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Remittances, Foreign Aid and Private Consumption in Sub-Saharan Africa (SSA):

A System GMM Estimation

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Abstract

The question of whether remittances and foreign aid at the macro level impact private consumption in SSA has been explored in this study. Twenty-nine (29) SSA countries were sampled for the study from 2002 to 2017. The System Generalized Method of Moment (SGMM) estimator was applied in the study to account for the dynamics in the model. Empirical evidence showed that foreign aid and remittances exerted positive but insignificant impact on private consumption.

Key Words: Remittances, Foreign Aid, Private Consumption, System GMM
JEL CODE: F24, F35, E21, C23

1.0 Introduction

Remittances refer to the money and goods that are transmitted to households by migrant workers working outside their communities of origin. These resource transfers represent one of the key issues in economic development. In 2004, official international remittances were estimated at $93 billion per year (Ratha, 2004), making them about twice as large as the level of official aid-related flows to developing countries. World Bank figures show that remittances to different regions in Africa hover between 1 percent and 5 percent of gross domestic product (GDP), with West Africa receiving around 4 percent of its GDP in remittances. Total remittances to Africa stood at $60bn in 2012, up from $41.6bn in 2011 (Bodomo, 2014).

Researchers and policymakers have tended to take a rather pessimistic view of how remittances are spent or used and the impact of these monies on economic development. For example, a recent review of the literature by Chami, Fullenkamp and Jahjah (2003) reports three stylized facts: first, that a "significant proportion, and often the majority," of remittances are spent on consumption; second, that a smaller part of remittance funds goes into saving or investment; and third, the ways in which remittances are typically saved or invested – in housing, land and jewelry – are "not necessarily productive" to the economy as a whole. Despite this pessimistic view, the amount of money remitted back to Africa is bound to grow because of the formation of new diasporas in economically fast developing countries such as China, Russia, India and Brazil. Currently, more than 70 percent of the remittances that flow to Africa south of the Sahara come from the West, but it is expected that a growing percentage will be sourced from expanding African communities in places such as China (Bodomo, 2014)

In addition to the foregoing, enormous amount of resources has been put into foreign aid that go to developing countries, which stood at US$135 billion in 2014 (World Bank, 2016). Given the call from international policymakers to increase it further, it is unsurprising that aid has always been, and remains a subject of controversy for academics and policymakers. On the one hand, proponents argue that aid can help poor countries break out of the vicious cycle of poverty by funding "the core inputs to development that is, teachers,

health centers, roads, wells, medicine, to name a few if rich and poor countries alike follow through on their commitments (United Nations Millennium Project, 2002), on the other hand, the controversies surrounding the desirability of foreign aid is further heightened when it is evident that six of the top ten aid recipients in SSA are resource rich; countries such as Tanzania, DRC, Nigeria, Mozambique, South Sudan and Ghana. It is important to note that only two countries (DRC and Mozambique) of the poorest countries by HDI (but resource rich) are among the top ten recipients of ODA in 2014 (Bokosi and Chiraerae, 2015). Diverse and varied are the resource endowments of SSA countries, that they have come to form a reliable source of foreign exchange earnings for these countries. These earnings by countries in SSA from the export of primary products, and foreign aid from more developed countries and organizations have for a long time formed the source of revenue for consumption and investment purposes, with little attention and policy direction given to the potentials of remittances to influence the economy, given the fluctuations that have occurred in the primary product export markets recently. These fluctuations have made foreign exchange earnings for most SSA countries almost unpredictable.

However, despite economic and political difficulties in migrant host countries of Europe and America, especially occasioned by the global economic downturn of 2008 to 2010, remittances and foreign aid flows continue to grow significantly. The recession that followed the downturn and tightened immigration laws in the United States did not reduce flows to the main recipient countries. These remittances and foreign aid flows have not followed cyclical economic dynamics in either the sending or receiving economies. Between 2008 and 2014, remittances grew by an additional US$ 5.8 billion and foreign aid by an additional US$ 6.6 billion. In the wider developing world, remittances have leapfrogged foreign aid as constituting the highest share of inflows and it has remained so (Maimbo and Ratha, 2005).

Remittances are a key poverty reduction tool, as more than 60% of remittances are used to purchase daily necessities such as food, clothing and shelter. The remainder is saved, invested in housing, small business, health care or education (Meins, 2009). The challenge for SSA countries is how to maximize the consumption

expenditure potentials of foreign aid and remittances flows into the region. At a time of slow growth in some of SSA's largest economies, these inflows are expected to help relax foreign exchange restraints and improve household economic activities in the area of consumption.

This study is a macroeconomic approach to investigating the explanatory power of remittances and foreign aid on private consumption in SSA. This is one of the shortcomings of existing literature on these inflows.

The remainder of the paper proceeds as follows – section two outlines existing literature, section three lays out the data and methodology adopted in the study while section four contains estimation results and discussion; in section five, we give the summary and conclusion of the study.

2.0   Literature review

2.1   Remittances and Consumption in Developing and Emerging Countries

Empirical literature on the impact of remittance on receiving economies has been examined from both the micro and macroeconomic perspectives. A lot of literature has examined the economic growth and consumption impacts of remittances. While most literature on the effect of remittances on economic growth are more macro in analysis, the consumption remittance nexus are more micro There is however, scarcity of literature on the macroeconomic impacts of remittance and foreign aid on private consumption; given the role both inflows into SSA have played in both welfare and growth.

Studies such as Chami, Fullenkamp, and Jahjah, (2003) found a negative effect of remittances on economic growth, unlike the positive effect found by Tchantchane, Rodrigues, and Fortes (2013); Adams and Page (2005, 2007) found that remittances significantly reduced the level, depth, and severity of poverty in the developing world, even when Parinduri and Thangavelu (2008) did not find a strong link between remittances and household consumption; Ang, Sugiyarto, and Jha (2009) found no significant influence of consumption by remittances; Rivera and Gonzalez (2009) found that internal remittances seemed to affect more, categories

related to human development investments, health and education, while external remittances affected positively, physical capital investments. External remittances had a strong positive effect on health, and less consistent effect on education, just as Duval and Wolff (2013) found it significantly improved the living standard of the recipient households; Combes and Ebeke (2010) and Bilal, et al (2015) showed that remittances played a role mitigating consumption instability in less financially developed countries; Clement (2011) found evidence that remittances helped dependent households to achieve a basic level of consumption.

2.2   Remittances and Consumption in Sub-Saharan Africa (SSA)

Quartey (2006) studied the impact of migrant remittances on welfare in Ghana using the General Least Square (GLS) estimation technique, the study revealed that remittances improved household welfare and helped to minimize the effects of economic shocks to household welfare. They did not offset the shocks completely, however, except for food crop farmers (the Poorest in Ghana).

Adams, Cuecuecha and Page (2008) used the Ordinary Least Square (OLS) to investigate how the receipt of internal remittances (from within Ghana) and international remittances (from African or other countries) affected the marginal spending behavior of households on a broad range of consumption and investment goods, including food, education and housing. Findings from their investigation showed that households receiving remittances in Ghana do not spend more at the margin on food, education and housing than households with similar income levels and characteristics that do not receive remittances. When the analysis controlled for endogeneity and selection bias, the findings showed that any differences in the marginal spending behavior between remittance-receiving and non-receiving households were explained completely by the observed and unobserved characteristics of households.

Anyanwu and Erhijakpor (2010) asked if international remittances affected poverty in Africa. The study tackled the question by adopting the Ordinary Least Square (OLS) technique of estimation to find that international remittances reduced the level, depth, and severity of poverty in Africa. After instrumenting for

the possible endogeneity of international remittances, it was also found that a 10 percent increase in official international remittances as a share of GDP lead to a 2.9 percent decline in the poverty headcount or the share of people living in poverty in Africa.

In Nigeria, Olowa and Awoyemi (2011) studied remittances and household expenditure in rural Nigeria using the Ordinary Least Square estimation method. Unlike Adams, Cuecuecha and Page (2008) that found that households receiving remittances in Ghana did not spend more at the margin on food, education and housing than households with similar income levels and characteristics that do not receive remittances, this study found that at the margin, households receiving domestic and foreign remittances spent between 45 and 58 percent more, respectively, on education and housing than do households with no remittances. However, their result showed that households receiving remittances spent less at the margin on consumption of food, consumer goods and durables than do households receiving no remittances.

Randanzzo and Piracha (2014) carried out a study on remittances and household expenditure behaviour in Senegal using the propensity score matching (PSM) and OLS methods. Results showed that there was a productive use of international remittances in Senegal. It was further discovered that the impact of remittances disappeared when the marginal spending behaviour is considered, i.e., households did not show a different consumption pattern with respect to their remittance status which represents the findings of Cuecuecha and Page (2008) in Ghana and part of the findings of Olowa and Awoyemi (2011) in Nigeria.

2.2   Foreign aid in Developing and Emerging Countries

Foreign aid and its impact on economic development has been examined in studies such as Tadesse (2011) and Girma (2015), Baliamoune-Lutz (2011), Fasanya and Onakoya (2012) and Mbah and Amassoma (2014) with conflicting outcomes. However, very few literatures exist on the consumption effect of foreign aid.

On foreign aid as an antidote for human poverty in Sub-Saharan Africa, Thorpe (2011) used an unbalanced panel data covering the period from 2003 to 2009 to estimate the impact of foreign aid on the incidence of

poverty in Sub-Saharan Africa. Adopting the fixed effects regression estimation method to account for country invariant characteristics and time effects, findings indicated that there was an inverse relationship between foreign aid and human poverty, an effect that was found to be marginal.

Meanwhile, Magesan (2016) in a study on the growth enhancing capability of foreign aid in 88 developing countries using the Ordinary Least Square (OLS) Fixed Effect, found that a percentage point increase in aid as a fraction of GDP causes the annual average growth rate in a recipient country to increase by about 0.6 percentage points. This estimated effect, according to the research findings, is explained almost entirely by an expansion of the service industry, accompanied by a large increase in household consumption, with no evidence that aid caused "Dutch disease". The paper concluded that aid increased growth by inducing a structural change in household demand for services.

Other studies that have estimated the role of foreign aid in the macro economy include Ogundipe, Ojeaga, and Ogundipe (2014) found that the growth enhancing effect of foreign aid is reversed when interacted with policy, Balde (2011) and Benmamoun and Lehnert (2013).

While the focus of these studies have been predominantly economic growth focused, this study intends to lay emphasis on the effect of remittances and foreign aid on one component of economic growth – private consumption.

3.0   Data and Methodology

Secondary sources of data were used for this study. The source of data for this study was the World Bank's Development Indicator (WDI). For this research work, panel data was sourced on Private consumption (PC), Remittances (REM) and Foreign aid (FA). These data cut across the 29 countries in SSA for which there are available data.

The data period chosen was due to data availability as well as evidence which indicates that remittances inflow to sub-Sahara Africa grew significantly from US$1.9 billion in 1990 to US$34.5 billion in 2014 while foreign aid inflow grew from US$17.8 billion in 1990 to US$46.9 billion (World Bank, 2008, 2016).

The data period is also justified on the account that between the 2000 and 2015, the total migrant stock grew from 13,716,539 to 18,993,986, an increase of over 5 million people in a decade and half (United Nations, 2015).

3.1   Descriptive Statistics

Table 1

Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
Pc	2.21e+10	5.31e+10	1.84e+08	4.08e+11
Rem	9.62e+08	3.25e+09	518994.7	2.20e+10
fa	8.42e+08	9.12e+08	-1.45e+07	1.14e+10

Note: The table reported common statistics for each variable. These are mean, standard deviation (Std. Dev), minimum (Min) and maximum (Max) values

Table 1 shows that in the period under review, average private remittance flow into SSA was more than average flow of foreign aid. This indicates that foreign aid may be less relied upon to grow consumption in SSA. Alternative international flow such as the private remittances is significant as this may serve to cushion the adverse effects that primary product dependent countries in SSA may face. The value of the standard deviation shows that there may be more stability in the flow of foreign aid than remittances.

3.2   Theoretical framework

The empirical model for this study is based on Milton Friedman's (1957) Permanent Income Hypothesis (PIH). The central idea of the theory is that people base consumption on what is considered as "normal" income. In

doing this, the theory attempts to maintain a fairly constant standard of living even though their incomes may vary considerably from month to month or year to year.

The idea behind the permanent income hypothesis is that consumption depends on expectational earnings over a considerable period of time.

The consumption function of PIH is defined as:

$$C_t = f(PV_t) \tag{1}$$

Where PV_t is the present value of current and future income at time t

Friedman differs from Ando-Modigliani beginning with his treatment of PV term in equation (1), which, multiplying by a rate of return, gives us Friedman's permanent income theory as

$$Y_i^P = r.PV_i \tag{2}$$

Thus, permanent income from the consumer's present value includes human capital. The present value of future labour income is included in the above equation (Rode, 2012).

Friedman assumes that the consumer wants to smooth his actual income stream into a more or less flat consumption pattern. This gives a level of permanent consumption C^P that is proportional to permanent income Y_I^P. The individual rate of permanent consumption to permanent income is K^i and presumably depends on the interest rate. Thus, permanent consumption is related to permanent income with the equation (Rode, 2012)

$$C_i^P = K_i Y_i^P \tag{3}$$

Remittances and foreign aid vary from time to time depending on factors such as economic situations of migrant host countries, cost of remittances and labour restrictions in the host countries, political and diplomatic considerations from aid giving countries thus; they can be classified as transitory income. Yet another argument may be that if there has been consistent and indeed growing flow of migrant remittances over the years, then

it is no longer transitory but permanent. On the other hand, foreign aid flow into SSA which has been outstripped by remittances flow, the amount of which is at the whims and caprice of the donor country may be classified as transitory. In this study therefore, we classify migrant remittances as permanent income and foreign aid as transitory income. Hence, private consumption will be a function of transitory (foreign aid) and permanent income (remittances received). This relationship is described with the following equation:

$$C_{it} = f(Y_{it}^T, Y_{it}^P) \qquad (4)$$

Where, C_{it} is consumption in country i at time t and it is the market value of all goods and services, including consumer durables expressed in current US dollar term.

Y_{it}^T is transitory income in country i at time t and is the value foreign aid (Official Development Assistance) received and expressed in current US dollar term.

Y_{it}^P is permanent income in country i at time t and is the value of private remittances received expressed in current US dollar term

3.2.1 The Model

An estimable consumption function of the form of the PIH can be derived from equation (4) above. Hence,

$$C_{it} = \alpha_0 + \alpha_1 Y_{it}^T + \alpha_2 Y_{it}^P + \mu_{it} \qquad (5)$$

According to the theory, it is important to note that an increase in income should not immediately increase consumption spending by very much, but with time it should have a greater and greater effect.

To test the theory, Friedman assumed that on the average, people would base their idea of normal or permanent income on what had happened over the past several years thus, current consumption is influenced by the past value of consumption. To account for this lag, the following equation is specified:

$$C_{it} = \alpha_0 + \alpha_1 Y_{it}^T + \alpha_2 Y_{it}^P + \alpha_3 C_{t-1} + \mu_{it} \qquad (6)$$

Furthermore, current consumption can also be influenced by past and current values of permanent income but less by the past values of transitory income. Therefore, equation (6) above is modified to account for this dynamic, thus equation (7) is the estimable, dynamic form of the model in equation (6) with all the variables expressed in their natural log forms

$$\ln PC_{it} = \beta_0 + \beta_1 \ln PC_{i,t-1} + \beta_2 \ln REM_{it} + \beta_3 \ln REM_{i,t-1} + \beta_4 \ln FA + \varepsilon_{it} + \mu_{it} \qquad (8)$$

The term ε_{it} is the fixed effect, containing all factors that do not vary over time, and u_{it} is the idiosyncratic error term (Wooldridge, 2013).

Hence, $\varepsilon_{it} + \mu_{it} = v_{it}$

3.3   Estimation Technique

With panel data, pooled OLS is appropriate when there is neither significant country nor significant time effects, as it assumes that both the slope and intercept are constant. This assumption is very restrictive, because there are considerable differences across these countries which could result in omitted variable bias (Thorpe, 2011). Therefore, to control for heterogeneity in countries, the fixed effects model or random effects model is appropriate for studies such as this with large N and small T. However, dynamic models of the type that has been specified for this study suffer from two sources of persistence over time. They are:

1) autocorrelation that results from the inclusion of a lagged dependent variable as a regressor in the model and

2) unobserved heterogeneity among units (Olubusoye, Salisu and Olofin, 2016). To solve these problems requires an estimator of the General Method of Moment (GMM) class that will utilize some sets of instruments to deal with the potential problem of correlation between the lagged dependent variable and the disturbance term. In this study, we have adopted the Blundell and Bond (1998) System GMM (SGMM) estimator because it is more efficient as it uses instruments in both the levels and first differences in the estimation process. In using the SGMM, we will employ the two-step estimation.

Although the Arellano and Bond (1991, cited in Olubusoye, Salisu and Olofin, 2016) and Blundell and Bond (1998, cited in Olubusoye, Salisu and Olofin, 2016) had reported that the two-step standard errors tend to be severely downward biased, the bias can be compensated for by the finite-sample correction to the two-step covariance matrix derived by Windmeijer (2005, cited in Olubusoye, Salisu and Olofin, 2016) making a two-step robust option more efficient than the one-step robust in system GMM (Olubusoye, Salisu and Olofin, 2016)

4.0 Estimations Results and Discussions

Table 2: Two-step System GMM Estimation
Dependent Variable: LNPC

VARIABLES	SGMM
$lnpc_{t-1}$	1.043***
	(0.0678)
$Lnpc_{t-2}$	-0.161***
	(0.0442)
lnrem	0.0253
	(0.142)
$Lnrem_{t-1}$	0.0111
	(0.131)
lnfa	0.0471
	(0.0293)
Constant	1.101*
	(0.564)
Observations	370
Number of crossid	29
country effect	YES
year effect	NO
Hansen_test	11.28

Hansen Prob	0.257
Sargan_test	14.44
Sargan Prob	0.107
AR(1)_test	-2.252
AR(1)_P-value	0.0243
AR(2)_test	-0.121
AR(2)_P-value	0.904
No. of Instruments	15

NOTE: Standard errors in parentheses

*** denotes 1% level of significance; ** denotes 5% level of significance and * denotes 10% level of significance

Source: Authors' Computation Using Stata 13

4.1   Interpretation of Result

From the parameter estimate, remittances is expectedly positively related to private consumption. The lag of remittances is also positively related to private consumption. However, both do not exert statistically significant impact on private consumption. From the output, ceteris paribus, a 1% increase in remittances received will induce about 0.03% increase in private consumption. Furthermore, a one period lag in remittances received will still have a positive effect on private consumption. In the same vein, foreign aid is positively but not significantly related to private consumption. From the results, a 1% rise in foreign aid will lead to about 5% rise in private consumption. It is also instructive form the results to note that households' current consumption is significantly influenced by the level of their previous income level. A one period lag of per capita income exerts a positive and significant impact on private consumption while further back, the effect becomes significantly negative. By implication, most households will not necessarily increase consumption expenditure

in the current moment even if their incomes increased. This might explain the reason why consumption has not risen to increases in remittances in recent years in the selected SSA countries.

4.1.1 Diagnostics

The Sargan and Hansen tests examine the validity of the instruments used by testing for the over-identifying restrictions. The reported p-values show the null is to be accepted. The AR (1) and AR (2) tests examine if there is first and second order autocorrelation in the error. The null hypothesis is rejected for AR (1) but accepted for AR (2)

All inferences for this paper are drawn at the 5% level of significance.

4.2   Discussion of Findings and Policy Implication

It has been shown from this research that private consumption in SSA is influenced more by its lag than remittances and foreign aid. This shows that modelling consumption in SSA requires a careful consideration of the lag in consumption. In more simple terms, a positive increase in current consumption will induce a positive response from consumption in one year. However, the same increase will produce a negative effect on consumption two years later. It will be noticed that the proxy for permanent income, that is remittances (*lnrem*), had both an instantaneous and one-year lag positive effect on consumption which may imply a high confidence placed on future consumption coming from income from private remittances received by households. Foreign aid as seen from the analysis has a positive but insignificant impact on private consumption. Fortunately, with the spread and rise in democratic governance and institutions across SSA, some of which are aimed at translating the aid into improved welfare for the people, foreign aid seems to be recording some positive impact in the region. The impact may of foreign aid may begin to have more impact if more projects are directed more towards projects that enhances the ability of the household to increase consumption. For example, an intervention in the educational sector will increase disposable income for consuming households who spend a good percentage of the private remittances received on education.

The outcome of the study has shown that policy makers in SSA can do more to improve the private consumption potential of remittances and foreign aid which have been shown to be positively but insignificantly related to private consumption. Private consumption is a variable of significance to policy makers since it constitutes a large chunk of the gross domestic product. Policies towards reducing the cost of remittances will free up more income for households receiving remittances to spend. Finally, for foreign aid to have the desired significant impact on private consumption, there must proper monitoring of the projects for which it is used to ensure that it eases households of the burden of human capital spending, to which studies such as (Tchantchane, Rodrigues, and Fortes, 2013) have identified as constituting the chunk of remittance spending.

5.0   Summary and conclusions

The question of whether remittances and foreign aid at the macro level impact private consumption in SSA has been explored in this study. The System GMM estimator was used to explore the question. Results from the study highlighted a positive but insignificant effect from remittances and foreign aid on private consumption in SSA. However, the study also showed that consumption in SSA is dynamic, judging by the significant effect on consumption, of its lag. Therefore, policies on consumption in the present, should consider past levels of consumption. The findings indicate that modeling consumption in SSA should take this dynamic to cognizance. Finally, from the results, remittances may have become a source of permanent income for households in SSA, as the significance of foreign aid wanes.

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