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IMPACT OF REMITTANCES ON ECONOMIC GROWTH OF SUB-SAHARA AFRICA: A SYSTEM GMM APPROACH

Ibrahim Baba Iya Department of Economics, Modibbo Adama University Yola, Adamawa State, Nigeria
Iliya James Department of Economics, Modibbo Adama University Yola, Adamawa State, Nigeria

Abstract

The study examined the impact of remittances on economic growth of sub-Sahara Africa. A system-GMM approach of empirical analysis was employed given the inflows of remittances in recent times in sub-Sahara Africa. The study employed Sys-GMM estimation technique for the forty-eight (48) sub-Sahara African countries. The result of the investigation showed that remittances and population are positive but has no significant impact on economic growth of sub-Sahara Africa countries. The result also found that exports is statistically significant and therefore has impact on economic growth of SSA. The study recommends that government in sub-Sahara Africa countries should develop a policy to ensure migrants sending money to home countries should channel it through official means and the money sent to home countries should be mandated to be invested it in a productive business.

Key words: Remittance, Economic Growth, Official Development Assistance, SSA and GMM

JEL CODES: F24, F43, F35, 055 and C61

1. Introduction

Foreign remittance is a transfer of money in cash or goods from a foreign worker to the individuals or family in their migrant's countries. Remittances play a pivotal role in economic development in the 21st century where online transaction is common. Hence, remittances are now a global phenomenon and have attracted the attention of the experts in economics. Globalization manifests itself in foreign direct investment, portfolio capital flows, goods and services in international trade, technology transfers and labour migration. Esman, Roseline, Leonard and Lydia (2012) posited that when remittances are channel through a formal means, it has the potency to impact positively on the financial sector which eventually guaranteed effectiveness and efficiency of the sector. According to the World Bank (2011), over fifty percent (50%) of the remittances accruable to countries in the sub-Saharan region are mainly done through the informal links. These unofficial links posed a

serious threat and challenge in accounting for the remittances that come to sub-Sahara African countries. Developing countries like sub-Sahara Africa in recent times considered remittances as the single largest source of foreign exchange, exceeding export revenues, foreign direct investment (FDI), and different nonpublic capital (World Bank, 2013). Atilaw (2021) cited UNECA, 2020 and confirmed that Remittance flows were five times higher than foreign aid in 2019, \$714 billion against \$153 billion among this 78% of the worldwide proportion of remittance flows to low-and middle-income countries. This means that remittances have grown faster than foreign direct investment, or official development assistance (World Bank, 2006). Remittances over the last few years have risen slowly to about \$613 billion in 2017, of which \$72 billion was received by sub-Saharan African (SSA) countries (World Bank, 2017). Remittances continue to increase steadily over the years because of the migration and remittances made by migrants as a result of the earnings generated and

transferred by migrants which form major sources of international capital flows in sub-Sahara Africa. Many of the sub-Sahara African countries migrated to developed nations in search for better income, better education, better welfare, better standard of living and better business opportunities. The quest for the above line of activities bring about inflows of funds to Sub-Sahara Africa and hence, the objective of this study is to assess the impact of remittances on economic growth of Sub-Sahara Africa adopting dynamic panel data of system generalized method of moments (SGMM). This study is structured as follows; section 2 is devoted to brief review of literatures, conceptual issues, theoretical framework and empirical review. Section three (3) is centered on methodology and section four (4) is results and discussion followed by the conclusion and recommendations.

2. Literature Review

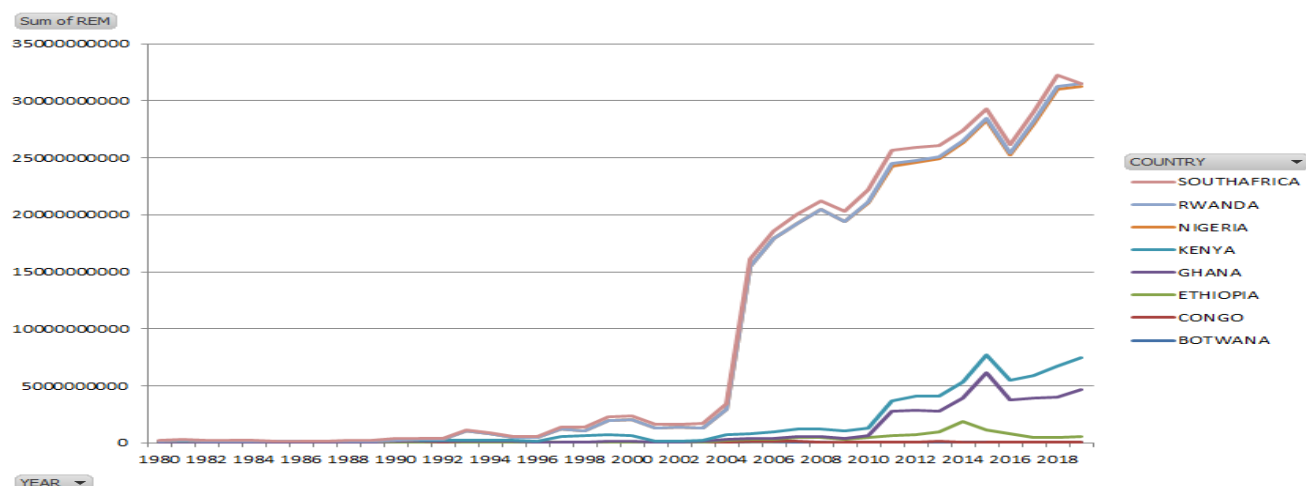
Experts like Molina, 2007; Barajas et al. 2009 believe that remittances play a similar role like foreign aid and foreign direct investment in boosting national savings in developing economies. Adenutsi (2010) stressed that remittances can have a positive impact on economic growth of developing economies like SSA as a result of investment capital coming out from the funds sent back to home countries by migrants. Remittances are also believed to provide much needed capital for households which they can use for savings to finance investments (Catrinescu et al., (2009). Learnmore (2012) cited Karagoz (2009) and affirmed that remittances can have a positive effect on economic growth in developing countries through savings and investment. Barajas et al., (2009) contends that remittances help boost human capital investments which are critical in economic growth through financing formal schooling of the receiving households. Chami et al., (2003) argued that due to

information asymmetry holding between the migrants and the remittances recipient household, moral hazards through reduced labour supply by the members of the receiving households are likely to negatively have impact on economic growth of the recipient economy. Learnmore (2012) cited Pradham et al. (2008) dwell on the term “idleness” to explain the moral hazard problem, a situation where recipient of remittances either reduce their labour effort or completely stops working. The recipient households may use remittances for increased leisure while reducing their labour supply (Learnmore, 2012 reported Karagoz, 2009; Barajas et al., 2009). It is reported that financial development within an economy can aid economic growth (Giuliano & Ruiz – Arranz, 2009). The migration literature has always perceived financial development as a prerequisite for positive growth effects of remittances. Betting and Zazzaro (2009) postulated that in order for remittances to have positive economic growth effects, there must be a well-developed financial system.

2.1 Conceptual Issues

Remittances

International Monetary Fund (IMF) (2020) concluded that when migrants sent home part of their earnings in the form of cash or goods to support their families, these transfers are known as workers’ or migrant remittances. IMF further asserts that “remittances have been growing rapidly in the past few years and now represent the largest source of foreign income for many developing countries”. Hence, remittances refer to personal transfers consist of all current transfers in cash or in kind made, or received, by resident households to or from other non-resident households. Below is the flow of remittances in sub-Sahara Africa for the few years.



Source: Author's computation using python, 2022

Figure 1: Inflow of Remittances in sub-Sahara Africa

From figure 1 above, South Africa inflows of remittances has a sharp increase together with Nigeria and Rwanda but the South Africa inflows is sharper than the two countries starting from year 2005. Hence, South Africa has experienced unprecedented inflows. Kenya and Ghana inflows are also increasing but started from 2010 and steadily increased in recent times even though Kenya's inflow is greater than that of Ghana. The remaining countries like Congo, Ethiopia and Botswana remittances inflows are very low most especially Botswana and Congo. It is sufficed to say from the table above that it is evident that the inflows of remittances in sub-Sahara Africa increases steadily and significantly impacted on the economy of SSA. The movements of the trends are positive, the money injected into the economy of sub-Sahara African countries by migrants is positively impacting a lot. Looking at the trends, it is evident from 2005 to date that sub-Sahara Africa economy has improved with the contribution of the sharp increase of the inflows in recent times.

Economic Growth

Ahuja (2016) postulated that economic growth is firstly, a sustained annual increase in an economy's real national income over a long period of time. This is a rising trend of net national product at constant prices and may not have positive impact on the economy, it is just a

mere increase accompanied by population increase more than the increase in national income. Secondly, economic growth is "annual increase in real per capita income of a country over a long period". This definition affects the standard of living of the people positively. Jhingan (2002) asserted that economic growth refers to the increase, over time, of a country's or an economic capacity to produce those goods and services needed to improve the well-being of the citizens in increasing numbers and diversity.

2.2 Theoretical Framework

Pure Altruism and Pure self-interest theories

The pure altruism theory highlights that migrants' remit in back home in concern of the welfare of remaining family members (Haggen-Zanker & Siegel, 2007; OECD, 2006). Chami et al (2003) posited that this model, the migrant's utility is derived from that of his/her family back home. The migrant is rather satisfied when the welfare of his family back home is better off (OECD, 2006). Pure self-interest model is based on the argument that remittances are not always countercyclical. This is true because a times volume of remittance will dwindle when economic conditions in the recipient country is bad. For this reason, Brown (2006) admitted that there is no inverse relationship

between volumes of remittances and the economic performance of the migrant's country. This means that migrants remit money for the purpose to invest or inherit assets back home and also for them to return home with dignity (Hagen-Zanker & Siegel, 2007; OECD, 2006) as cited by (Learnmore, 2012).

2.3 Empirical Review

The subject of the growth effects of remittances is characterized by different and conflicting perspectives and the findings are mixed. While migration optimists believed in positive growth effect of remittances, migration pessimists on the other hand challenge this position and claim that remittances have either a negative or statistically insignificant. Bajra (2021) carried out a study on the impact of migrant remittances on economic growth and inequality in the Western Balkan countries. He adopted the method of instrumental variables (IV), the study found that while remittances influence economic growth, their inflow also promotes a high level of migration and absorbs a large workforce by influencing the labour market and encouraging uncontrolled individual relocation. The study also revealed that remittances do not provide strong support for economic growth and inequality. Similarly, Atilaw (2021) carried a study on the effect of international remittances on economic growth in sub-Saharan Africa evidence from panel data approach of the Generalized Method of Moments (GMM). The study used 29 sub-Saharan African countries for the period 2004 to 2019. The study found that international remittances have a significant positive effect on economic growth of sub-Saharan Africa.

Ofori and Grechyna (2021) investigated remittances, natural resource rent and economic growth in sub-Saharan Africa. Study had a sample of 43 SSA countries for the period 1990–2017. The study employed the Pooled Ordinary Least Squares (POLS), Fixed-Effects, Random-Effects and Generalized Method of Moments (GMM). The result revealed that there is a positive marginal and net effect on economic growth from the interaction between remittances and oil rent. More to this, the unconditional effect of remittances on growth is positive. In a similar study, Falade et al.,

(2020) examined migrants' remittances, financial development and economic growth in Nigeria: the interaction effect. The study adopted Augmented Dickey-Fuller (ADF) and Phillip Peron (PP) unit root test, Johansen Co-integration and Vector Error Correction Model technique (VECM). The study found out that both the ADF and PP indicated that real-GDP, migrants' remittance, financial development index, the interaction of migrants' remittance and financial development index, and trade openness were integrated of order ($\Delta=1$). The VECM also revealed that interaction of migrants' remittance and financial development index and trade openness were directly related to real-GDP. More to this, Lacheheb and Ismail (2020) investigated the relationship between remittance and economic growth in a panel of 93 low and middle-income countries using annual data from 2009 to 2017. The study adopted System Generalized Method of Moments (SYS-GMM), the result revealed that remittance has a significant negative impact on growth after removing outliers. However, the result before outliers was indicating a negative but non-significant relationship between remittance and growth. The results confirm that remittance flow leads to deteriorating economic growth in the receiving countries. Laura, Ruxandra and Loana (2020) carried out a study on the impact of remittances on the receiving country: some evidence from Romania in European context. The study adopted quantitative analysis by using econometric models to establish the correlation and the causality between the variables. The result found out that remittances granger-cause investment rate and export and the remittances does not granger cause economic growth.

Saidu and Salisu (2020) used panel data to examined international remittances and economic growth in some selected sub-Saharan Africa Countries: Evidence from panel co-integration approach. The study analyzed the long-run relationship of remittances and economic growth in some selected Sub-Saharan Africa Countries consisting of four countries. The study adopted LLC and IPS panel unit root test, Pedroni and Kao co-integration test to investigate structural and causal relationship between variables. The result of the study revealed that an increase in remittance, foreign

direct investment, trade openness and domestic investment increase economic growth of sub-Saharan Africa. Similarly, Ekanayake and Moslares (2020) carried out a study on do remittances promote economic growth? Evidence from Latin American countries. The study employed panel least square and panel full-modified least squares (FMOLS) method of estimation. In addition to this, short run and long run effects of workers remittance on economic growth and poverty on individual countries with the autogressive Distributive Lag (ARDL-ECM) approach to cointegration was adopted spanning from 1980-2018. The study found that workers remittances have a positive effect on long-run economic growth in the majority of the countries under investigation.

Mordi and Okafor (2019) examined the role of foreign remittances and the performance of Sub-Saharan African Economy. The study employed a panel econometric technique of pooled Ordinary Least Square (OLS), fixed effects model, random effects model, the Hausman test, the dynamic panel data model, using the Generalized Method of Moments (GMM SYS) for 26 Sub-Saharan African Countries between (1990 – 2016). Other tests carried out are; descriptive statistics, heteroscedasticity test, panel unit root test, ward test, white test and granger causality test. The econometric result of pooled OLS, the static (fixed effect and random effect) and the dynamic panel data model revealed that remittances inflows significantly affect the economy of Sub-Saharan African negatively. The granger causality test carried out in the study also revealed a negative unidirectional relationship between remittances and economic growth. The study suggests that higher remittances channeled towards unproductive purposes have invariably led to a fall in economic growth in Sub-Saharan Africa. Anetor (2019) investigated remittance and economic growth nexus in Nigeria: does financial sector development play a critical role? Spanning from 1981 to 2017. Autoregressive distributed lag (ARDL) model to analyze the long-run and short-run relationships between the variables. The results depict that remittances have a negative and significant effect on economic growth both in the long-run and short-run.

3. Methodology

3.1 Research Design

The study adopted quantitative research design in the form of econometric modeling technique by using dynamic panel data analysis of system generalized method of moments. Panel data model of econometric techniques were used to assess the impact of remittances on economic growth of sub-Sahara Africa.

3.2 Data and Sources

Data for all the variables were drawn from World Bank Indicators that is publish in December, 2022. The variables are Gross domestic product (GDP), remittances (REM), total population (POP) and export of goods and services (EXP).

3.3 Method of Data Collection

The study used quantitative research and essentially collected from World Development Indicators data bank publication of December, 2022.

3.4 Model Specification

The model is specified as thus;

$$GDP_{it} = \beta_0 + \beta_1 REM_{it} + \beta_2 POP_{it} + \beta_3 EXP_{it} + \mu_{it} \quad (1)$$

To include the lag of growth as another explanatory variable, the model can be extended and specified below;

$$GDP_{it} = GDP_{it-1} + \beta_1 REM_{it} + \beta_2 POP_{it} + \beta_3 EXP_{it} + \mu_{it} \quad (2)$$

Where GDP = Gross domestic product

GDP_{it-1} = lagged value of Gross domestic product

REM = Remittances

POP = Total Population

EXP = Exports of goods and service

A priori Expectation

$\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 > 0$. Remittances and population expected sign are either positive or negative (+-), export of goods and services is expected to be positive (+).

3.5 Method of Data Analysis

The study adopted dynamic panel data approach because it allows control for individual heterogeneity, gives more information data sets, better study the dynamics of adjustment and identification of parameters. This method also addresses the problem of endogeneity problem. Endogeneity problem arises as a result of bi-directional causality between economic growth and remittances. Jongwanich (2007) used Generalized Method of Moments (GMM) to solve for the endogeneity problem. The method is also employed because of the inclusion of lagged dependent in the model by adopting System GMM because of its superior, precision, less bias and efficient. Hence, two-step SYS-GMM is interpreted in this study. The rationale behind the use of GMM as a method of estimation is the fact that economic variables are dynamic in nature. Also, the method has ability to deal with biases resulting from measurement error and the endogeneity problem (Durlauf et al., 2004).

3.6 Postestimation Tests

The Sargan test is adopted in the study to test for overidentifying restrictions. This test is significant when it comes to assessing the validity of instruments included in the model. It helps identify the correct number of restrictions to be included in the growth model and also in locating the relevance of the included regressors. Test for autocorrelation was carried out. The test for AR (1) were applied to the differenced residuals while the test for AR (2) detects autocorrelation in levels. The test has null hypothesis of no autocorrelation. A correlation matrix with all the included explanatory variables is used and this helps to check for multicollinearity. Multicollinearity is a problem that arises when either all or some of the included regressors are highly correlated with each other (Koop, 2009).

4. Results and Discussion

Table 1: Summary of Descriptive Statistics

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum
LGDP	1892	26.2238	3.384547	-2.007555	32.92244
LREM	1536	17.56521	2.427519	9.208553	23.9142
LPOP	2016	15.56568	1.568449	11.05502	19.17868
LEXP	1672	25.11357	3.201403	12.5728	32.24656

Source: Analysis using STATA 12, 2023.

In table 1 above, gross domestic product (GDP) of Sub-Saharan Africa have been unprecedented with a mean value of 26.2238 between 1980 and 2021 with standard deviation of 3.84547. The minimum GDP recorded in SSA over the period of study was -2.007555. A maximum of 32.92244 between 1980 to 2021. Personal remittances (REM) which is also high with the mean value of 17.56521. This is possible because remittances are one of the most influential determinants of economic growth over the years with the standard deviation of 3.84547. The minimum remittances recorded were 9.208553 and

the maximum was 23.9142. This may partly be explained because of the migration of sub-Saharan African countries citizens to other part of the world. Population (POP) mean value in SSA was 15.56568 with standard deviation of 1.568449 and minimum value of 11.05502, while a maximum of 19.17868 was discovered over the years. Export of goods and services (EXP) mean value of the years under study is also high with 25.11357 and standard deviation of 3.201403. The minimum value of the export of goods and services recorded was 12.572, while the maximum value was 32.24656.

Table 2: Correlation Matrix

	GDP	REM	POP	EXP
LGDP	1.0000			
LREM	0.3086	1.0000		
LPOP	0.4933	0.4433	1.0000	
LEXP	0.8966	0.2801	0.3668	1.0000

Source: Analysis using STATA 12, 2023.

The correlation between exports (EXP) and gross domestic product (GDP) in table 2 above is strongly positive (0.8966) suggesting that as export of goods and services increases, gross domestic product also increase. The association between remittances (REM) and gross

domestic product is positive with the value 0.3086 but not strong. This is due to the fact that most of the money remitted to sub-Sahara African countries is devoted to consumption which may not have a significant impact on the economy. The relationship between population (POP) and gross domestic product (GDP) is positive (0.4933) but low. This means that the populations we have in sub-Sahara Africa are not productive as reflected above. Remittances (REM) and Population (POP) shared a positive but weak correlation (0.4433). Remittances (REM) and export of goods and services (EXP) shared a weak association (0.2801). Again, correlation between population and exports is positive but weak with the value of 0.3668.

Table 3: Summary of System GMM Results

Variables	One step System GMM	Two step System GMM
LGDP _{t-1}	0.8301584***	1.032595***
LREM	0.0025537	0.0012836
LPDP	0.0972847***	0.0852736
LEXP	0.1166086***	0.1267537***
Sargan Test	22.35.137	42.35022
	0.000	1.0000
P – value		
AR (1)		-3.97441
		0.0001
P – value		
AR (2)		0.042882
P		0.6681
N	48	48
T	41	41

Sources: Analysis using STATA 12, 2023

Note: The variables are defined as follows: Log of Gross Domestic Product (LGDP) = Log of Remittances (LREM); Log of Population (LPOP); Log of Exports (EXP). Significance; ***, ** and * indicate significance at 1%, 5% and 10% respectively.

The result in table 3 showed that the lagged dependent variable (LGDP_{t-1}) with the coefficient 1.032595 positive. It shows a positive impact of lagged dependent variables. Thus, it suggests that a previous value of gross domestic product (GDP) has positive and significant impact on the current value of gross domestic product. The coefficient of remittances (REM) is 0.0012836 which suggests a positive coefficient but has

insignificant impact on economic growth of sub-Sahara African countries. Although this association contravenes the theoretical expectations, it numerically implies that gross domestic product in SSA will increase by 0.001 (1%) each time remittances increase by 1 percent. The coefficient of population is positive with the value 0.0852736 which is (80%). This implies that one 1 unit increase in population will result to about 80% increase

in gross domestic product in the sub-Sahara Africa countries. The association between the population and gross domestic product is statistically insignificant. This may be due to the fact that sub-Sahara Africa countries populations are unproductive. When you have productive population its impacts positively on economy of the country. As expected, export of goods and services exerted positive and significant impact on economic growth in SSA, thus gross domestic product will increase by 0.1267537 (12%) percent when exports increase by 1 percent.

The post estimation test revealed that the results of the two-step System Generalized Method of Moments (SYS-GMM) are efficient indicating that the instruments used are valid. The results indicate that 42.35022 (1.0000) which means the instruments are valid. The AR (1) and AR (2) of autocorrelation tests results are - 3.9741 (0.0001) and 0.42882 (0.6681) both indicated that there is no autocorrelation among the residuals in the model.

5. Conclusion and Recommendations

Remittances are positive but have insignificant impact on the economic growth of sub-Sahara Africa. Ofori and Grechyna (2021) equally confirmed that unconditional effect of remittances on growth is positive. The fact that remittances has insignificant impact on growth could be connected with the fact that most of the funds sent back by migrants to the home country in the region were not

invested into productive venture that will improve the economic performance but rather it is used for either consumption, education of their children, channels which would not have direct impact on the economy. In addition to this, well financial sector need to be develop in SSA region. Mordi and Okafor (2019) attested that higher remittances sent back to home countries in SSA were channeled to unproductive purposes which led to the fall in economic growth in the region. Similarly, populations in sub-Sahara Africa are positive but also have insignificant impact on the economy. This is possible because with the high population we have in Sub-Sahara Africa, the people are not productive hence becoming a burden on the economy of the region. Export of goods and services is positive and has significant impact on the economy of the region. This is eminent because of the contribution of exports to the sub-Sahara Africa country. The study therefore recommends the following;

Government of sub-Sahara Africa should design a policy of channeling all remittances through official means and develop its financial sector for accountability and to also help determine the inflow of remittances in the region.

A deliberate policy should be design in the region in order to track those receiving remittances in order to compel them invest it in productive businesses that will help improve economic growth of the region.

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