movement Average (GMM) as the estimation technique. Findings from the study showed that positive changes in the prices of export commodities has little positive impact on macroeconomic performance in Sub-Saharan Africa while negative price change has negative and significant impact on macroeconomic performance in Sub-Saharan African countries during study period. Based on these findings, the study therefore concludes that the relationship between commodity price shocks and macroeconomic performance in Sub-Saharan Africa is asymmetric. The study recommends that countries in Sub-Saharan Africa should introduce and implement policies to withstand shocks that may come from commodity price shocks such as economic diversification not only in area of agriculture but also in the area of industrialization and manufacturing.

Keywords: Commodity Price Shocks, Output Growth, GMM and Sub-Saharan Africa.

SECTION ONE

Introduction

Fluctuations in the commodity prices cut across both oil and non-oil producing countries in Africa. For instance, the sudden reduction in crude oil price at international oil market exposed oil producing countries particular Africa oil producing countries to various degrees of challenges in managing their macroeconomic performance particularly Nigeria, Ghana, Cameron, Angola, Equatorial Guinea, South Sudan, Sudan, Republic of the Congo, Gabon and Chad while non-oil producing states such as Samba, Zimbabwe, Senegal, Tanzania experienced slow economic growth because of agricultural commodity price fluctuations. Other African countries have their own fair share from severe drought.

Fluctuation and reduction in production and exploitation of certain commodities (Oil and Agricultural products) came in recent time as a result of various attacks by some groups. Take for instance, Islamic extremists, such as Boko-Haram in Nigeria, Niger, Cameroon, Siea in Sudan, Islamic fundamentalist in Central Africa and also the Niger delta militant in Nigeria. These fluctuations in commodity price might have influenced the macroeconomic performance of Sub-Saharan African economies either positively or negatively. It has been established that commodity price uncertainty and shocks pose more challenges for those nations that engage in the production and exportation of primary and intermediate products, World Bank (2014). These challenges are experienced not only by government, also producers in the affected countries have their own fair share. Take for instance, envisaged changes in export prices may complicate budgeting process and can hamper the attainment of debt targets. This is very common in developing nations that mostly depend on earnings from export of primary and intermediate products for buck of their revenues. For producers (exporters) price fluctuation stimulates increase in cash flow variability which eventually retards collateral value of inventories, this combine to accelerate interest rate for peasant producers. Also, inadequate savings and lack of access to credit facilities cope with revenue fluctuation through crop diversification may likely ignore specialization which may eventually leads to a roning stone that garders no moose. (hack of specialization).

Furthermore, commodity price uncertainty may generate inflationary pressure especially in developing nations (Sub-Saharan African inclusive). Majority of the countries in Sub-Saharan Africa might have had their economic growth been influenced positively or negatively, this might have occurred as a result of unstable commodity prices. Inflation as it has been established by some studies Saliu (2004) Muham, (2000) and Godwin, (2007) is not only being driven by oil price changes but also determined to some extent by food prices. A good example is the global food price increased in 2008 especially for wheat, soya-bean and corn. Domestic commodity prices can as well be driven by global commodity prices. The identified determinants of increase in commodity prices are gab between supply and demand for foods, the growing presence of financial investors and speculator in the commodity markets in case of financialization of commodities. Also, unpredictability of weather is another major reason for decrease or increase in commodity production and prices.

Additionally, in African countries, particularly in Sub-Saharan Africa, the relationship between commodity and macroeconomic performance is worrisome and paradoxical. Paradox in that, when there is an increase in commodity prices, particularly oil price, the macroeconomic performance mostly remains constant or relative increase, but when prices of these commodities fall at international markets, macroeconomic performance suffers greatly. A very good example was the recent reduction in crude oil price of mid-2014. During this period, many of the African oil producing countries were exposed to different macroeconomic instability to an extent that some of their economies went into recession.

There have been studies on the relationship between commodity price fluctuation and macroeconomic variables, Michael (2014), Jan (2000), Stephen, (2014), Paul and Benedict, (2007), Afolabi (2017) and others. However, empirical findings from most of these studies produced conflict results which might be due to the fact that some fundamental variables (investment and domestic interest rate) were not incorporated into their models. Most of the previous studies concentrated on prices of commodity rather than nature and pattern of unstable commodity price

which is one of the major determinants of macroeconomic performance. This therefore, makes this present studies to depart relatively from some of the previous studies in two fold. Firstly, in this study, macroeconomic performance was measured by two indicators; namely, investment and output growth rate and also the trends of major agricultural products which form the bulk of a export goods in Sub-Saharan Africa countries were considered.

The rest of the paper is structured thus; this introductory section is followed by section two that presents the empirical literature. Section three centers on methods and materials. Section four deals with results and discussions while section five concludes the paper.

SECTION TWO

Empirical Literature

Studies have been conducted both in developed and developing countries to consider the relationship between commodity prices and macroeconomic variables. Some of these studies are presented here empirically to provide guides and directions for this present studies.

Tony and Alanu (2014) examined the agriculture commodity price shocks and their effects on growth in Sub-Saharan Africa. The study employed vector autoregressive model as estimation technique. Findings from the study revealed that there was evidence of asymmetric responses of growth of selected economies to shocks emanating from commodity price shocks. In a similar study, Michael (2014) investigated the impact of commodity price shock (copper and chile) on the growth of selected economies in Africa using VAR. Findings from the study showed that both the negative and positive commodity price fluctuation impacted the economies of the selected countries. The negative commodity price has much impact on the selected economies.

Cashin, (2002), employed VAR to estimate the relationship between commodity price fluctuation and output growth. A comparative study of oil and non oil producing countries. Finding showed that commodity price fluctuation has much negative impact in oil producing countries than non oil exporting countries. Frankel and Campell, (2006), studied the connections between monetary policy in agricultural sector and mineral commodity in Liberia. The study employed GARCH as estimation technique. Finding from this study revealed that monetary policy showed a considerably impact on the selected two sectors of Liberian economy. Spatafora and Samke, (2012) examined the impact of commodity prices shocks on fiscal outcomes in some selected African countries. The study employed vector autoregressive as estimation technique. Finding from this study showed that government revenue and expenditure response to commodity price increase. Arezki and Bruckerner, (2010) investigated the effects of international commodity price shocks on external debt in ninety three countries of developing nations. The study employed the conventional methods of structural Vector Autoregressive model as estimation technique. Finding revealed that increase in the international commodity price for export commodity were associated with significant reduction in external debt. In another study, Stephen, (2014), examined the sectoral impact of commodity price shocks in Australia. The study employed structural vector autoregressive as estimation techniques. Findings from the study revealed that commodity price shocks largely affect the mining, construction and manufacturing industries in Australia. However, the financial and insurance sectors were discovered to be relatively affected. Jan (2000) studied commodity price uncertainty and shocks in developing countries. The study employed GMM as estimation technique. Findings showed that per-capital growth rates are significantly reduced by

large discrete negative commodity price shocks. Walter and Alfred, (1990) investigated commodity price fluctuations and macroeconomic adjustment in some selected developing countries. The study made used of Granger causality as estimation technique. Findings showed that commodity price fluctuation brought about instability in macroeconomic performance of those selected developing countries. In a related study, Nicholas, (2016) examined commodity price and income inequality from 2000 to 2014 in selected developing countries using panel co-integration. Finding from these studies showed that there was no significant relationship between commodity price and income inequality in the selected countries.

Jing He (2009) examined macroeconomic response to crude oil price change in China between 1999 and 2004. The study employed input-output as estimation technique. Finding from the study revealed that the response of macroeconomic fundamentals to shocks emanating from oil price change was positive and significant. In the same line of study, Landgraf and Chowdhury (2010) investigated the relationship between global liquidity and commodity price in emerging economies between 1980 and 1998. The study made use of Structural vector autoregressive distributive model as estimation technique. Finding from the study showed that excess liquidity was found to be one of the major determinants of growth and variation in prices than unexpected demand shocks during the study period. Thomas (2016) examined the impact of commodity price uncertainty on the growth of developing countries using panel cointegration. Finding from this study showed that commodity price change has no significant impact on the growth of developing countries. In an attempt to advance literature on this, Hassan and Salim, (2011), examined the interactions among commodity prices, inflation, unemployment and short term interest rate in Australia between 1980 and 2009. The study employed VAR as estimation technique. The results from the study revealed that positive shocks from commodity price stimulate both inflation and unemployment during the study period.

To further contribute to the existing literature, Hangnite, (2015) examined the effect of commodity prices on economic growth in African countries between 1999 and 2014. The study employed panel Structural VAR as estimation technique. Result from this study showed that an increase in commodity price is more likely to benefit African economies than hurting them. Also, Deaton and Thomas (2106), examined the relationship among commodity price shocks, growth and structural transformation in low-income countries. The study made used of panel VAR as estimation technique. Finding revealed that macroeconomic conditions do not respond to individual low income country conditions contemporaneously. This implies that a one standard deviation increase in commodity prices rises per capital income in developing countries by 26% and government spending investment by 4.4% and 12.4% conclusively.

In summary, the empirical literature reviewed above is far reaching with respect to the relationship between commodity price fluctuation and macroeconomic performance in Sub-Saharan Africa countries. However, findings from those studies reviewed produced contradictory results, Salim (2011), Hangnite (2015) and Thomas (2016) conclude that commodity price fluctuation did not in any way affect output growth in their various studies while, Stephen (2014), Cashin (2012) Tony and Alanu (2014) conclude in their studies that commodity price fluctuation have negative and significant effects on output growth. Besides, most of the studies reviewed employed annual data which does not abstract from the business cycle phenomenon. Also, most of these studies employed different panel estimators which induced biases in infinite sample and poor precision

asymptotically. This present study tries to overcome the shortcomings in the previous studies by using quarterly data and GMM as estimation techniques.

SECTION THREE

In this section, theoretical underpinning, model specification estimation techniques and sources of data are presented.

Model Specification

The model for this study takes it root from sport price model, sticky and flexible price model that capture the seasonal effects of price dynamics and effects of money on growth and savings. However, space constraint may not permit us to illustrate this theory mathematically.

Two models are being specified to capture the relationship between commodity price shocks and macroeconomics performance in Africa. Gross fixed capital formation and real gross domestic products growth rate are used to proxy macroeconomic performance. These two variables are used as dependent variables, while price index of the export commodity, terms of trade index, real effective exchange rate and inflation rate are explanatory variables.

Model 1 GDPgr = F(XCP, TOT, REER, INF, GFCF, μ)
Model 11 GFCF = F(XCP, TOT, REER, INF, GDPgr, μ)

The estimation techniques for this study is Generalized Moment average (GMM)

Data for the study which were quarterly in nature were source from statistical publications of the Central Bank of Selected Countries, World Development Indicators (WDI) Database of the World Bank and the IMF International Financial Statistics (IFS) database.

SECTION FOUR

4.1 Empirical Analysis

This section presents the empirical analysis of the model. The first step was to determine the behaviour of the variables by conducting the descriptive statistics. Next was the panel unit root test for the variables of interest. Here, the IM Pesaran and Shin panel test were explored. Thereafter, the trends analysis of the major export commodities were examined. Also, the interactions among the variables of interest were considered by GMM. Finally, the discussion of finding was presented.

Table 4.1

Statistics	Ingdp	Inexcp	Inreer	Ininf	Intot	Ingfcf	Inewop
Mean	1.436457	4.759142	4.565666	2.031839	4.799625	22.21784	31.72345
P50	1.568616	4.801767	4.569489	2.066863	4.815479	22.74838	30.23456
Sd	.6730372	.3708493	.2046	.6447846	.3450583	2.070946	2.345621
Skewness	-2.031067	-.7150207	.1650733	-.559005	.3545354	-.1348283	15.45077
Kurtosis	8.764562	3.231058	2.650326	4.158404	2.353369	1.64954	2.34567
Cv	.4685396	.0779236	.0448127	.3173405	.0718928	.093211	1.145621

Source: Author's computation

From table 4.1, the mean values for the GDP, price of the export commodity, real effective exchange rate, inflation rate, terms of trade, and gross fixed capital formation and world oil price were 1.436457, 4.759142, 4.565666, 2.031839, 4.799625, and 22.21784, 31.72345 respectively. Also, the standard deviation values were 0.6730372, 0.3708493, 0.2046, 0.6447846, 0.3450583, 2.070946 and 2.34572 respectively.

The coefficients of variation were 0.4685396, 0.0779236, 0.0448127, 0.3173405, 0.0718928, 1.1456212 and 0.093211 also respectively. Values for the GDP, export price, inflation rate and gross fixed capital formation were negatively skewed. The peakedness of the GDP and the inflation rate were higher than the normal distribution (i.e. leptokurtic) while that of the terms of trade and the gross fixed capital formation were lower (i.e. platykurtic).

4.2 Correlation Test
The pair wise correlation coefficients of all the variables employed in the study are presented in table 4.2. The result showed that there were weak correlation between gross domestic product (GDP), export commodity price (XCP). Real effective exchange rate (REER), World Oil Price (WOP), inflation rate and they were not also statistically significant, while the result showed positive and significant relationship between output growth rate, gross fixed capital formation and term oftrade. There was positive correlation between inflation (INF), GDP, export commodity prices and real effective exchange rate. Terms of trade (tot) shows that oil price has statistically significant and positive correlation with GDP, export commodity prices and inflation. Conversely, a negative and statistically insignificant correlation was obtained between terms of trade and real effective exchange rate. The relationship among gross fixed capital formations (GFCF), GDP, and export commodity prices was positive and not statistically significant. However, gross fixed capital formation exhibited a negative correlation with real effective exchange rate. The relationship between gross fixed capital formation and inflation as well as terms of trade was positive and statistically significant. Also, the relationship between oil prices was negative and also insignificant.

Table 4.2: pair wise correlation

	lngdp	lnxcp	lnreer	ininf	lntot	OP
lngdp	1.0000					
lnexcp	0.1966	1.0000				
	0.0618					
lnreer	0.0176	0.1293	1.0000			
	0.8715	0.2193				
lninf	0.0175	0.1012	0.0465	1.0000		
	0.8715	0.3291	0.6615			
lntot	0.2697	0.2449	-0.1385	0.3166	1.0000	
	0.0097	0.0162	0.1880	0.0018		
lngfcf	0.1316	0.0372	-0.0985	0.2181	0.6225	1.0000
	0.2139	0.7190	0.3503	0.0337	0.0000	
OP	0.3221	0.7121	0.6221			

Source: author's computation

4.3 Panel Unit Root Test

Table 4.3 presents the panel unit root test result for the variables of interest. The level of stationarity of the variables of interest was tested using the IM Pesaran and Shin panel unit root test. All the variables namely GDP, XCP, REER, TOT, INF and GFCF became stationary at first difference.

Table 4.3 IM PESARAN and SHIN PANEL UNIT ROOT TEST

S/N	At levels	Critical value at 5%	At first difference	Critical value at 5%	Remark
OP	-1.8212	-3.21	-2.1123	-2.3421	I(1)
GDP	-1.9131	-2.020	-2.4696	-2.020	I(1)
XCP	-1.7067	-2.020	-1.9085	-2.020	I(1)
REER	-0.6628	------	-1.9960	------	I(1)
TOT	-1.4757	-2.020	-1.8891	-2.020	I(1)
INF	-1.7652	------	-2.2180	------	I(1)
GFCF	-1.3419	-2.020	-2.2585	-2.020	I(1)
WOP	-0.8246	-------	-1.8241	-2.045	I(1)

Source: author's computation

Unit root test results on table 4.3 showed that the variables of interest because stationary at first difference. This implies that variables of interest are integrated of order 1(1).

TRENDS OF MAJOR AGRICULTURAL EXPORTED COMMODITIES IN SUUB-SAHARAN AFRICA COUNTRIES
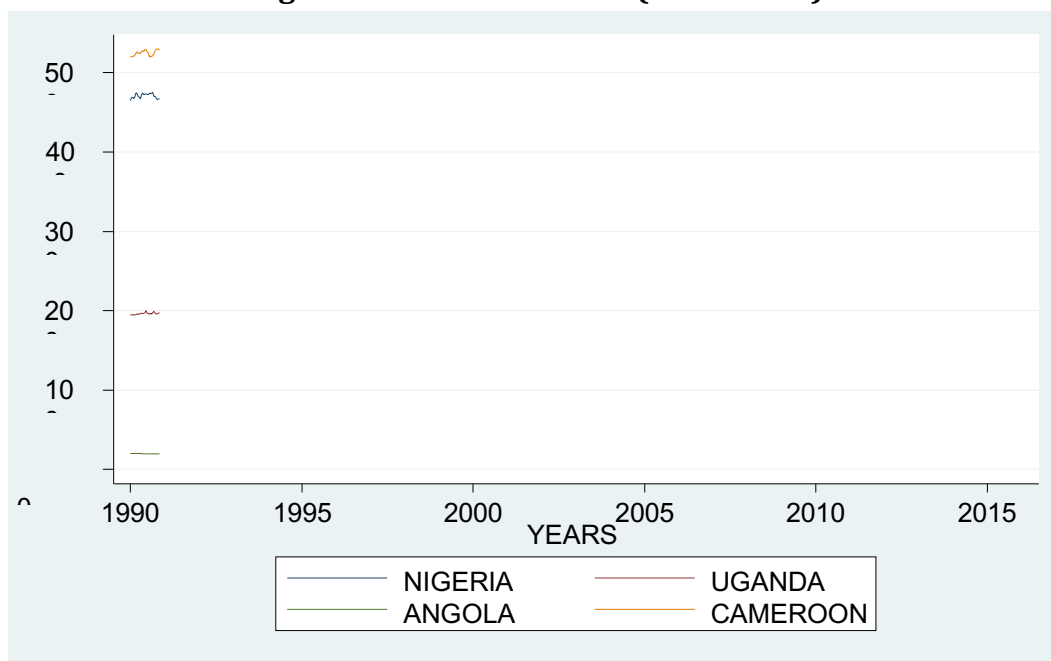**Fig. 1: TREND OF COTTON (1990-2016)**

Figure 1 showed trends of cotton production in Nigeria, Angola, Uganda and Cameroon over a period of 27 years. As shown in the figure, Nigeria and Cameroon maintained rising production of cotton between 1990 and 1995 after which Nigeria's output fell sharply between 1996 and 1999 while Cameroon production output declined mildly. Output of both countries rose thereafter settling at a peak value of 470 (1000 480 IB.Bales) in 2010 for Nigeria and 500 (1000 480 IB.Bales) in 2004 for Cameroon. Cameroon output fell drastically between 2005 and 2007 settling at 275 (1000 480 IB.Bales), but later rose sharply to an all-time high of 530 (1000 480 IB.Bales) in 2014.Cotton output in Nigeria maintained an upward trend between 2005 and 2010 but declined sharply to 325in 2012. While both Nigeria and Cameroon cotton output trended upward in a wave like manner over the period, Uganda output trended mildly during the same period, moving from the lowest value of 18 (1000 480 IB.Bales) in 1993 to 125(1000 480 IB.Bales) in 2003 and 170(1000 480 IB.Bales) in 2011, before settling at 125(1000 480 IB.Bales) in 2016 Observably Angola cotton production decline over the period despite it was the lowest amidst the four countries.
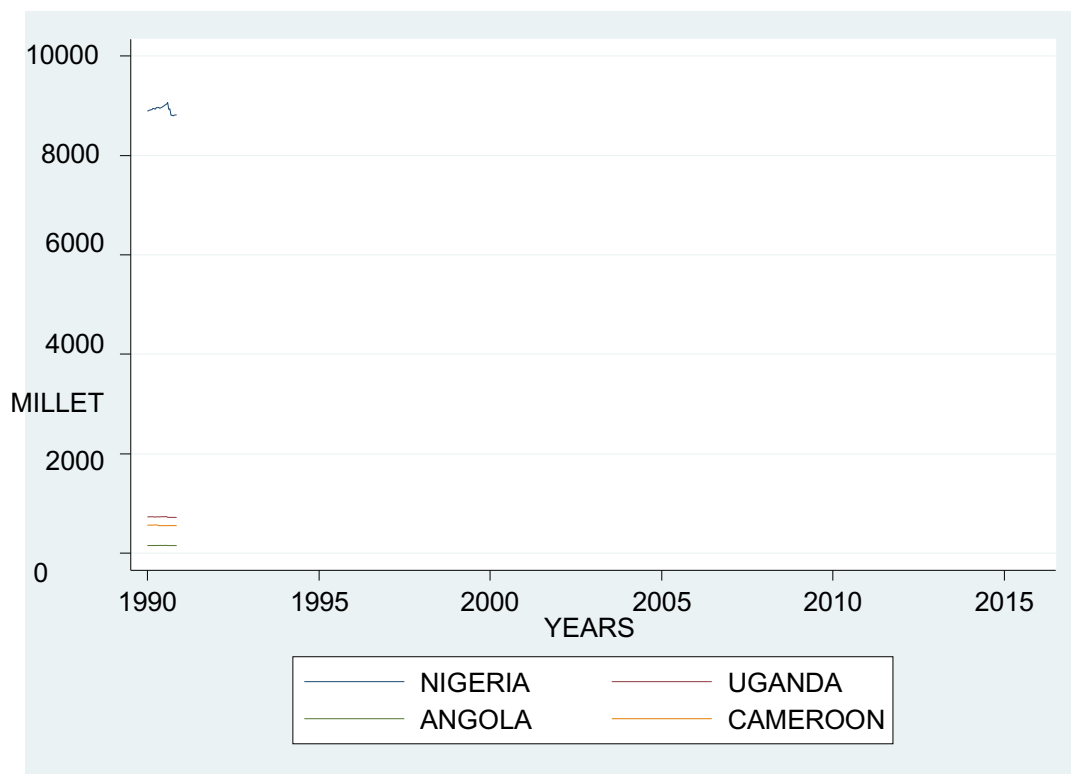
Fig. 2: TREND OF MILLET (1990-2016)

Figure 2 showed output of millet for Nigeria, Uganda, Angola, and Cameroon over the period 27 years. The figure revealed that Nigeria maintained the highest level of millet production all through the years period under consideration moving from 3800(1000 MT) in 1990 to a peak value of 9064(1000 MT) in 2008, but fell drastically between 2009 and 2013 to an all-time low value of 910(1000 MT). Millet production for Uganda, Angola and Cameroon is relatively low throughout the period with a mild decline for Uganda from 1995 to 2016, Cameroon from 1998 to 2016 and Angola from 2003 to 2016.
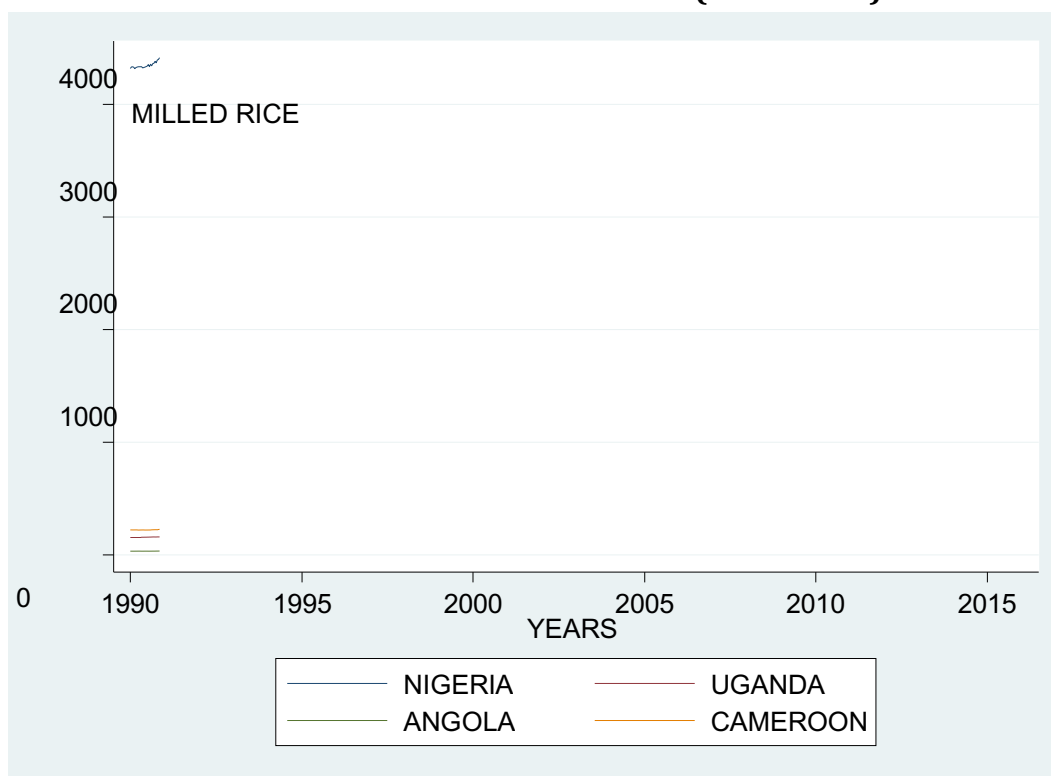
FIGURE 3:TREND OF MILLED RICE (1990-2016)

Figure 3 showed trend of milled rice production in Nigeria, Angola, Uganda and Cameroon over the period of 27 years. As shown in figure 3, Nigeria also maintained the highest level of output over the years. Production of milled rice rose progressively over the yearssettling at a peak value of 4410 (1000 MT) in 2016 from 1500 (1000 MT) in 1990, with an average growth rate of 5.24%.Relatively, output for other countries (Uganda, Angola and Cameroon)is very low with no definite trend over time. For Uganda output value only rose from 0 in 1990 to 159 (1000 MT) in 2016, for Angola it rose from 3 (1000 MT) in 1990 to 38 (1000 MT) in 2016, and for Cameroun milled rice production rose from 66 (1000 MT) in 1990 to 226 (1000 MT) in 2016.

From the trends analysis, overview of agricultural out in countries selected across Africa region reflect a clear cut indication that Nigeria out-performed other Africa countries in agricultural production in the last 3 decades reason which could be attributed among other things to the rich agricultural land in the country as well as labour availability due to the population size of the country (7Th Largest in the world).

4.4 System GMM Results

The result of the one- step system GMM is presented in table 4.4 where GDP is the dependent variable. Sargan test was conducted to ascertain the validity of the instrument employed in the study.

The statistically insignificant value of the Sargan statistics showed that the choice of the instrument was appropriate. Also, the model was tested for auto correlation in the first second order. Although, there was an indication of serial correlation of the error in the first model, no evidence of

autocorrelation was observed in the second model. In the result obtained on the effect of export commodity prices on real GDP growth, it was reviewed that the term of trade and inflation were statistically significant at 5% and 10% levels. Other variables, namely export commodity prices, real, effective exchange rate and oil price were not statistically significant. A close look at the coefficient of parameter suggests that export commodity prices showed a positive relationship with GDP growth. It showed that a percentage increase in price of export commodity lead to GDP growth. Since terms of trade showed a positive and statistically

significant relationship with GDP growth. It implies that a percentage increase in terms of trade brings 0.4% improvement in GDP growth in SSA. In line with the theory, inflation exhibited a negative relationship with GDP growth this showed that a percentage increase in inflation lead to 0.2% decline in the GDP growth in SSA. A plausible reason for the statistically insignificant value of the coefficient of export commodity prices could be as a result of Dutch Disease phenomenon that characterized export commodity in SSA. Also, world oil price showed positive but insignificant relationship with output growth. The reason for this might be as a result that world oil price is unstable in recent time especially from 2008 till date.

Table 4.4: Dynamic panel – date estimation, one step system GMM of Model 1

S/N	lngdp	Coef.	Std. Err.	Z	p>/z/	(95% Conf.	Interval
1	L1. lngdp	.29220704	.1809651	1.61	0.106	-0.624776	.6468925
2	lncp	.0717121	.2133339	0.34	0.737	-.3464146	.4898388
3	Lnreer	.3153982	.3258027	0.97	0.333	-.3231633	.9539598
4	lntot	.4603327	.2149559	2.14	0.032	.0390268	.8816386
5	lninf	-.2320578	.128817	-1.80	0.072	-.4845343	.0204188
6	OP	-.362311	1.834562	-1.42	0.0671	-7.21141	1.32112
7	_cons	-2.482852	1.893305	-1.31	0.190	-6.193661	1.227958

Source: Author's computation
Arellano-Bond test for AR (1) in first differences: z =-2.30 Pr>z = 0.022
Arellano –Bond test for AR (2) in first differences: z = 0.17 Pr>z = 0.869
Sargan test of overid. Restrictions: chi2 (1) = 1.89 Prob> chi2 =0.170
(Not robust, but not weakened by many instruments.)

The dynamic panel data estimation for model 2 with gross fixed capital formation as the dependent variable is present in table 4.5. Again, the validity of the instruments was tested using the Sargan test of overriding restrictions. The statistically insignificant value of the Sargan statistic showed that the instruments employed were valid. The model was tested for autocorrelation in the first and second order respectively. It was revealed that although there was serial correlation of errors in the first model, there was no evidence of autocorrelation in the second model. The estimation showed that the one period lagged gross fixed capital formation and inflation were statistically significant. This suggests that a percentage increase in previous year domestic investment would increase the current year investment by 0.9%. Contrary to theory, inflation exerted a positive and statistically significant effect on gross fixed capital formation. This implies that a one percent rise

in inflation would increase gross fixed capital formation by 0.1%. The coefficient of other variables in the regression namely, export commodity prices, real effective exchange rate, oil price and terms of trade were not statistically significant. The statistically insignificant value of the coefficient of export commodity prices could be as a result of the fact that most of the proceeds from export commodity particularly oil are not being utilized appropriately. Also, statistical positive and significant relationship between oil price and investment in the model shows that to some extent oil price determines investment level in the selected Sub-Saharan African countries.

Table 4.5: Dynamic Panel – data estimation, one-step system GMM of Model 2

S/N	lngfcf	Coef.	Std. Err.	z	P>|z|	(95% Conf.	Interval
1	L1.	.9182189	.0594979	15.43	0.000	.8016051	1.034833
2	lncp	-.0835544	.0937028	-0.89	0.373	-.2672086	.1000998
3	Lnreer	-.0298464	.1242601	-0.24	0.810	-.2733916	.2136988
4	lntot	.2515962	.2273536	1.11	0.268	-.1940086	.6972011
5	lninf	.1011175	.0445149	2.27	0.023	-01387	.188365
6	_cons	.9937698	.873099	1.14	0.255	-7174729	2.705012
7	OP	.93321	.824113	1.33	0.03421	-.624112	3.4562

Source: Author's computation

Arellano-Bond test for AR(1) in first differences: z = -3.42 Pr> z = 0.001
Arellano-Bond test for AR(2) in first differences: z = -0.54 Pr>z = 0.588
Sargan test of overid. Restriction: chi2(5) = 2.82 Prob> chi2 = 0.727

DISCUSSION OF RESULTS

The presentation and analysis result of this study commenced with the descriptive statistics which showed that all the variables used in the estimation have means that were much closed to the maximum limit. This shows that the commodity prices were relatively high but did not contribute significantly to the growth of the selected economies during the study period. The results from descriptive statistics further showed that, all the variables of interest employed in this were negatively skewed. However, the peakedness of the GDP and inflation rate were higher than the normal distribution (i.e. Leptokurtic) while that of the terms of trade and the gross fixed capital formation were lower (i.e. Platykurtic). This finding is in line with the finding of Olomola and Adejumo, (2006) as well as Olajide, (2010) where it was established that there was trade-off between imported commodity prices in developing countries particularly Nigeria. This however, always brings about unfavorable terms of trade. Also, oil price showed the highest variance among the variables of interest. The implication of this is that, oil price is highly unstable. This is clearly evident of the incessant changes in the crude oil market since 1980s. this finding is equally compatible the result obtained by Aliyu, (2011), where it was found that in the last two decades, there have been unprecedented in the growth of developing economies as a result of dynamics in oil price at international oil market. After the descriptive statistics, what followed was IM Pesaran and Shin panel unit root test. From the results, all the variable of interest became stationary after the first difference. This finding is in line with the study of Gabriel, (2016). Thereafter, trends of the most exported commodities in Sub-Saharan Africa were done. From these trends analysis, it was revealed that both upward and downward trends were followed by most of the commodities employed. This finding also corroborates the finding of Afolabi, (2016). The correction test was equally carried out in this study, it was established that there was weak correlation between gross domestic product and export commodity prices. This finding is also in line with finding of Ojo,

(2011), but negates the finding of Emmanuel, (2013). Results from GMM results showed that term of trade and inflation were significant determinants of investment while other variables did not show significant relationship with investment proxed by gross fixed capital formation. However, the price of export commodity did not show significant relationship with output growth during the study period. The statistically insignificant value of the co-efficient of export commodity prices could be as a result of the fact that most of the proceeds from export commodity during booms were not effectively utilized. The finding is in line with the study of Ogunmayowa, (2016), Folorunso, (2010), but negates the finding of Gabriel, (2011) and Lao, (2016).

SUMMARY AND CONCLUSION

The study examined the relationship between commodity price shocks and macroeconomic performance in Sub-Saharan Africa between 2005 and 2017. The study empirically analyzed the level of relationship between prices of exported commodities and output growth rate. In this regards, output growth rate was tested with other variables such as term of trade, oil price, real effective exchange rate, inflation Rate and the level of investments which was captured by fixed capital formation.

The results from the study showed that changes in the prices of export commodities had little though positive impact on the output growth rate. However, terms of trade had much greater influence on output growth rate while a rise in the level of inflation leads to a fall in output growth rate in those countries selected for this study. Also, the study showed that level of inflation contrary to theory displays that an increase in the level of investment in particular year could lead to further increase in the level of investment in the subsequent year. Whereas an increase in the prices of export does not lead to the much expected increase in the level of investment as confirmed in previous studies, Michael (2014), Tony and Alamu, (2014), Jan, (2000), Afolabi (2017) and others. Generally, the growth rate of output and an increased in the level of investment were associated with increased in the price of export commodities, world oil price of inflation rate as well as a favorable Terms of Trade.

POLICY IMPLICATIONS

These inferences can be drawn from the results of this study;

i. That investment level in the selected countries is determined to some extent by price of export commodity, Agricultural products, Terms of Trade, Inflation rate and World Oil Price.
ii. Also, an increase in the price of export commodity tends to produce favorable balance of trade thereby contributing positively to the output-growth rate in the selected countries
iii. Unfavorable balance of trade reduces the level of investments.
iv. Inflation neglects theory by investment captured by grossed fixed capital formation showing a positive relationship with investment.

Based on these findings, the study therefore concludes that positive changes in export commodity prices did not bring significant positive change in macroeconomic performance while negative change in price of export commodity brings negative and insignificant charges in the macroeconomic performance in Sub-Saharan Africa countries. In this regards, the study recommends that governments in various selected countries should identify the sources of commodity price shocks when considering policy option in response to commodity price

fluctuations and also government should pursue effective policies that will enhance effective usage of natural resources windfall.

References

Addison T. and Ghoshray (2013): Agricultural Commodity Price shocks and Their Effect on Growth in Sub-Saharan Africa. UNU-WIDER working paper No. 2013/098

Arezki R. and Bruckner M. (2010): International Commodity Price Shocks, Democracy and External Debt. IMF working paper No. 10/53

Alexander C, Bristol M, and Smet G. (2008), "Price Volatility and the World Trade" Journal of International Economics 8: 453-5

Aliyu, S. U. R. (2011). "Oil Price Shocks and the Macro Economy of Nigeria: A Non-linear Approach". Journal for International Business and Entrepreneurship Development, 5(3)

Azzoni, c. (2006), "Commodity Price Changes and Their Impacts on Poverty in Developing Countries: The Brazilian Case". Department of Economics, University of Sao Paulo, Brazil

Baffes, J., (2007), "Oil Spill on Other Commodities", the World Bank, Policy Research Working Paper, WPS4333.

Browne, F., Cronin, D., (2010), Commodity Prices, Money and Inflation. Journal of Economics and Business 62,331-345.

Cashin P.C. (2002), "The Long-run Behavior of Commodity Prices" IMF Staff Paper 46(6).

Cashin, P., McDermott, C.J., and Scott, S., (2004), "The Myth of Commoving Commodity Prices", IMF Working Paper, WP/99/169.

Central Bank of Nigeria (2014), "Commodity Price, Money and Inflation" Policy Research Working Paper 1468

Chen J.B and Rogoff E.A. (2003), "Exchange Rate Policy Reconsidered". Occasional Paper 10, Group of Thirty, New York, NY.

Christopher Muller (2006), "Poverty Simulation and Price Changes". Working Paper AD 2006-13.

Collier P. and Goderis B. (2008). Commodity Prices, Growth and the Natural Resources Curse: Reconciling a Conundrum, Oxford Journals.

Deaton A. and R. Miller (1995): International Commodity Prices, Macroeconomic Performance, and Politics in Sub-Saharan Africa. Princeton, NJ: Princeton Studies in International Finance, No.79.

Etharaht G. and geureneau c. (2011). "commodity price, money and inflation" central bank of Nigeria working Paper series no837.

Farooqi, M. Z., (2012), China's Metals Demand and Commodity Prices: A Case of Disruptive Development? European Journal of Development Research 24; 56-70.

Frankel, J. A., (2004), Commodity Prices and Money: Lessons From International Finance. American Journal of Agricultural Economics 66, 560-566.

Gilbert C. L. and Morgan C. W. (2010), "Food Price Volatility", Philosophical Transactions of the Royal Society B. No.365: 3023-3034.

Goodwill (2017), commodity price fluctuation and performance of manufacturing industries. International journal of social issues vol 3, pp 20 – 38.

Harris E.B. (2009), "The Commodity-Consumer Price Connection: Fact or Fable?" Journal of Economic Policy Review Chicago.

Katrak H. (1973). Commodity Concentration and Export Fluctuations: A Probability Analysis, The Journal of Development Studies 9(4): 556-565.

Kirchene Z.B. (2008), "Commodity Price Dynamics in 21st Century: Fundamental and Speculation" International Centre for Trade and Sustainable Development (ICTS) Australia.

Kose M.A. and Riezman R. (2001). Trade Shocks and Macroeconomic Fluctuations in Africa, Journal of Development Economics 65(1): 118-123.

Lombardi A.S. and Pagano F. B. (2010), "Effects of Commodity Prices Fluctuations on United States of America Economy", Journal Computation of OPEC.

Macbean, Alasdair I., and D. T. Nguyen, (1987). Commodity policies: problems and prospects, London, Croom Helm.

Medina L. (2010), "The Dynamic Effects of Commodity Prices on Fiscal Performance in Latin America", IMF Working Papers No. 10/192.

Muham (2000), Oil price and economic growth in developing countries. Journal of contemporary politics. Vol 8 pp 17 – 33.

Olomola A. P. and A. V. Adejumo (2006). "Oil Price Shocks and Macroeconomic Activities in Nigeria". International Research Journal of Finance and Economics Vol 3.pp28-34.

Spatafora N. and Samake I. (2012). Commodity Price Shocks and Fiscal Outcomes. IMF Working Paper No. 12/112

Saliu (2014), commodity price shocks and Nigerian economy. Journey of social Research vol 3. Pp 66 – 84. World Bank (2014), Commodity price in developing countries. Working paper