Monetary Integration, Single Currency Zone and Economic Growth of Sub-Saharan African Countries

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Abstract
This study examines the impact of monetary integration in economic growth of Sub-Saharan African (SSA) countries for the period 1999 to 2021, using Panel Autoregressive Distributed Lag Model (PARDL). Nine SSA countries from the four regions of SSA were selected based on high GDP growth rate in 2021. The countries are; Nigeria, South Africa, Kenya, Angola, Democratic Republic of Congo, Ethiopia, Cote d'Ivoire and Ghana. The annual panel data were collected from World Bank database on the variables such as Gross Domestic Product growth rate (GDPG), Inflation Rates (INFR), Real Exchange Rates (REXR) and Fiscal Deficit (FDEF). The panel unit root and Johansen Fisher co integration tests were conducted on all the variables. While the variables exert mixed order of integration, there exists long run relationship amongst the variables. The result of the PARDL reveals that inflation rate has positive and insignificant impact on GDP growth rate in the long run but negative and insignificant impact in the short run. The result further shows that both in the long run and short run, real exchange rate has negative and insignificant impact on economic growth of SSA countries. The fiscal deficit result shows a significant and positive impact on GDP growth rate in SSA countries both in the long run and short run. The study therefore recommends that government should formulate policy that would strengthen local currencies against foreign currencies, probably by fixing the exchange rates. If this is done, inflation rate will be tamed through various productions of goods and services at reduced costs.

Keywords: Monetary Integration, Panel ARDL, Economic Performance

Introduction
Monetary integration is the existence of a single monetary zone with a high degree of monetary stability in furtherance of economic integration. It is the monetary unification of the participating countries in an economic union and it involves the adoption of a common currency, coordinated exchange rates policies and harmonization of fiscal and monetary policies(Nana-Sink-am,1978) cited in(Adekunle,2020).The benefits of monetary integration ranges from the establishment of a central bank which enhances monetary policy management, trade creating potential within and beyond the members state by removing trade restrictions and payment obstacles, unification of national capital markets, seignorage (losses) from issuance of a common currency and pooling of foreign reserves of members countries. It is an arrangement among members to allow flow of ideas, investment funds, technology and goods and services. The objectives from economic integration are the attainment of macroeconomic objectives viz economic growth. According to Belke and Wang (2006) the potential benefit for an economy joining a single currency area are the perceivable gains of efficiency and credibility. The monetary efficiency gain occurs from pegging to fix exchange rate area instead of letting the exchange rate floats since this tends to lower inflation differences and exchange rate volatility and hence, transaction costs.

The European Union remains one of the most successful examples of integration in the world. Experiences drawn from the union could be very informative for African aspiring to establish monetary union.

The creation of single currency for the African countries has long been a pillar of African unity, a symbol of the strength that its backers hope will emerge from success with efforts to integrate the continent. In Africa, monetary integration exists only with the Rand and the Franc zones. The Franc zone comprises fourteen African countries and is built around two monetary unions which are; The West African Monetary Union and the Union of States belonging to the Banque des Etatsd' Afrique Centrale (Faezeh, 1992). The Franc zone has been successful in creating a stable and convertible currency due to the backing of French government. A single African currency is intended to contribute to regional integration and solidarity, which together are viewed as necessary to counteract the small economic size and lack of clout of individual African countries. Monetary integration is indispensable for achieving the continent's balanced development. This would help to strengthen Africa's bargaining position with Europe and other industrialized nations of the world (International Monetary Fund African Department (IMFAD), 2015).

Although, monetary union has its costs and benefits, the theoretical and empirical evidence suggests that, if established, regional currencies among developing country grouping can bring considerable benefits that are similar to those expected from the introduction of the euro. They can reduce the cost of doing business within a region and eliminate exchange rate spreads and commissions in currency trading associated with intraregional trade and investment. Other benefits include; expanded aggregate investment, improved resource allocation, increased domestic savings, enhanced financial intermediation and greater international trade which makes the economy of participating countries become more open terms of the share of its exports in Gross National Product (GNP) (IMFAD, 2015).

As part of the efforts in ensuring the adoption of monetary integration in Sub-Saharan Africa, African leaders established the Organization of African Unity to promote socio-economic structures aimed at improving the welfare of the citizens of member states and general integration of the continent, monetary integration inclusive. African Monetary Cooperation Programme, alongside the establishment of the Committee of Central Bank Governors was established in 1995 to promote intra-Africa trade and enhance monetary integration. The 2018 Abuja Treaty also stipulated that African Economic and Monetary Union be set up. However, owing to ideological differences and convoluted financial infrastructures, the goals have not materialized (African Union Commission(AUC), 2010). Thus, sub-Saharan African countries' major goals towards a single currency would be to improve economic growth and lower inflation while overcoming poor infrastructure and low investments.

The implementation of monetary integration has been the major issue in sub-Saharan Africa as the formation requires harmonization of exchange rate mechanisms and fiscal and monetary policies. The real effective exchange rates actually appreciated in more than half of the sub-Saharan African countries, in part due to high inflation (IMF, 2022). Inflation has increased more rapidly and more persistently than expected. These have resulted in increased poverty, food insecurity and malnutrition, high unemployment to mention few (World Bank Indicator, 2021). The regional indebtedness is now approaching levels last seen in the early 2000s before the impact of the Heavily Indebted Poor Countries Initiative, though with a different composition. The substitution of low cost, long term multilateral debt with higher cost private funds has resulted in rising debt-service costs and higher rollover risks. Most of these SSA countries are experiencing high fiscal deficit which make majority of them to be in debt distress or at high risk of distress.

Sub-Saharan Africa's recovery has however, been sharply interrupted due to exchange rate and fiscal disharmony. The GDP growth rate was 4.7 percent in 2021. The growth in 2022 however slowed by more than 1 percentage point to 3.6 percent due to dramatic pickup in inflation rate which is driven by external factors, including global commodity prices and disruptions to global supply chains (IMF, 2022). Similarly, there is disparity in the findings of scholars who have researched on the nexus between

monetary integration and economic growth. The likes of Stanisic (2012); Ionel (2020) established that monetary integration influences the growth of the economy, while Kooti and Xu (2013); Kangami and Akinkugbe (2019) found negative impact between monetary integration and economic growth in their study areas. Based on these, this study therefore examines the impact of monetary integration on economic growth of sub- Saharan African countries between 1999 and 2021, using panel Autoregressive Distributed Lag (ARDL) approach.

Conceptual Issues

a) Concept of Monetary Integration

Monetary integration is the monetary unification of participating member countries in an economic union and involves the adoption of common currency, co-ordinated exchange rate policies and harmonization of fiscal and monetary policies. It is a process that can only be envisaged during the final stages of economic integration (Omoruyi, 1986). According to Agu (1992), monetary integration is a process whereby a group of countries usually in adjacent geographical areas, form a monetary union that has the characteristics of establishing one central monetary authority which takes over the formulation of the union's monetary and fiscal policies; issuing a single currency to which all the national currencies of member countries are convertible and the flow of the union currency is unrestricted among member countries; and pooling of the foreign exchange reserves of the member countries.

Monetary integration according to Saka *et al. (*2015) is an arrangement whereby a group of countries agree to use a common currency and adhere to a single monetary and exchange rate policy. These policies are managed in such a way that common economic objective of the integration can be achieved. African Development Bank Group (2016) defines monetary integration as a process whereby two or more countries embark on measures of rapprochement of monetary conditions. The index of monetary conditions is calculated by the weighted average of an indicator measuring interest rates variation and an indicator measuring the exchange rates variation.

The definition of Agu (1992) forms the working definition of this study because he specifically explained the geographical areas of countries that can form monetary union, which is also key in ensuring smooth operation of monetary integration.

b) Concept of Economic Growth

Jhingan (2011) defines economic growth as quantitative sustained increase in a country's per capita income which is as a result of expansion in the labour force of a country, level of consumption, capital formation and volume of trade. Ogboru. (2018) defined economic growth as a long term expansion of productive potential of the economy. The trend of growth could be expanded by raising capital investment spending as a share of national income as well as the size of capital inputs and labour supply, labour force and the technological advancement. Economic growth is the increase of per capita GDP or other measures of aggregate income.

Nwogwugwu. (2022) defines economic growth as the process whereby the country's real national and per capita income increases over a long period of time. The increase in per capital income is the better measure of economic growth since it reflects increase in the improvement of living standards of masses. Another measure of economic growth is the increase in real national income. This increase should be in terms of increase in output of goods and services, and not due to a mere increase in the market prices of existing goods. Thus, economic growth can be seen as the value of all the production made in the economy over a period of one year. This therefore forms the working definition of this study.

Other Related Issues

a. Benefits of Adopting Monetary Integration in Sub-Saharan Africa

The formation of a monetary union requires harmonization of exchange rate mechanisms and fiscal and monetary policies. Monetary integration, that is, single currency adoption, has many promises in terms of boosting trade across the continent and benefits for all member states through synergy and symbiosis. It has capacity to increase economic cooperation among member states and stimulate faster

development efforts across the continent (AUC, 2010). A bigger market under one currency will stimulate more foreign direct investments due to the size of their economies. If monetary integration exists, regional nations could benefit by pooling resources and enjoy the economies of scale and better market access negotiated under better terms. This can also improve regional productivity through competition as well as help diversify production and exports. Member states will also benefit from lower transaction costs and stable exchange rate.

A single currency could offer sub-Saharan nations to use productivity and better economic strategies to manage chronic budget deficits, thereby, curtailing inflation since the option of printing money will be seriously downplayed among member nations. Also, a unification currency will improve fiscal and monetary cooperation among member states. This has the benefit of long-term macroeconomic stability as a common monetary union and central bank can offer more reliable fiscal control mechanisms and anti-inflationary measures more efficiently (AUC, 2010).

b. Problems of Adopting Monetary Integration in Sub-Saharan Africa

The decision to adopt a single currency was borne out of the monetary problems plaguing sub Saharan African countries and it is believed that these problems could be solved if there is monetary integration. The notable problems hindering monetary integration in SSA remain the differences in the economic and social structures of the participating countries. The trade patterns, cultures, natural resources, rate of growth, policies, wage rate, political and economic structures differ. These affect their motivation for integration or the applicability and effectiveness of the instruments they choose. A country whose economic and social structures are more developed than that of other members will resist any policy harmonization that might impose a regressive policy. Another problem that has mitigated against monetary integration is the fear of the uneven distribution of the benefits which will accrue to member nations. Unstable political relation in all member countries is a serious impediment to the actualization of monetary integration in SSA countries (Agu, 1992).

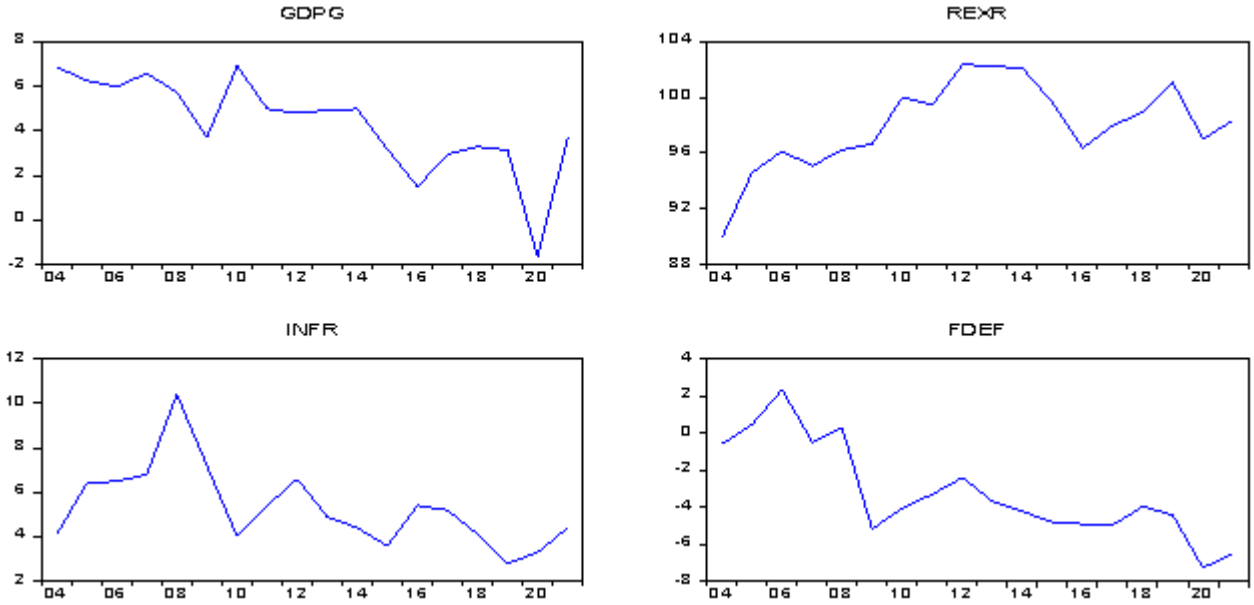
The 2019 convergence report also showed that none of the countries fulfilled all the criteria for convergence. In most of these countries, inflation has always been two digits for the past one decade now. The rising prices have mirrored worldwide trends, where inflation has increased more rapidly and more persistently than expected, and where incomes have been eroded by hikes in the cost of living. Recent increase in inflation may appear less striking relative to historical averages for sub-Saharan Africa, especially for countries with fixed exchange rates (World Bank Indicator, 2021).

The fact is that most of the countries in SSA find it difficult to satisfy and sustain their performance on the convergence scale. Almost all the regions in SSA performed abysmally poor on fiscal deficit criterion. Over the ten years period, SSA countries have not been able to satisfy and sustain the inflation criterion as the inflation rates in these countries are not single digit. This has led to the postponement of the launch of the common currency for over four times from the initial date to 2020, since the ability to meet the convergence criteria forms the basis for admission into a monetary union (International Monetary Fund [IMF], 2022).

c. Indicators of Economic Growth

According to World Bank (2022), economic indicators include measures of macroeconomic performance (gross domestic product, consumption, investment, and international trade) and stability (central government budgets, prices, money supply, and balance of payments). It also includes broader measures of income and savings adjusted for pollution, depreciation, and depletion of resources. Other measures include net exports, consumer price index, interest rates.

Trend Analysis of the Primary Criteria of Monetary Integration



Source: World Bank Indicator (2022)

The sub-Saharan African countries experienced the gross domestic product growth rate of 6.87% in 2004 but declined by 1.89% to 4.98% in 2014. The GDP growth further contracted by -1.66 in 2020 due to the emergence of COVID-19 pandemic which crippled all economic activities. However, the economy bounced back, although weakly, with the growth rate of 3.70% in 2021. Also, inflation rate in 2004 was 4.1%. It further increased to 4.4% in 2014. Although, there was a slight reduction in 2015 to 3.6%, the rate in 2021 however increased to 4.4%. Inflation rate increased faster and more persistently than previously anticipated, reflecting mounting prices for essential food and energy items.

The real exchange rate for sub-Saharan African countries in 2004 stood at 89.91. After a decade, that is, in 2014, it rose to 102.10, based on the consumer price index. This was however due to global monetary tightening. In 2020 and 2021, real exchange rate stood at 97.01 and 98.36 respectively. The fiscal deficit of the region widened to 4.04% in 2010, up from the estimated 3.3% in 2011. It further widened to 7.27% and 6.52% in 2020 and 2021 respectively.

Empirical Literature

Empirical investigations of the views of monetary integration and economic growth in SSA remain inconclusive. This study therefore reviews the empirical works that were done by scholars across the globe.

Djirimu (2022) carried out the analysis of single currency on the ten countries of the Association of Southeast Asian Nations and three other countries in the Asia pacific regions (ASEAN+3) between 1993 and 2017. The study used pooled OLS regression and revealed that ASEAN+3 regions are not ready to implement single currency because of an increasing trend of asymmetric shock, lack of business cycle synchronization, differences in production structure, trade relations and economy sizes. Kankpeyeng (2021) examined the impact of inflation on gross domestic product growth in Ghana for the period spanning 1986 to 2018. The vector autoregressive model (VAR) was employed and the result showed that high rate of inflation is detrimental to the growth rate of GDP in Ghana.

Kangami and Akinkugbe (2019) carried out a study on the effect of common currency on economic growth of Central African Economic and Monetary Community (CEMAC) Customs Union. The study covered the period from 1970 to 2013, using both parametric and non-parametric approach. The study however found that monetary policy change instituted in the CEMAC region in 1994 has not played

any significant role in promoting economic growth in the CEMAC region. Silva (2018) investigated the impact of the single currency on economic growth in Organization for Economic Cooperation and Development (OECD) countries between 1985 and 2015. The study employed fixed effect model and it was found that euro has insignificant impact on economic growth in the OECD countries.

Muzekenyi (2018) assessed the role of real exchange rates on economic growth in South Africa. The study covered the first quarter of 1994 to the fourth quarter of 2015, using VECM method of data analysis. It was however found that both in the long run and short run, real exchange rate has negative impact on economic growth in South Africa. Aero and Ogundipe (2018) employed the threshold autoregressive model (TAR) to investigate the effects of fiscal deficits on economic growth in Nigeria between 1981 and 2014. The result revealed that fiscal deficit has negative effect on economic growth in Nigeria.

Arcade (2017) studied the threshold effects of inflation on economic growth in Africa from 1970 to 2013, using dynamic panel threshold regression. The result shows that low inflation is growth enhancing in Africa. Saka (2015) empirically analyzed the behaviours of the convergence criteria in a proposed monetary union of Economic Community of West African States (ECOWAS) for the period spanning 2000 to 2008. The study utilized panel least square technique and it was found that all the variables (exchange rate, fiscal deficit, interest rate, tax revenue) have indirect effects on the income growth rate.

Kazimoto (2014) empirically examined the role of single currency on economic development of the East African countries, using questionnaires with 91 respondents. It was revealed that exchange rate fluctuations and inflation rate have direct impact on the development of the region. Kooti and Xu (2013) employed switching regression model to study the effect of monetary integration on long-term growth of East Asia. The study covered the period from 1997 to 2010 and the results reveal that monetary integration has negative effect on the long term economic growth of East Asian countries.

Durmus (2012) utilized pooled ordinary least square (OLS) method to empirically investigate the effect of monetary union on macroeconomic performance for 24 Organization for Economic Cooperation and Development (OECD) countries between 1988 and 2009. The study found that euro monetary union has positive effect on foreign trade in the 24 OECD countries. Stanisic (2012) studied the effect of international monetary integrationon inflation and economic growth of some selected developing countries of the world from 2005 to 2009. The study used Kolmogorov and Smirnov method of analysis and the results reveal that monetary integration influences the inflation reduction in developing countries but does not have effect on economic growth in the 18 selected developing economies.

Kin (2012) examined the impact of real exchange rates on economic growth in South Africa between 1994 and 2010. The study employed vector error correction model and it was revealed that devaluation of currency significantly hampers economic growth in the long run. Mukwaya (2009) studied the trade effects of a single currency in East Africa from 1988 to 2003. The study employed simulation analysis and it was found that a single currency will result in a regional net welfare gain in East Africa.

Methodology

Theoretical Framework and Model Specification

This study examines the impact of monetary integration on economic growth in Sub-Saharan African countries from 1999 to 2021. This study therefore introduced real exchange rate, inflation rate, fiscal deficit (% of GDP) and real gross domestic product growth rate into the model. This is because they are the primary criteria a developing economy should meet before adopting monetary integration. The explanatory variables of this study thus include, inflation rate, fiscal deficit (% of GDP), real exchange rate, while the dependent variable is growth rate of GDP for the selected countries (Nigeria, South Africa, Kenya, Angola, Democratic Republic of Congo, Ethiopia, Cote d'Ivoire and Ghana).These countries are selected amongst the sub Saharan African countries because they contribute more to GDP in 2021.The model is specified in line with the model of Saka (2015). While Saka's model is specified as in equation 1, the model of this study is specified in equation 2 as shown below:

$$GDPG = f(CBNFIN, FD, INF, PUBINV, REXCR, RINTR, TAXREV, WAGE\ BIL, EXTREX) \quad (1)$$

Where,

CBNFIN = Central Bank Financing

FD = Fiscal Deficit

INF = Inflation Rate

PUBINV = Public Investment

REXCR = Real Exchange Rate

RINTR = Real Interest Rate

TAX REV = Tax Revenue

WAGE BIL = Wage Bill

EXTREX = External Reserve

The functional form of this study's model is specified as;

$$GDPG = f(REXR, INFR, FDEF) \quad (2)$$

Where,

GDPG = Gross Domestic Product' Growth Rate

REXR = Real Exchange Rate

INFR = Inflation Rate

FDEF = Fiscal Deficit as a percentage of GDP

The variables such as tax revenue, interest rate, wage bill, external reserve and public investment were removed because they are secondary convergence criteria, while Central Banks financing was removed since it is not necessary for countries to satisfy all the criteria. This study therefore includes only the primary convergence criteria of monetary integration which countries should satisfy before joining monetary union.

The stochastic form of this model is written as;

$$GDPG_t = \beta_0 + \beta_1 REXR_{t-1} + \beta_2 INFR_{t-1} + \beta_3 FDEF_{t-1} + £_t$$

Where,

β_0= Intercept

$\beta_1, \beta_2, \beta_3$= Slope of the coefficients of the independent variables.

£ = Stochastic error term which captures other explanatory variables that could not be explicitly specified in the model.

Sources of Data
The annual panel data were collected from World Bank Development Indictor on variables such as GDP growth rate (GDPG), real exchange rate (REXR), inflation rate (INFR) and fiscal deficit as a percentage of GDP (FDEF). The period covered the period 1999 to 2021 which was due to availability of data.

Estimation Techniques
This study used the technique of Panel Autoregressive Distributed Lag (PARDL) to analyze the impact of the convergence criteria of monetary integration on economic performance of SSA countries. This method was employed to check the long run and short run dynamics of the model and it can be applied even if the variables are integrated of different orders, that is, I(0) and I(1). It also produces more efficient estimates even in small samples. To achieve this, the panel unit root test was carried out to ensure that our estimations are consistent and not bias. Johansen Fisher cointegration test was also employed to check if long run relationship exists amongst the variables. Based on the specification of Shin (2011), the long run elasticities based panel ARDL-UECM model for this study is specified as thus;

$$\Delta GDPG_t = \beta_0 + \beta_1 GDPG_{t-1} + \beta_2 INFR_{t-1} + \beta_3 REXR_{t-1} + \beta_4 FDEF_{t-1} + \sum_{i=1}^{q} \beta_5 \Delta \ln GDPG_{t-1} + \sum_{i=1}^{q} \beta_6 \Delta \ln INFR_{t-2} + \sum_{i=1}^{q} \beta_7 \Delta \ln REXR_{t-1} + \sum_{i=1}^{q} \beta_8 \Delta \ln FDEF_{t-1} + \text{Ø}ECM_{t-1} + \mu_t$$

Presentation and Interpretation of Results

Panel Unit Root Test
This section presents the individual panel unit root test carried out on all the variables.

Table 1: Summary of Panel Unit Root

Variables	Order of Integration	LLC	IPS	ADF	PP
GDPG	I(0)	-21.3	-10.1	295.6	85.3
INFR	I(0)	-17.0	-10.5	197.5	108.2
REXR	I(1)	-1.76	-2.8	48.7	61.4
FDEF	I(1)	-7.5	-8.9	105.3	261.2

Source: Eviews 10 Output.
From the result, the tests reveal that the variables have mixed order of integration based on the fact that all the p values are less than 0.05. The result is presented in Table 1 and it shows that gross domestic product growth rate (GDPG) and inflation rate (INFR) are integrated of order zero, that is, stationary at levels while real exchange rate and fiscal deficit are stationary at first difference, that is, integrated of order one.

Panel Cointegration Test

Panel cointegration test is necessary to establish the presence of cointegration among the variables of the study. In this study, the Johansen Fisher cointegration test was employed and the result is presented in Table 2.

Table 2:Johansen Fisher Panel Cointegration Test

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	192.5**	0.0000	143.3**	0.0000
At most 1	89.96**	0.0000	62.61**	0.0000
At most 2	46.06**	0.0003	36.60**	0.0059
At most 3	36.43**	0.0062	36.43**	0.0062

**** indicates that the estimated parameters reject the null hypothesis of no cointegration.**

Source: Eviews 10 Output.

The Johansen Fisher cointegration test indicates that there exists cointegration amongst the variables. This can be verified from the p values of all the hypothesized numbers of cointegrating equations which are less than the level of significance at 5 percent. Thus, the null hypothesis of no cointegration is rejected.

Panel Autoregressive Distributed Lag (ARDL)-UECM Model

After establishing that there is long run relationship amongst the variables, the long run elasticities based panel ARDL-UECM model was conducted and the result is presented in Table 3.

Table 3: Panel Autoregressive Distributed Lag (ARDL)-UECM Model

Dependent Variable: D(GDPG)
Method: ARDL
Date: 03/10/23 Time: 22:46
Sample: 2000 2021
Included observations: 198
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): INFR REXR FDEF
Fixed regressors: C
Number of models evalulated: 1
Selected Model: ARDL(1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
	Long Run Equation			
INFR	0.002164	0.014208	0.152286	0.8792

REXR	-0.003388	0.007697	-0.440103	0.6605
FDEF	0.525699	0.077263	6.803999	0.0000

Short Run Equation

COINTEQ01	-0.761712	0.114270	-6.665864	0.0000
D(INFR)	-1.044223	0.952157	-1.096691	0.2744
D(REXR)	-0.600205	0.543948	-1.103423	0.2715
D(FDEF)	0.634693	0.263622	2.407582	0.0172
C	6.827185	2.495072	2.736268	0.0069

Mean dependent var	0.230808	S.D. dependent var	35.13971
S.E. of regression	17.83196	Akaike info criterion	5.618885
Sum squared resid	50558.62	Schwarz criterion	6.391689
Log likelihood	-533.5546	Hannan-Quinn criter.	5.931400

*Note: p-values and any subsequent tests do not account for model

Source: Eviews 10 Output.

The result in Table 3 presents both the long run and short run estimates of ARDL. The long run estimate shows that inflation rate (INFR) has positive relationship with the growth rate of GDP (GDPG). The coefficient of inflation rate is 0.0022 and it implies that 1 percent increase in inflation rate will increase GDPG of SSA countries by 0.0022 percent in the long run. An increase in inflation rate will always erode the purchasing power of individuals as well as investors, thereby, forcing people to dis-save and caused reduction in the level of investments that could foster economic growth. This finding is against the a priori expectation and corroborates the finding of Kazimoto (2014) who found a positive relationship between inflation rate and economic growth in East African countries.

The coefficient of the real exchange rate which stands at -0.0034 indicates that 1 percent increase in real exchange rate will decrease the GDP growth rate of SSA countriesby 0.003 in the long run. This is in conformity with the a priori expectation because further devaluation of local currencies will force investors to cut down production since most of the raw materials used for production are imported. This will result to reduction in the contributions of firms to output growth. The study's outcome supports the findings of Saka*et al*. (2015) and in contrary to the findings of Kazimoto (2014).

The coefficient of fiscal deficit reveals a positive relationship as well, with the value of 0.5257. The implication is that 1 percent increase in fiscal deficit will increase GDP growth rate of SSA countries by 0.53 percent in the long run. Looking at this from the angle of fiscal discipline, if the money borrowed to finance the deficit is utilized judiciously and efficiently, it is expected that GDP growth rate will increase. However, if the funds are mismanaged, the resultant effect will be reduction in the growth rate of GDP since the money would be paid back. This finding failed to support the findings of Saka*et al.* (2015) who revealed that fiscal deficit has negative implication on economic growth among ECOWAS countries. Going by the p values of all the variables, the result shows that only fiscal deficit is statistically significant at 5 percent level with the p value of 0.0000 which is lower than 5 percent. While inflation and exchange rates are statistically insignificant since their p values of 0.88 and 0.66 respectively, are greater than 5 percent.

Furthermore, the short run estimate shows that the coefficient of inflation rate stands at -1.0442. This relationship is negative and it is expected because high inflation rate will cause reduction in investments as there would be little or nothing to invest as the purchasing power is being eroded. The coefficient suggests that 1 percent increase in inflation rate in the short run will reduce GDP growth rate of SSA

countries by 1.04 percent. The finding conforms to the a priori expectation but in contrary with the findings of Kazimoto (2014) who found in his study that inflation has positive impact on economic growth in East Africa.

The coefficient of real exchange rate in the short run is -0.6002. It means that if real exchange rate is increased by 1 percent, GDP growth rate will be reduced by 0.60 percent. The finding conforms to the a priori expectation and as well corroborates the findings of Saka*et al.* (2015).The coefficient of fiscal deficit also shows a positive value of 0.6347. This implies that 1 percent increase in fiscal deficit will increase GDP growth rate of SSA countries by 0.63 percent in the short run. Fiscal deficit is revealed as a growth enhancer in this study. However, it does not support the findings of Saka*et al.* (2015). Judging from the p values, the result also shows that only fiscal deficit is statistically significant at 5 percent level while inflation and exchange rate are statistically insignificant.

The constant value of 6.8272 shows that if all the variables are held constant, the value of GDP growth rate will be 6.8272. This finding conforms to a priori expectation because the constant or intercept value can be positive or negative. The error correcting term (ECT), that is, the cointegrating equation which represents the speed of adjustment from the short run disequilibrium position to the long run equilibrium position is -0.7617 with the p value of 0.0000. The ECT has the expected sign and statistically significant at 5 percent level. This implies that 76 percent disequilibrium in the previous years will be corrected or adjusted for in the current year. The speed of adjustment value is quite high and it suggests that any disequilibrium will be quickly adjusted for, for the economy to come back to the path of equilibrium.

Conclusion and Policy Recommendations

Conclusion

This study examines the impact of convergence criteria of monetary integration on economic performance of Sub-Saharan African countries between 1999 and 2021, using panel ARDL approach. The panel unit root test conducted shows a mixed order of integration, that is, I(0) and I(1). The Johansen Fisher cointegration test also reveals a long run relationship among the variables. After establishing the long run relationship, the study proceeded to using panel ARDL model and the result suggests that in the long run inflation rate is positive while it is negative in the short run. The study further shows that both in the long run and short run, real exchange rate has negative and insignificant effect on economic performance of SSA countries. Fiscal deficit also have positive and significant effect both in the long run and short run. The error correcting term shows 76 percent speed of adjustment and it is rightly signed.

There is no doubt that monetary integration remains a key strategy for SSA to transform itself from a continent of mainly least developed and developing countries to a strong united bloc of developed nations and a global force. It is imperative to widen the region's economic space so as to generate economies of scale for production and trade and to maximize the welfare functions. In conclusion, the convergence criteria of monetary integration vis-à-vis economic performance of SSA countries suggests that monetary integration is achievable but not without costs.

Policy Recommendation

Based on the findings of this study, the study therefore recommends the following;

- **i.** Governments should ensure that exchange rate is fixed so as to avoid continuous devaluation of their local currencies. This would help to increase investments and thereby contributing to the growth of the economy of SSA countries.
- **ii.** If exchange rate is fixed and there is appreciation of local currencies against the foreign currencies, inflation rate will be tamed through various productions of goods and services at reduced costs. Therefore, government should formulate policy that will help control exchange rate. As a way of controlling inflation as well, monetary policy tightening should be encouraged. This will help reduce the excess money in circulation.

iii. Although, fiscal deficit is positive and significant both in the long run and short run. This shows that borrowed funds have been judiciously utilized in these countries. However, governments of SSA countries should as a matter of urgency diversify their economies by tapping into their untapped abundant natural resources. These would help to increase revenue generation and there would be surplus against the fiscal deficits that these countries do run.

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Appendix

Balanced observations for each test (GDPG)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-21.3061	0.0000	9	189
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.0985	0.0000	9	189
ADF - Fisher Chi-square	295.575	0.0000	9	189
PP - Fisher Chi-square	85.2942	0.0000	9	198

Balanced observations for each test (INFR)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-17.0371	0.0000	9	189
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.4636	0.0000	9	189
ADF - Fisher Chi-square	197.518	0.0000	9	189
PP - Fisher Chi-square	108.187	0.0000	9	198

Balanced observations for each test (REXR)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.76260	0.0390	9	180
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.83884	0.0023	9	180
ADF - Fisher Chi-square	48.7301	0.0001	9	180
PP - Fisher Chi-square	61.4422	0.0000	9	189

Balanced observations for each test (FDEF)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.48091	0.0000	9	180
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.95399	0.0000	9	180
ADF - Fisher Chi-square	105.282	0.0000	9	180
PP - Fisher Chi-square	261.203	0.0000	9	189