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MONETARY POLICY DYNAMICS AND THE ECONOMIC GROWTH OF THE SUB SAHARA AFRICA (SSA)

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Abstracts
The study investigated the effects of monetary policy dynamics on the economic growth of the SSA using data from thirty seven Sub Saharan African Countries. Dynamic panel data technique is used to estimate the model which described the relationship between SSA economic growth and monetary policy variables. However, macroeconomic variables such as exchange rate, inflation rate among others are included in the estimated dynamic panel model. The results show that the monetary policy rates failed to lead to sustainable growth in the SSA because of the limited effects it has in boosting domestic output. This reason is evident in the fact that the expected effect of expansionary monetary policy is limited due to weak financial deepening that is rampant in many Sub Saharan African Countries. Monetary policy approach that will not only be expansionary but exert required financial deepening that will have significant effect on the real domestic activities in the SSA should be encouraged.

Research paper

Keywords: Monetary policy dynamics, Dynamic panel data, Sub Sahara Africa

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Introduction

Economic growth in Africa as a continent has been falling in recent times in most, if not all the regions. The initial optimism concerning the effect of the global financial crisis has cast more doubt in that the spillover effect might be with the region for some time to come (Arieff et al 2010). Going by the earlier prediction of International Monetary Fund (IMF), average economic growth in Africa was expected to slow down to 1% in 2009 from an annual average of over 6% from 2004 before it can rebound back to 4% in 2010. The persistent recession, the severe decline in commodity prices, increasing protectionism, the high real interest rates and decreasing net capital flows are all said to be retarding the erstwhile recorded progress in economic growth of the region, IMF 2010 Although average inflation declined to 9.1 percent in 2004 from an average of 14.6 percent between 1997 and 2001 (Saxegaard, 2006), SSA's economic growth may likely decelerate from 4.6 percent in 2014 to 3.7 percent in 2015 based on the World Bank report of 2015 (Maswanganyi, 2015). This is said to be the lowest since 2009.

While the region is battling with this problem, policy makers across the region have continued to emphasise monetary approach as an effective way of restructuring the SSA economies in such a way that the economy will rebound from the economic downtown to a path of positive and sustainable economic growth (ADB, 2014; IMF 2013).

In the literature, the relevance and role of monetary policy in solving the myriads of problems confronting the SSA has been a subject of debate (see for example Mohamed, 2011; Corden and Neary,1982; Lama and Medina, 2010). Different tools and approaches of monetary policy have been discussed in these studies and varieties of these approaches such as inflation

targeting monetary policy, exchange rate targeting and forward looking Philips curve as well as Taylors principles among others have been applied in many countries of the SSA in recent years. These approaches have culminated in the incessant adoption of either contractionary or expansionary monetary policy (Romer, 2012).

This action culminated in the dynamics of monetary policy in the SSA (Jorda and Salyer, 2002). However, efforts of the monetary authorities in the SSA to rescue their economies from their economic woes have led to continued alteration or adjustment of key monetary policy variables in order to cope with a prevailing economic situation at a particular period of time. For instance the Central Bank of Nigeria in the last two years have changed the monetary policy rates MPR more than ten times, the last one came up in April this year when the MPR was increased from 10% to 12% making it the fourth time within the last 6 months. In South Africa, the trend has continued to be the same, the annual average in interest rate rose from 5% in 2013 to 5.75% to 5.79 in 2014 and 2015 respectively. In Kenya it rose from 8.5 to 8.6 and fell to 8.3 within the same periods (Focuseconomics, 2015). It should be noted that during these periods as well the volume of money supply in the SSA has been fluctuating which is as a result in the dynamism in the monetary policy. This action in its own aggravated the dynamism in monetary policy in the SSA in recent periods. According to the IMF (2014) the monetary policy outlooks in the SSA has continued to exhibit an unprecedented dynamism in the recent years, thereby aggravating monetary policy uncertainty.

The vulnerability of the SSA economy to external influence as earlier stated appears to be making monetary policy approach highly susceptible

to dynamics, Therefore, despite all these efforts, SSA has not been able to escape the turbulence of the international economic environment which brought about unsustainable growth rates and economic instabilities of recent years. For instance, In Ghana the prices of the major revenue earners of the country have decelerated significantly. Between 2012 and 2015, the shocks in the price of gold led to a huge loss of more than $2b in revenue (World Bank 2015). In the same vein, shocks in cocoa prices resulted in more than $1b in revenue during the same period. The fluctuation according to the Governor of the Central Bank of Ghana, Kofi Wampah complicates monetary policy implementation and hence the need for a complete overhauling of monetary policy framework. In the same vein for the first time in two decades, South Africa experienced recession during the financial crisis of 2007-2009. Most countries seen as having solid macroeconomic governance such as Botswana have sought international financial refuge in order to be able to cope with the effect of the crisis (Arieff et al 2010). Nigeria which is the largest economy in SSA is having her own share of shock in the prices of petroleum products with it attendant consequences on exchange rate falling from N198/$1 in April 2015 to N385/$1 in February 2016.

However, it is pertinent to note that since the monetary approach explained above has not been able to bring about sustainable economic growth to the SSA despite its dynamism hence, there is the need to investigate the synergy between monetary policy dynamics and the SSA growth. Again, an important observation in the current literature on the monetary policy-growth relationship is that the empirical research efforts on the nexus at regional level is scarce, whereas it is expected that international managers and policymakers working at regional levels may be more interested in re-

gional evidence. Moreover, recent studies have started to discover important relationships at the regional level of analysis. Examples of such studies are Belke et al (2014) work that focused on some selected OECD countries, Mobolaji and Omoteso's (2009) research on the transitional economies of Eastern Europe and Central Asia and Khan's (2010) work which examined the different relationship between the growth of Gross Domestic Product and different monetary aggregate in 20 SSA economies. While recent monetary reforms in advanced economies have been well researched, the same cannot be said of less developed and developing nations. This study is therefore set out to fill these gaps by investigating monetary policy dynamics in relation to growth in SSA which is a clear departure from earlier studies that were based on developed economies or individual country's experience.

Methodology

This aspect of the research work focuses on the method of research embraced to be able to achieve the objective of this study. This section explains the theoretical framework which describes the theoretical underpinnings of the models adopted to achieve the objectives. Also the section contains the model specification which postulates the functional relationship between the dependent variable and the independent variables. Variable description and definitions as well as their sources are also described. Finally the estimating technique adopted for to estimate the models specified are also discussed.

Theoretical framework

Romer (2006) in his modification of Arrow's seminar work on the economies of learning by doing pointed out that investment in knowledge (experience) has strong linkage with increase in productivity. According to Romer (2006), the indexes of experience by cumulative investment follow the following production function.

$Y_{it} = F(K_{it}, A(t)L_{it})$.....1

Where Y_{it} is the output of firm i , A(t) is the stock of knowledge of firm i at period t, K_{it} and L_{it} are the capital and labour of the firm at period t. Romer pointed out that labour is more productive due to accumulation of knowledge which also depends on experience. However experience is a function of past investment. Consequently the growth rate of output can be written as a function of indexes of experience by cumulative investment as follows:

$G(t) = \int_{-\infty}^{t} I(v)dv = k(t)$.....2

Where G(t) is the growth rate of the output, I(v)dv is the indexes of the cumulative investment which is equal to capital stock k(t). However, the growth rate of output of the firm according to Romer (2006) is equal to the per-capital production function (real output/income) i.e

$y = k(t)$.....3

Substituting 3 in equation 2 shows that:

$G(t) = y$.....4

Where y is the real output

Again, in the definition of money demand function, Romer(1996) postulated a relationship between inflation, money growth and interest rate

in such that demand for real money balance is a decreasing function of interest rate and increasing function of real income. That is:

$$\frac{M}{P} = L(r, y) \quad \text{.....5}$$

This can be written in linear form thus:

$$\frac{M}{P} = \alpha y - \beta r \quad \text{.....6}$$

Therefore:

$$\alpha y = \frac{M}{P} + \beta r \quad \text{.....7}$$

Dividing both sides by α leads to:

$$y = 1/\alpha \left(\frac{M}{P}\right) + \alpha/\beta(r) \quad \text{.....8}$$

Where $1/\alpha$ and α/β are elasticities of real money balance and interest rate respectively.

Substituting equation 8 into 4 leads to:

$$G(t) = 1/\alpha \left(\frac{M}{P}\right) + \alpha/\beta(r) \quad \text{.....9}$$

Thus growth rate can be presented as a function of the real money balance and interest rate which determines capital stock investment, where labour remains constant.

Our model is a modification of equation 9. In our attempt to study the impact of monetary policy dynamics on the growth the Sub Saharan African Countries SSACs, apart from the monetary policy instruments like interest rate and money supply, we also included in the model as explanatory variables some policy variables like exchange rate and inflation rate. Net domestic credit represents financial sector indicator. All these variables are identified has having direct linkages with monetary policy dynamics

(Ngalawa and Viegi, 2012; Omolade and Ngalawa, 2014) While, gross capital formation and government expenditure are used as a control variable. The inclusion of government expenditure is premise on the role fiscal policy in aiding money supply fluidity in the economy which is very germane to monetary policy dynamics especially in developing countries where federal allocation constitute an important chunk of money in circulation (Obinyeluaku, 2004). The growth rate of GDP is the dependent variable.

Model Specification

Following equation 9 our model is expressed thus

$$G_{i,t} = \varpi_0 + \varpi_j \sum_{j=2}^{7} \varpi_j K_{i,t} \varpi_j M_{pi,t} + \mu_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 10$$

Where $G_{i,t}$is the growth rate of output of the manufacturing sector of country i at time t, $M_{pi,t}$ comprises of the monetary policy instruments; real money balance measured by real money supply and real interest rate. It also comprises of policy variables such as real exchange rate, and inflation rate as well as financial sector indicator that is net domestic credit in the economy in country i at time t, while $K_{i,t}$ is the capital of country i at time t and $\mu_{i,t}$ represents the country specific stochastic variable. Note that i=1,2.....37 and t=1,2………,40. More explicitly for the panel analysis the model is presented as follows

$$gdpgr_{i,t} = \vartheta_{i,t} + \beta_{i,t} intr + \alpha_{i,t} msgr + \theta_{i,t} exr + \delta_{i,t} infr + \rho_{i,t} ndc + \pi_{i,t} k + \sigma_{i,t} ge + \mu_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 11$$

Estimating technique: The Dynamic Panel Data Analysis

Equation 11 specified earlier is to examine the impact of monetary policy dynamics on the growth of the SSACs. The dynamic panel data is explored to achieve this. In addition, as a remedy to inefficient estimator that is common to static panel data estimation and to improve the performance of the estimators we explored the dynamic panel data approach. This was popularized by Arellano and Bond, (1991). According Franz (2009) a static specification of the fixed effects model is joined with autoregressive coefficients which are the lagged value of the dependent variable; this allows feedback mechanism flowing from the past or current shocks to the current value of the dependent variable. This method of specification of model is known as generalized method of moments (GMM). The dynamic specification takes away the temporal autocorrelation in the residuals and prevents running a spurious regression which may lead to inconsistent estimators. The GMM model is specified thus:

$$y_{it} = \beta_1 + \rho y_{it-1} + \beta_2 x_{2it} + \beta_3 x_{3it} + \beta_4 x_{4it} + \mu_{it} \text{.....12}$$

Equation 12 is the modified form of the fixed effects model with the addition of the lagged value of the dependent variable.

Taking the first difference of equation 12, we obtained equation 13 as follows:

$$\Delta y_{it} = \beta_1 + \rho \Delta y_{it-1} + \beta_2 \Delta x_{2it} + \beta_3 \Delta x_{3it} + \Delta \psi_{it} \text{.....13}$$

Avoiding possible correlation between y_{it-1} and ψ_{it} necessitate the use of an instrumental variable that will not be correlated with the both and through matrix transposition of the explanatory variable, instrumental variable Z' is obtained, hence equation 13 is multiplied in vector form by Z'leading to :

$$Z'\Delta y_{it} = Z'(\Delta y_{-1})\rho + Z'(x)\beta_{it} + Z'\Delta\psi_{it} \quad \text{.....14}$$

Estimating equation 20 using generalized least square GLS the result yields one step consistent GMM estimators. However, additional input to Arellano and Bond (1991) evolved over the years and was developed by Blundell and Bond (1998) this is called system-GMM. There is no much difference between this approach and GMM only that system-GMM exercises more precaution in the usage of the instrumental variables. It was developed to tackle the problem of possible weak instrumental variables which may occur in GMM. Arellano and Bond (1991) argued that fixed effects LSDV might be inefficient hence the need to exploit the orthogonality conditions that exist between the lagged values of the dependent variable and the disturbance term through the use of additional instrument in the model. This approach is called the generalized moment method GMM of estimation. This was modified by Blundel and Bond (1998) due to the facts that the assumption of strict exogeniety is more relaxed here, again it has been argued that the instruments used by Arellano and Bond(1991) are likely to be weak in that if *y* is close to random walk then the differenced GMM will perform poorly meaning that past levels conveys very little information about the future changes leading to weak instruments. To remedy this situation Blundel and Bond (1998) came up with an approach which transforms the instruments through differencing to make them exogeneous to the fixed effects . In short, while Arellano and Bond (1991) instruments differences with levels only Blundel and Bond instruments are at both differences and levels.This is capable of yielding a more efficient estimator.(see Roodman, 2006)This is expected to be explored in our dynamic panel model, so that at the end the estimates will be consistent and as well as efficient.

Diagnostic Test

The diagnostic checks are very important to the dynamic panel model because they validate the parameter evaluation outcomes achieved by the estimated model. This arises because if there is a problem in the residuals from the estimated model, it is an indication that the model is not efficient such that parameter estimates from the model may be biased. The diagnostic tests that will be carried out are the Sargan –Hasen test, the test for serial correlation and the instrument adequacy test.

Results and discussion

Growth model used to derive the model specification for this objective necessitated the use of production function since we are concerned with output growth consequently the variable appear in log form. The estimating technique adopted here is panel data. This is because all the variables have been made stationary as shown in table 1. But yet we cannot use panel ARDL since the dependent variable which is the GDP growth rate is stationary at levels for all the SSA (see Pedroni, 2004). The study uses both the fixed and random effects and hausman test is conducted to ascertain the model that gives a better result (See Pedroni 2004, Hausman 1995). In addition, dynamic panel model is estimated as a robust check as well as to check consistency in our results. Earlier the fixed effects least square dummy variable is also adopted to test for the cross sectional dependence. We begin with the fixed and random effects estimations. But before the panel analysis the panel unit root testis conducted first.

Panel Unit root test for the SSA

One important criterion for panel analysis is that all the variables must be made stationary. This is the reason why it is important begin the analysis with the unit root test (Pedroni 2004). The result is presented in table 1.

Table 1. Panel Unit root test for the whole SSA

Variables	**IPS unit root test**		**ADF-Fisher Chi-square unit root test**		**LLC unit root test**	
	t* Statistics	Order of integration	t* Statistics	Order of integration	t* Statistics	Order of integration
Mpr	-1.8165***	I(0)	1111.4330***	I(1)	-9.6675***	I(0)
Gdpgr	-4.8033***	I(0)	772.7790***	I(0)	-19.7990***	I(0)
Exr	-3.1168**	I(1)	570.5235**	I(1)	-32.2307**	I(2)
Inf	-3.7179***	I(0)	453.4714***	I(0)	-16.3528***	I(0)
Ge	-5.0185**	I(1)	825.2299**	I(1)	-21.5292**	I(1)
K	-5.2683**	I(1)	912.0424**	I(1)	-20.5313**	I(1)
Msgr	-4.0604***	I(0)	621.1645***	I(0)	-20.4252**	I(0)
Ndc	-3.9345**	I(1)	631.3320**	I(1)	-34.9641**	I(2)

The result form the unit root test is an indication that the entire variable are stationary and are between order one and zero. In other words they are all integration of order1 and 0 I(1) and I(0). Three methods of panel unit root test are used; IPS, ADF and LLC. Though few are I(2) under the LLC but they are all I(1) under the IPS and ADF, which is enough to accept them as integration of order one that is I(1). Notwithstanding, the aim here is that all of them must be made stationary and this has been achieved thus, paving the way for our panel analysis.

Fixed and Random Effects Estimation for GDP growth in the SSA

The results of both the fixed and random effects for the whole SSA are presented in table 2. Notwithstanding, the hausman test is also conducted to determine which of the estimated results is more reliable.

Both the results of the random and the fixed effects appear to be similar considering the coefficients of the variables and the level of significance. But the yet, as earlier posited the result of the hausman test is necessary to determine which of the two results to stick with. According to the hausman test, the probability of the Chi Square is significant; this simply indicates that Fixed effects results are more preferable in this case.

From the coefficients relationship estimated in the fixed effect result for the whole SSA, it is clear that monetary policy rate exhibit an inverse relationship with the economic growth of the SSA.

Table 2. Fixed and Random Effects results for GDPGR in SSA

Variables	**Coefficients**	
	FE	RE
LMPR	-.2095717**	-.1826521**
	(.0999297)	(.084522)
LEXR	.0680286**	.028349
	(.035413)	(.0200705)
LINF	-.0095697	-.02683
	(.030468)	(.0288695)
LGE	.0076767	-.0867585
	(.0704102)	(.0589125)
LK	-.0002544	.073681
	(.0599627)	(.0546484)
LMSGR	.0308708**	.0882944**
	(.0458685)	(.0445484)
LNDC	.0146354	.0075224
	(.0282426)	(.0210254)
CONS	1.360292	1.461172**
	(.7149213)	(.5220391)
F(7,813)/ Wald chi2(7)	3.06***	17.26**

** Statistical significance at 10%,** Statistical significance at 5%, *** Statistical significance at 1%*

Table 3. Hausman test for SSA

chi2(5)	35.28
Prob>chi2	0.00000

However, apart from the fact that this relationship is correct theoretically, it is also statistically significant. This is an indication that monetary policy rates play important role in determining the level of economic growth in the SSA. The consistency in the result is also very important. This is because both the random and the fixed effects model show that monetary policy relates coefficients are statistically significant.

Again, the fixed effects results have established a significant relationship between exchange rates and the economic growth of the SSA. The relationship is positive thus indicating the currency appreciation might not be good for the economic growth of the sub region. Furthermore, exchange rate as a variable has been confirmed by the estimated model as a variable that is germane in determining the economic growth of the SSA

Money supply growth rate coefficient in the estimated model also shows a significant positive relationship with the SSA economic growth. Since the ration of the money supply to the GDP is used here, this simply indicates that financial deepening is very important in determining the growth of the SSA economy.

In addition, the fixed effects result has also shown that apart from three variables discussed above that is monetary policy rate, exchange rate and money supply growth rate, none of the remaining variables used as explanatory variables in the model shows a significant relationship with the economic growth of the SSA. This singular reason further underscores the importance of the monetary policy dynamics and exchange rate in the SSA

The test of overall significance that is the F test indicates that the fixed effect model is statistically significant. Therefore, all the variables used in the model will jointly influence economic growth of the SSA significantly.

The fixed effects model is also subjected to cross sectional dependence test to ascertain the level cross sectional specific effects in the model.

Cross sectional dependence test for the SSA

This test as explained under the methodology is to confirm the level at which our results can be generalized among the whole 36countries used in the fixed effects panel model. The fixed effects least square dummy variable is used to achieve this objective. The result is presented in table 4.

Table 4. Fixed effects least square dummy variable LSDV for the SSA

Country dummy	Intercepts
2	.0707063
3	.1957185
4	-.7839589**
5	.2929215
6	.785196**
7	.0859034
8	.911814**
9	.0940698
10	-.2577378
11	.1741557
12	-.1266116
13	.0979586
14	.1048276
15	1.048027**
16	.2611925
17	.3150916
18	-.4729797
19	.7526501**
20	.0354425
21	-.3130271
22	.1170043
23	.6300045
24	.9517142**
25	.178884
26	.0369253
27	-.2531024
28	.0380183
29	1.613087**
30	-.1652548
31	.0316287
32	-.2070548
33	-.0758627
34	.3522878
35	.5514922**
36	-.2951361
Cons	.5220391

The result of the fixed effect LSDV is an indication that the individual intercepts generated for each of the countries are largely not significant. Out of the 37 countries, only 8 countries demonstrate specific cross sectional effects. This means that the results generated by the fixed effect can be

generalized to a large extent among the 37 countries. Notwithstanding, since there is a slight countries specific effect, breaking the analysis down to major economic blocs in the SSA might throw more light into countries which are going to be outliers among the 37 countries used in the study.

In addition for further robust check on the panel results, the dynamic panel model is explored to further examine the effects of the monetary policy dynamics on the economic growth of the SSA.

Dynamic panel estimation of the effects of monetary policy dynamics on the economic growth of SSA

Apart from standing as an appropriate robust check for the results discussed under the fixed effects, the dynamic panel estimation will further examine the consistency in the results and it is capable of generating more efficient parameter estimates than the fixed effect results.

Table 5. Dynamic panel model for the SSA

Variable	Coefficients	Robust S.E	
LGDPGRL1.	-.021463	.0609975	
LMPR	-.4430628***	.1366033	
LEXR	.0217517**	.0154208	
LINF	-.0343585	.0360663	
LGE	.003321	.1124073	
LK	-.0397457	.1054859	
LMSGR	-.0498376	.0560344	
LNDC	-.0270155	.0397994	
Arellano-Bond test for AR(1), 0.002	***z = -3.03***		***Pr > z =***
Arellano-Bond test for AR(2) 0.097	***z = -1.66***		***Pr > z =***
Sargan test of overid. restrictions: 0.006	***chi2(496) = 578.96***		***Prob > chi2 =***
Hansen test of overid. restrictions: 1.000	***chi2(496) = 28.36***		***Prob > chi2 =***

The dynamic panel results as shown in table 5 further affirm the importance of monetary policy dynamics in determination of the economic

growth of the SSA. The coefficient is negative and significant just as we obtained under the fixed effects estimation. The exchange rate is another variable that maintains its relationship with the economic growth. The coefficient of the exchange rate remains positive and significant in the estimated dynamic panel model. However, money supply growth rate or the financial deepening indicator fails to maintain the significant relationship it possesses in the fixed effect model. The implication is that the results under the dynamic model are more reliable than that of the fixed effect model. Notwithstanding, we have been able to ascertain some levels of consistencies in our results.

Dynamic panel model diagnostics

Customarily, the dynamic panel models are subjected to some diagnostics test to ascertain the reliability of the results. Both the serial correlation test and Sargan/Hasen test for over-identification are carried out. The results are also contained in the bottom of the table 5. Both the AR1 and AR2 results indicate that there is no presence of serial correlation in the dynamic panel results. Again, the over-identification test also confirmed that the instruments used in the dynamic panel estimation are in order and are appropriate to a large extent.

Conclusions and recommendations

Firstly, in studying the dynamic effects of monetary policy on the economic growth of the SSA, the dynamic panel data has shown that monetary policy rate is significant in determining the economic growth of the SSA. This findings is supporting the conclusions of various empirical stud-

ies like Kutu and Ngalawa, 2014; Olomola 2007 among others where it was confirmed that many of the SSA countries find monetary policy tools useful in controlling key macroeconomic variables at their domain and consequently giving monetary policy an important pride of place in dictating the pace of the economic activities in most of the SSA countries. Therefore this finding is contributing to the existing literature that found monetary policy dynamics to be an important determinant of economic growth in the SSA.

Secondly, the dynamic panel results for the SSA have shown that exchange rate is an important factor that affects the economic growth of the SSA. The coefficient of exchange rate is positive and significant. The implication is that the situation in the SSA favours currency devaluation as against currency appreciation to promote economic growth. This is also supporting the views of Olomola 2007; Omolade and Ngalawa 2013 among others that over-valuation of currencies is capable of squeezing out the tradable sector and the real sector of the economy. This process is found to be inimical to the economic growth of many developing countries.

Thirdly, money supply growth rate which doubles as a key monetary policy instrument and also a proxy for financial deepening does not exert significant pressure on the economic growth of the SSA. Since the ratio of money supply to the GDP is used, it is capable of measuring the financial deepening in the SSA. The results from the analysis indicates that money supply growth rate is only significant in the static panel model but not in the dynamic panel model which is the basis for our discussion. The implication of this result is that the rate at which money supply influences the economic activities in the SSA appear to be very low. However, corruption, credit diversions, money laundering, capital flight, and porous border among others,

have been attributed to the cause of ineffectiveness of money supply on the domestic economy. This is because many of the money that supposed to go the economy fail to achieve the purpose for which they are intended (Manturu, 2007; Ngalawa, 2009).

All other variables used in the model such as capital formation, net domestic credit and inflation rate fail to have any significant impact on the economic growth of the SSA. The dearth of socio-economic infrastructures in the SSA has been revealed with the non-significance of capital formation on the economic growth of the SSA. Some empirical studies have attributed the slow pace of economic growth in the SSA and general backwardness in terms of economic development to the deficient socio-economic infrastructures (Omolade and Ngalawa, 2014). Again, the net domestic credit fails to have significant impact on the economic growth of the SSA, this is supporting our finding in the previous paragraph where money supply fails to exert significant impact on the SSA economic growth. Levels of inflation in the SSA might not be an important determinant of the economic growth of the SSA during the periods under review. This is because many SSA countries are much more aware of the danger inflation rate poses to their economies and many of them have put in place measures to curtail these inflation pressures (Manturu, 2007).

Finally, it is recommended that monetary policy that will not only be expansionary but that will have the required financial deepening effect to promote domestic outputs of SSA should be encouraged. This is because the study has revealed that the percolation of money supply to the real sector of the economy of the SSA is impaired. This has limited the expected effects of monetary policy in the SSA.

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