

Foreign Aid, Remittances and Poverty in Sub-Saharan Africa (2007-2018)

*S. O. Falana, S. D. Salako, S. M. Akinsanya, L. O. Awoyinka, A. Salaudeen, and O. J. Adewoye

Department of Economics, Federal University of Agriculture, Abeokuta (FUNAAB), P.M.B. 2240,
Abeokuta, Nigeria.

Department of Agricultural Economics and Farm Management, FUNAAB.

The Federal Polytechnic, Ilaro.

Department of Computer Science, Yaba College of Technology.

*Corresponding Author

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ABSTRACT

This study examined the impact of foreign aid and remittances on poverty in 37 sub-Saharan African countries from 2007 to 2018, a region that has received significant aid and remittances over the past 20 years. Key variables included Poverty Headcount (%), international remittances, and foreign aid flows. Data were obtained from the World Development Indicators, OECD, and the GCIP published by the United Nations. A dynamic panel data model was used, estimated with the system-Generalized Method of Moments (sys-GMM). The AR (2) and Hansen test statistics supported the model's validity, and a robustness check with Real Household Final Consumption Expenditure confirmed the results. The findings indicate that remittances significantly reduce poverty in the short run but not in the long run, while foreign aid has an insignificant positive effect. The study recommends reducing remittance costs, removing barriers to inflow, and creating a policy environment that enhances the effectiveness of aid.

Keywords: Poverty; Foreign Aid; Remittance.

INTRODUCTION

Background to the study

Poverty, a concept which has also been conceptualized as deprivation, is a situation whereby an individual is not able to satisfy his physical, psychological, and social needs. In the world today, out of a population of over 7 billion, around 10% are deemed to be living in poverty and deprived – living below \$1.90 per day (The World Bank Group, 2018). Countries all over the world in the past have made consistent and concerted efforts, plans, and policies towards ensuring the liberation of the society from impoverishment. It may be safe to say that a good number of countries who have been successful in their attempts are those referred to as the “developed countries” today, while others who have remained unsuccessful are the developing and less-developed countries of the day; the efforts have not stopped.

The United Nations Development Programme (UNDP) through its Sustainable Development Goals (SDGs) has prioritized putting an end to poverty in all its forms by 2030 among its developmental goals (World Bank, 2010). The reason for this is not far-fetched. Poverty, which is intrinsically linked to welfare, has a large degree of bearing on the state and structure of any given economy, ranging from level and quality of human capital, productivity levels, socio-cultural advancement, and a host of other important components. Since 1990, the World Bank and other international developmental organizations have made significant progress in the efforts

to reduce poverty; the number of people living in extreme poverty having been reduced from 1.9 billion in 1990 to an approximate 736 million in 2015, successfully halving the number of poor in the process. While it must be acknowledged that these efforts have yielded positive results, much is still left to be desired.

Today, while the total number of people living in poverty has reduced, regional poverty level reduction has remained uneven. Specific focus shall be given to the Sub-Saharan Africa for the purpose of this study; essentially, poverty level in this sub-region is what the study is concerned about. Over the years, the region has seen a rise in the number of poor, accounting for more than half of the extremely poor in the world today. Only four of the 47 sub-Saharan countries have achieved reduction in poverty headcount (Cape Verde, Mauritania, Senegal and South Africa), while about a dozen of them in fact recorded increases in poverty headcount ratio, for example, Nigeria, Democratic Republic of Congo and the United Republic of Tanzania showed substantially higher number of people living in poverty in 2005 than in 1981 (Hillebrand, 2008). The region infamously boasts of around 413million people who live below US\$1.90 daily. The use of socio-economic measures such as level of education, access to health and health status, life expectancy to capture the different dimensions of poverty also underline the welfare severity in the region. The table below gives a clearer insight into the distribution of the poor across regions of the world:

Column1	Poverty Headcount Ratio(% of Total Population)	Number of poor (in millions)
World	10	736
Sub-Saharan Africa	41	408.1
South Asia	12	209.9
East Asia and Pacific	2	45.7
Latin America & Carribean	4	24.9
Europe and Central Asia	1	9.1
Middle East and North Africa	5	21.3

Table 1 - Poverty Level across Regions. Source: Author (Data obtained from data.worldbank.org)

Of the various means through which solutions have been sought to the problem of poverty in developing and less developed countries, foreign aid, and remittances stand-out. Foreign Aid, the development assistance rendered by developed economies to developing and less-developed countries, is typically targeted at improving economic outcomes in the recipient countries. The earliest origin of foreign aid can be traced to the famous “Marshall Plan”, also known as the “European Recovery Program”, a successful United States-led program which was set-up to revive and improve the economies of some Southern and Western European countries after the second world war. By 1960, foreign aid had taken a more defined shape, spread beyond Europe and particularly targeted at poor or needy countries, with international organizations like the World Bank, IMF and United Nations taking over the full role of allocating and determining the qualification for the receipt of global aid funds. In the 1970, the United Nations and its member countries agreed to donate 0.7 percent of their Gross

National Income to global aid fund, however, only Sweden, Denmark, Luxembourg, the Netherland, and Norway have been able to donate up to this mark.

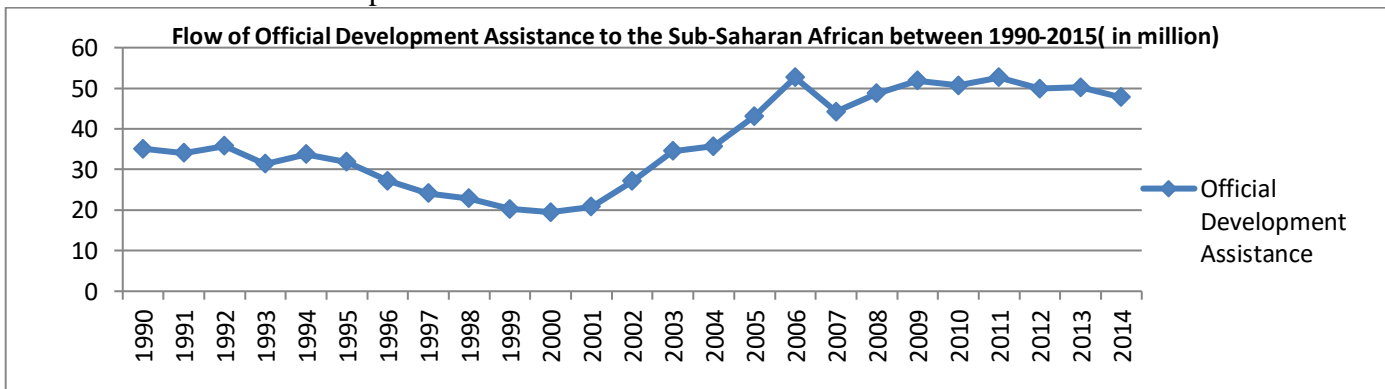


Figure 1. 1 : ODA Flows to the sub-Saharan Africa

Today, foreign aid is primarily captured by Official Development Assistance (ODA) from the Organization for

Economic Cooperation and Development (OECD). While at this juncture the bold claim that the flow of ODA has been responsible for the significant headway made in some regions regarding poverty-alleviation cannot be made, reference shall be made to existing relevant empirical works.

According to Champalimaud, Rui and Gil (2018); Chong, Gradstein and Calderon, (2009), foreign aid by itself does not seem to have a significant effect on poverty while for other authors such as Alvi and Senbeta (2014); Bahmani-Oskooee and Oyolola (2009); Feeny and McGillivray (2017); Ugwuanyi, Ezeaku and Ibe (2018), aid has been established to have substantial positive effect on poverty reduction. In the case of Burnside and Dollar (2000), aid has positive effect on poverty reduction only in a good policy environment, while Alvi and Senbeta (2011); Yontcheva and Masud (2014) found that multilateral aids and grants - aids provided by non-governmental organizations and international organizations - usually have more significant effect on poverty level than bilateral aids.

In addition to foreign aid, remittances, which is defined as the share of income sent home by workers working outside their home country, is also one other very important source of foreign capital for most developing countries. More specifically, the importance of remittances to households in developing countries cannot be overemphasized, as while it may serve as only a complement for some families, it is the lifeline for some others; inferring that they are going to be left to starve without it. The flow of remittances to low-income and middle-income countries rose by 9.6% in 2018, totalling \$529billion from \$483billion in the previous year. This trend can be attributed to the positive economic growth in the major-sending economies, particularly the United States, and renewed remittances outflow from some Gulf Cooperation Council (GCC) countries and Russia (World Bank, 2019). By region, South Asia witnessed the highest growth in remittances (12.3% - a total of \$137billion from \$131billion), followed by Europe and Central Asia (11.2% - up to \$59billion from \$53billion) and the Sub-Saharan Africa, the African sub-region witnessing a 9.6% increase to \$46billion up from \$42billion in 2017, and a further rise to \$48billion in 2018. By this figure, remittances in the sub-Saharan Africa continue to dwarf Foreign Direct Investment (FDI) as the largest source of foreign exchange earnings, more so as FDI inflow continues on the downward trend (World Bank, 2019). This revelation beams the focus light of development experts and researchers on the effect and various dimensional impacts of remittances on the region. The question then arises that apart from serving as a source of consumption income, have remittances played any significant effect in the poverty-alleviation drive of the less-developed countries? and through what channels have remittances affected the welfare of the recipient households?

Statement of Research Problem

Among the sources of capital and foreign exchange earnings for developing countries, international remittances and foreign aid are two of the most important (World Bank, 2019; OECD, 2018). The sub-Saharan Africa particularly remains one of the recipient regions of the highest amount of foreign aid. These efforts have appeared largely ineffective as the region quite contrastingly boasts of the highest level of poverty in the world today. In fact, according to the statistics made available by the World Bank (2015), one in every two poor persons in the world is from the sub-Saharan Africa. These facts continue to puzzle donors, development experts and researchers.

Quite a number of studies carried out in developed economies such as Alvi and Senbeta (2011), Alvi and Senbeta(2014) have proved that aid can be very effective if properly and efficiently utilized, this fact informs the importance of investigating the effect of foreign aid on poverty levels in the poverty most-prevalent region, the sub-Saharan Africa.

Also, with regard to foreign exchange earnings, remittances have continuously outperformed Foreign Direct Investment in the sub-Saharan African region since 2015 (World Bank, 2019), this is also as there appear to have been a decline in the level of Foreign Direct Investment, and as a result drawing attention to the impact of remittances on the welfare of the receiving households in the region. Past studies such as Akobeng (2015); Imai *et al.* (2014); Adams (2011); Anyanwu (2010) have found that remittances have negative significant effects on poverty levels. Although, Imai *et al.* (2014) also found that remittances are a source of output shock to the receiving economy. In effect, there have been limited facts and contradiction in some cases on the effect of foreign aid and remittances on poverty. Moreover, few studies have combined these two sources of capital in the

same study. These facts even more prompt the inquiry into how remittances have impacted the living conditions of the residents of the sub-Saharan Africa.

This study therefore seeks to assess the influence and significance of aids and remittances, and whether they complement poverty-reduction efforts in the sub-Saharan African region. With the use of most recent data which accurately capture the variables in question, and the adoption of the most appropriate econometric methodology, the findings from this study will provide insights on what the linkage between these variables are and how to best integrate the effect of each one on the explained variable to achieve the desired results.

This research aims to provide answers to the following questions: (i) What has been the trend of poverty, remittances, and foreign aid? (ii) What is the effect of foreign aid on poverty in the sub-Saharan Africa? (iii) What is the impact of remittances on poverty in the sub-Saharan Africa?

Research Objectives

The broad objective of this study is to determine the impact of foreign aid and remittances on the level of poverty in the Sub-Saharan Africa, and the extent and significance of this impact. Specifically, this study seeks to:

1. Examine the trend and statistical characteristics of the study variables in the region.
2. Assess the effect of remittances on poverty level in the sub-Saharan Africa.
3. Investigate the effect of foreign aid on poverty in sub-Saharan Africa.

LITERATURE REVIEW

Review of Basic Concepts

Foreign Aid

Foreign Aid itself therefore refers to those material resources, ranging from money, machines, drugs, training, and education, etc, which are transferred between countries to achieve an improved economic well-being in the recipient economy. As defined by the OECD Development Assistance Committee (DAC), foreign aid, also called Official Development Assistance, is “*government aid designed to promote the economic development and welfare of developing countries*”(OECD, 2014). Foreign aid may be classified based on form and source. Forms of foreign aid range from cash gifts, grants, loans, machinery and in fact human capital, while based on source, foreign aid can be classified into bilateral and multilateral aid. Bilateral aid usually involves the direct transfer of economic assistance from one country (wealthy) to another (poor). Multilateral aid on the other hand refers to aid from international organizations such as the United Nations, World Bank, and International Monetary Fund, pooled by various developed countries.

Remittances

Remittances refer to transfers, both in cash and in kind, made by workers abroad to their immediate families, relatives, or close friends. While remittances may narrowly refer to international transfers, it is important to note that they can also be in form of “intra-country” transfers, where workers in the urban areas and cities send home money and other material items to their people in the villages and other rural areas, these are known as “Internal remittances”.

According to the statistics available from the World Bank, international remittances in developing countries have been on the rise since 1990, going from US\$33 billion in 1990, \$70 billion in 2004, \$125 billion in 2005, \$325 billion in 2010 to US\$372 billion in 2011. In 2018, remittance flows to LMICs reached \$529 billion, an increase of 9.6 percent over 2017 figures (World Bank, 2019).

Poverty

The concept of poverty, which is broad in scope, has been studied extensively and as such there exists a vast amount of literature about *poverty*. In its simplest form, it describes a situation whereby an individual is unable

to cater for his basic needs. According to Black (2003), it is the inability to afford an adequate standard of consumption. Naraya, Patel, Schafft, Rademacher, & Koch-Schulte (2000) further describe poverty as the lack of material well-being, insecurity, social isolation, psychological distress, lack of freedom of choice and action, unpredictability, lack of long-term planning horizons because the poor cannot see how to survive in the present, low self-confidence and not believing in oneself. Development Economists usually explain poverty in both relative and extreme (absolute) terms. Relative poverty measures standard of living in a comparative and contemporary context, i.e., measured with respect to the society in which the subject resides, while absolute poverty views poverty objectively, measuring poverty in terms of a given level of sustenance that must be always met in all societies. One metric for measuring extreme poverty is the use of a 'Poverty Line' index, a monetary measure of living standard. Currently, an individual is considered extremely poor if he or she lives below the \$1.9 threshold which is the poverty line defined by the World Bank and other International Development Institutions.

Theoretical Review Keynesian/Liberal Theory of Poverty

Of all theories of poverty, the Keynesian theory appear to be the most befitting to the subject of this study as it looks at poverty as a situation imposed on individuals due to macro-level economic conditions. Liberal theory revolves around the idea that not only market distortions, but also broad underdevelopment in its multiple facets causes poverty. Meanwhile, Keynesians suggest growth can promote economic development and thus relieve poverty, hence further justifying government intervention at the macroeconomic level (via fiscal and monetary policy), mainly to tackle involuntary unemployment (Davis & Sanchez-Martinez, 2014). The theory therefore subtly points to the fact that an efficient use of aid in pursuance of economic prosperity (growth) will lead to economic development and in turn, poverty reduction.

Prospect Theory of Remittances

The prospect theory of remittances tries to explain the various rationale behind migrants sending part of their income back home to families and has further subdivision:

The Altruism Hypothesis

This hypothesis tries to argue that "altruism" is the driving force behind why migrants make remittances. Proponents of this hypothesis have argued that family members are naturally always concerned about the welfare of one another and therefore will be willing to give-up part of their earnings to make-up for the shortfall in the family's consumption and investment level. In the work of Auguste Comte "*The Catechism of Positive Religion, (1852)*", he submitted that individuals, by moral standards, will be willing to sacrifice their own self-interest for the good of others. Individuals under this hypothesis are presumed to expect no material or physical gain in return. However, some authors have also argued under the utility view that the individual in fact gets something in return in the form of satisfaction.

Marxian/Radical Theory of Poverty

Marxian and other radical economists posit that economic growth alone is not sufficient to lift an individual out of poverty (in this case relative poverty). This is explained by the fact that members of a particular economic class may not at all benefit from overall income growth since the mechanism through which this income growth come about does not capture/involve that the economic class/group. This school of thought saw poverty as a moral and technical issue, considering an example where the poor are the ones who are usually more adversely affected by the efforts of the rich to increase their wealth; increase in number of industries and consequently industrial pollution. This perspective effectively shifts focus away from the individual himself to the characteristics of the class/group which he belongs to.

Empirical Review

Burnside & Dollar (2000) conducted a study seeking to establish the impact of foreign aid on economic growth

in 56 developing countries and for six four-year periods (1970-1993). The study adopts the classical OLS regression and as well the two-stage least square (2SLS) regression primarily because for endogeneity concerns in the OLS regression. The study finds that foreign aid has a positive effect on growth in a good policy environment. It also finds that bilateral aid has a strong positive impact on government consumption. We estimate separate aid allocation equations for bilateral and multilateral aid and find that it is the former that is influenced by the donor interest variables. Multilateral aid is largely a function of income level, population, and (good) policy. The study concludes that if donors want to have a large impact on growth and poverty reduction, then they should place greater weight on economic policies of recipient-countries.

Azam, Haseeb, & Samsudin (2016) examined the impact of foreign remittances along with other variables (foreign aid, debt, human capital, inflation, and income) on poverty alleviation. The data was collected over 39 countries and through the period of 1990 and 2014. The methodology adopted is the Panel Fully modified OLS (FMOLS). The study finds that increase in income leads to a decrease in poverty. Foreign remittances are found to have positive impact on poverty alleviation and statistically significant only for upper middle-income countries, with the conclusion that policy makers need to design an appropriate policy to remove overdependence on foreign aid and reduce poverty majorly by encouraging remittances inflow.

Adams & Cuecuecha (2010) studied the impact of international remittances on poverty, household consumption, and investment in Indonesia using panel data from the Indonesian Family Life Survey (2000-2007). They employed a three-stage model to account for selection bias:

First Stage: A nested logit model with instrumental variables estimated the probability of households receiving remittances, using instruments like distance to the nearest rail station, rainfall data (1994-1999), and unexpected rainfall in 2000.

Second Stage: The model, adapted from McFadden & Dubin (1984), estimated selection-corrected household spending with and without remittances.

Third Stage: This stage calculated undifferenced selection terms and fixed effects.

The study found that international remittances significantly reduce poverty in Indonesia. Specifically, the Poverty Head Count and Squared Poverty Gap decreased by 26.7% and 69.9%, respectively, for remittance-receiving households compared to those that did not receive remittances in 2007. Additionally, remittance-receiving households reduced their marginal expenditures on housing by 39.1%.

According to Capistrano & Maria (2010), it is possible to classify the economic benefits and detriments of foreign remittances and migration into three, the macro (national) economic effect, the community (local) effects and the household effects. The provision of foreign exchange earnings, balance of payment improvement and improved consumption, savings and investment levels of recipient economies remain the most important benefits of international remittances (Cattaneo, 2009; World Bank, 2016) – on the national level.

Another study Maimbo & Ratha (2005) also found that a consequence of a rise in household consumption due to remittances is the multiplier effect because this increase in consumption is most likely going to be on domestic goods. This increase in demand for locally produced goods will also lead to increased production levels, benefiting other households (local producers) in the process and creating job and promoting localized development in the remittance-receiving community (Woodruff, 2001). Another possible community-level development is the emergence of migrant associations which promote the establishment of new schools, health centres and other socially-beneficent services and projects (Nyberg-Sorensen, Hear, & Engberg-Pedersen, 2003). On the household level meanwhile, the impacts of remittances are not far-fetched, from raising consumption levels of both durable and non-durable goods, improved access to education and healthcare facilities, and in some cases, serve as capital to kick-starting a business venture.

Richard H Adams (2011) assesses the effect of international remittances on economies of developing countries by examining over 50 recent literatures; ones who made use of household survey data in their research. The study particularly examines the issues with the methodology of each work and uses this to ascertain the strength

and weakness of each. The study finds that while international migration is necessary for remittances, it is not sufficient, as it has been found from the various household surveys that only about half of international migrants' remit, also a substantial number of households receive remittances without any member migrating. The major finding of this review is that even though remittances consistently have a positive impact on poverty reduction, there are also possible adverse effects in the form of reduced labour supply, education (brain drain) and economic growth (productivity).

Vacaflares (2017) assessed the impact of international remittances on poverty levels and inequality using a dataset of 18 Latin countries and covering the period between 2000 and 2013. The data on workers' remittances were obtained from the Central Banks of the countries so studied, while that on poverty and inequality were collected from the Socio-economic Database for Latin American and the Caribbean. The methodology used, as reported, follows that of (Arellano & Bond, 1991) and (Arellano & Bover, 1995) requiring that independent variables are instrumented by their lags. The study found that real GDP per capita, economic performance, higher labour force participation and government healthcare expenditures all have negative (beneficial) effect on poverty level. However, the effect of official development aid was insignificant while the main variable of interest –remittances – indicate that a 1unit increase in remittances per capita leads to a reduction of 8.2 units in poverty rate in the succeeding period.

Gap in literature

After reviewing many empirical works on the topic, this study found several shortcomings and aims to address them. Some studies used remittances as a ratio of GDP in their models, which can distort results. This study proposes using 'remittances per capita' instead, arguing that population changes affecting this measure are minimal. Additionally, this research will utilize poverty statistics from the Global Consumption and Income Project (GCIP) rather than GDP per capita. The study employs recent econometric methods and data to explore the relationship between remittances, foreign aid, and poverty, a novel approach with no existing research on this exact topic.

RESEARCH METHODOLOGY

Theoretical Framework

This study is based on the two-gap model of economic growth (McKinnon, 1964), which extends the Harrod-Domar model. This theory identifies two main growth constraints for developing countries:

1. **Savings Gap:** Domestic savings are insufficient to fund the investment needed for economic growth, partly due to low average income levels. To address this, countries often seek foreign capital through Foreign Direct Investment, Foreign Portfolio Investment, and Foreign Aid.
2. **Foreign Exchange Gap:** Developing countries struggle to import necessary goods due to inadequate foreign exchange, resulting from their inability to export enough to achieve a trade surplus and accumulate foreign earnings.

While foreign capital can help bridge these gaps, remittances from migrant workers also serve as a stable source of foreign capital, effectively acting as a form of service export.

Mathematical Derivation of the Two-Gap Model

Considering the conventional National Accounts Identity:

$$Y = C + I + (X - M)$$

$$Y - C = I + X - M$$

Recall that savings is defined as that part of income that is unspent:

$$S = Y - C$$

Therefore:

$$S = I + X - M$$

$$I - S = M - X$$

The left-hand side of the identity above captures the savings gap, while the right-hand side captures the foreign exchange gap. On basis of the premise that foreign capital can be used to finance domestic investment, $(M - X) = F$, where F represents foreign capital. Therefore:

$$I - S = F$$

$$I = F + S$$

Domestic Savings (S) can thus be complemented by foreign capital (F) to achieve the required level of Investment (I).

Model Specification

The model adopted in this study follows the basic growth-poverty relationship used in studies such as Alvi & Senbeta (2011); Gupta, Pattillo and Wagh (2009); Adams & Page (2005); Ravallion & Chen, (1997); Datt & Ravallion (1992) to investigate the impact of remittances and foreign aid on poverty. The baseline specification is:

$$\log p_{it} = \alpha_0 + \beta_1 \log Y_{it} + \beta_2 \log G_{it} + \varepsilon_{it} \quad (1)$$

where i and t are indices of country and year, respectively,

P_{it} is the measure of poverty, Y_{it} is the real per capita income for country i at time t, G_{it} is the Gini coefficient for country i at time t, β_1 is the growth elasticity of poverty, β_2 is the income inequality elasticity of poverty.

Equation (1) above is then adapted for this purpose of this study by including AID_{it} (aid per capita in country i and at time t) and REM_{it} (remittances per capita in country i and at time t). In order to account for the persistent nature of the poverty variable (regressand), its lag $P_{i,t-1}$ is included as part of the explanatory variables. G_{it} which represents the Gini co-efficient has been found to be used in existing literatures on the a priori basis that higher income inequality is accompanied by a higher poverty level, however, due to the unavailability of reliable data on this variable across almost all the subjects under study, this variable is dropped. Our new specification therefore appears thus:

$$P_{it} = \alpha P_{i,t-1} + \beta_1 \log Y_{it} + \beta_2 REM_{it} + \beta_3 AID_{it} + \sum_{k=1}^n X_{itk} \theta_k + \omega_i + \gamma_t + \varepsilon_{it}$$

X_{it} is a vector of other control variables such as per capita government expenditure on health, per capita government expenditure on education, age dependency ratio, globalization and labour force participation which have all been identified in existing literature as important poverty explanatory variables, and ε_{it} is the idiosyncratic error term.

The key parameters of interest are β_2 and β_3 , which explain the direct effect of remittances and foreign aid on poverty respectively. The total effect of both variables is a sum of their direct and indirect effects. Indirect effects of aid could come in the form of improved government policy and institutions while that of remittances maybe captured through private investment and expenditure on health and education.

Data Sources

Table 3. 1 - Data Source

Variable	Unit	Source
Aid per capita	Constant 2011 US Dollars	OECD Database
Remittances, per capita	Constant 2017 US Dollars	World Development Indicators
Poverty Indices (Poverty Headcount)	Percentage	General Consumption and Income Project (GCIP)
Per capita GDP	Constant 2011 US Dollars	World Development Indicators
Per capita, government expenditure on health	Constant 2011 US Dollars	World Development Indicators
Per capita, government expenditure on education	Constant 2011 US Dollars	World Development Indicators
Age Dependency Ratio	Constant 2011 US Dollars	World Development Indicator
Globalization	Index	Gygli et al., 2019 (KOF Globalization Index)
Labour Force Participation	Percentage	World Development Indicator

Estimation

There are various methodological issues with our relational model such as endogeneity, simultaneity and reverse causation which could be because of the bi-causal relationship between poverty and each of remittances and foreign aid. It is important to employ an appropriate econometric approach to side-step this endogeneity issue. Also as have been noted earlier, poverty series are known to be persistent, and this is taken care of by including its lag in our model. The inclusion of this lagged variable poses an econometric concern. While this introduced variable may be uncorrelated with the error term, random and fixed-effects estimates become inconsistent because the lagged dependent variable will correlate with the transformed error terms. One possible way to handle this problem is to use the instrumental variable approach. The use of lagged explanatory variables as instruments helps us address the problem of reverse causality when used with dynamic system Generalized Methods of Moments developed by (Blundell & Bond, 1998). From our equation (2) derived above.

$$P_{it} = \alpha P_{i,t-1} + \beta_1 \log Y_{it} + \beta_2 REM_{it} + \beta_3 AID_{it} + \sum_{k=1}^n X_{itk} \theta_k + \omega_i + \gamma_t + \varepsilon_{it}$$

This study has opted to employ a dynamic panel data method to capture issues such as the persistence of our dependent variable (poverty headcount), endogeneity, reverse causation, cross-country heterogeneity, measurement error and missing values. However, panel data dynamic model specification introduces the problem of serial correlation in the residuals. This is important to test for the validity of instruments and has implications on the consistency of the estimates. The dynamic system Generalized Methods of Moments (sys-GMM) is most suitable for estimation as suggested by (Schmidt-Hebbel et al., 2000). Applying system GMM involves transforming the above equation to remove the unobserved country effects and then estimating the resulting equation by instrumental variables. Arellano and Bond (1991) derived a GMM estimator for the coefficients of such an equation based on first differences, using lagged levels of the dependent variables and the predetermined variables (“internal instruments”), and second, taking differences of the strictly exogenous explanatory variables. The approach assumes that there is no second-order autocorrelation in the first-differenced idiosyncratic errors. Tests for autocorrelation and Sargan test of over-identifying restrictions are conducted to

determine the appropriateness of the specification.

RESULTS AND DISCUSSION

Descriptive Statistics

From the table below, the average value of poverty headcount (PHC) across units and over the scope of study is 38.78%, implying that approximately 40% of the entire population in Sub-Saharan Africa live below the \$1.9 poverty line. PHC can also be seen to be highest at 88.87% in the Democratic Republic of Congo (DRC) in 2007, it may however be said that the country has fairly shaken-off a paltry proportion of this figure, as PHC in DRC as of 2015 stood at 70.51%, overtaking countries like Madagascar (78.49%), Burundi (77.11%) and Liberia (74.36%). Mauritius, Gabon, Cabo Verde boast the minimum poverty concern as the trio averaged impressive of 0.46%, 3.24%, 6.06% respectively, while the DRC, Madagascar, Liberia, Malawi, and Burundi fared worst within the same time, with PHC averages of 76.78%, 78.85%, 74.83%, 78.84% and 72.13% respectively. The extreme variation in the values may be a pointer to the fact that although located in the same continental region, some sub-Saharan countries have recorded and still maintain economic and welfare metrics that are quite commendable and may necessitate that future studies classify these countries on this basis for more effective study and actionable findings. Household Final Consumption per capita (HFCE) averaged \$1,388.887 for the entire study period and across all countries - a corresponding \$4 per day. The peak of this variable is marked at \$7252.2 for Mauritius in 2017, with the duo of South Africa and Namibia consistently coming next in ranking over the last 7 years of the study. Since this is a measure of welfare, it is not surprising to find that similar set of countries – Burundi, Niger, DRC, Madagascar, and Mozambique - reported the poorest figures as in the case of poverty head count, with averages of \$199.67, \$255.46, \$259.29, \$344.86 in that order. The lowest HCFE was recorded in Burundi in 2007 and stood at \$188.64.

Aid per Capita (Aid Per Cap) representing per person distribution of Official Development Assistance (ODA) was at an average of \$43.68 with a maximum value of \$472.54 in 2010 in Cabo Verde. A standard deviation value of \$56.54 indicates the level of disparity in distribution amongst units. A key point to note at this point is the negative value of -\$97.91 obtained for Seychelles in 2016, this implies that Seychelles had paid back more than what is received in aids – this however does not include aids it provided to other countries. Angola and Nigeria parade the lowest Aid Per Cap figures at \$5.31 and \$6.47 respectively. The smallness of the value for Nigeria may be because of its population as the country remains one of the largest recipients of ODA in sub-Saharan Africa.

Remittances per Capita (**Rem Per Cap**) is the per head share of income transfers from abroad. Cabo Verde, at \$445.06 in 2018 has the highest value across units and through-out the period under study, this is chiefly because Cabo Verde is known for being deeply rooted in emigration and consequently receives a sizeable number of remittances annually. As a matter of fact, citizens in diaspora outnumber the Island's resident population and almost every family has a member or relatives in a foreign country (Claudia, 2018). \$0.02 is the minimum value for remittances per capita for the study period, obtained in Burundi in 2007. On the average scale, the value of remittances was \$57.73 and a standard deviation of \$81.44 indicates the high level of disparity among the regions.

The average of per capita GDP over the study units and period is \$2341.14, with a maximum value of \$14385.3 posted by Seychelles in 2018, and \$210.78 obtained in 2018 in Burundi. Generally, Seychelles (\$12296.15), Gabon (\$9172.996) and Mauritius (\$8769.58) averaged the highest figures over the study period and on the other side of the divide, Burundi (\$229.65), Niger (\$366.18) and DRC (\$368.1) parade the most welfare-poor figures. An alarming standard deviation of \$2978.03 is a pointer to the great difference in welfare level among the units.

Age Dependency ratio (**Age Dep**) for each country did not change for much from the initial year (2007), with an average value across units in 2007 standing at 85.12 only marginally improving to approximately 78.9 in 2018. Overall, the average value stood at 82.176 the least value was 41.28, obtained in Mauritius in 2012, while the most burdened population with a value of 111.78 was obtained in Niger in 2016. The low standard variation (15.708) further points to the fact that this welfare measure did not improve (or maybe worsen) significantly.

Globalization (**Glob**) measures level of interaction and integration with the rest of the world on several indices. The higher the value, the more integrated a country is with the rest of the world. The average level of globalization stands at 43.17 over the study period and across countries. Mauritius, at 79.33% in 2018 boasts of the highest degree of globalization, while Ethiopia at 19.18% in 2007 is the least integrated with the rest of the world. Mauritius (73.93%), Seychelles (68.68%) and Namibia (62.06%) are on average, the most globalized economies and this is reflected in their standard of living when poverty levels and per capita GDP are considered. The three least globalized countries across the study period are Ethiopia (25.95), Dem. Rep. of Congo (28.06%) and Sudan (30.19%).

Labour Force participation rate (**Lab For**) measures the proportion of the total labour force actively involved in productive economic activities – a measure of the level of employment. The average level of labour force participation stood at 68.49% (of the labour force) through-out the entire study period, with a standard deviation of 11.57 indicating that the overall variation is quite minimal. The lowest value was 42.71% obtained in 2007 in Comoros, while the overall maximum of 90.34% was obtained in Madagascar in 2010.

Per capita Government Health and Education Expenditures (PCGHE & PCGEE) tell us the extent of government welfare expenditure. It may also be taken as a critical determinant of the level of human capital development. PCGHE and PCGEE averaged \$59.52 and \$84.87 respectively for the entire study period and across countries. The standard deviation values of \$98.90 and \$120.50 is an indicator of the unfortunately high degree of disparity in human capital efforts in the sub-Saharan Africa. For example, while the highest per capita government health and education expenditures were \$486.89 (Seychelles 2018) and \$666.19 (Seychelles 2016) respectively, the lowest for health in 2018 stood at \$4.78(Liberia) and \$5.48 (Guinea), while the lowest values for education in 2016 were \$9.99 (Dem. Rep. Congo), \$13.42 (Burundi) and \$13.84 (The Gambia). The lowest overall figures were obtained for health expenditure in Guinea in 2018 at \$1.15 and for education the minimum government expenditure was \$5.89 in the Dem. Rep. of Congo in 2012.

Table 4. 1 - Descriptive Statistics

Variable	Obs.	Mean	Std. Deviation	Min. Value	Max. Value	Prob. (Skewness)	Prob. (Kurtosis)
PHC	430	38.781	22.893	0	88.87	0.5459	
HFCE	384	1388.89	1474.29	188.64	7252.2	0	0
Aid Per Cap	443	43.679	56.564	-97.91	472.54	0	0
Rem Per Cap	440	57.731	81.439	0.02	445.06	0	0
PCGDP	443	2341.14	2978.03	210.78	14385.3	0	0
Age Dep	444	82.176	15.708	41.28	111.78	0	0.0838
Glob	442	43.168	12.68	19.18	79.33	0	0.8145
Lab For	432	68.4947	11.5708	42.71	90.34	0.00375	0
PCGWE	279	127.862	204.694	4.147	1146.51	0	0
PCGHE	384	59.52	98.9	1.1479	486.89	0	0
PCGEE	280	84.87	120.5	5.89	666.19	0	0

Source: Author's computation with Stata 14

Graphical Analysis

The figure below shows a downward trend over time, an indication that, on average, poverty headcount (PHC)

has been on the increase over the past decade. Answering the question of how, and through what channels remain a key objective of this study.

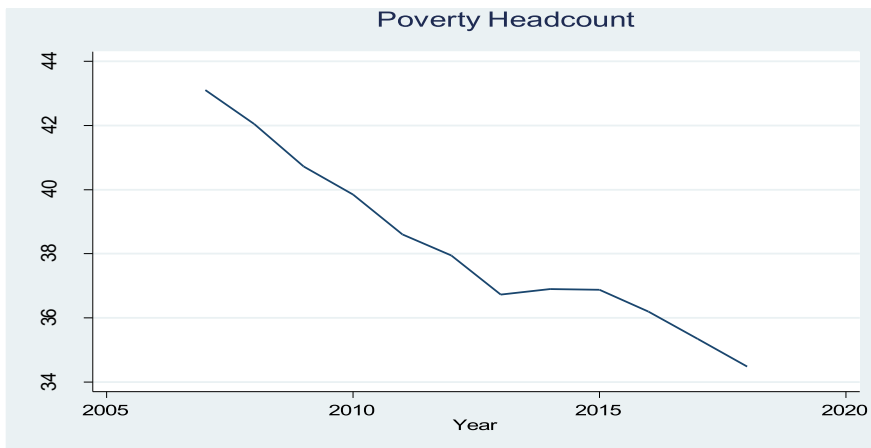


Figure 4. 1 - Poverty Headcount

The trend from this graph indicates that households’ final consumption expenditure has been on a steady rise since 2007, with the average value currently standing at \$1566.03 compared to \$1199.3 in the initial year.

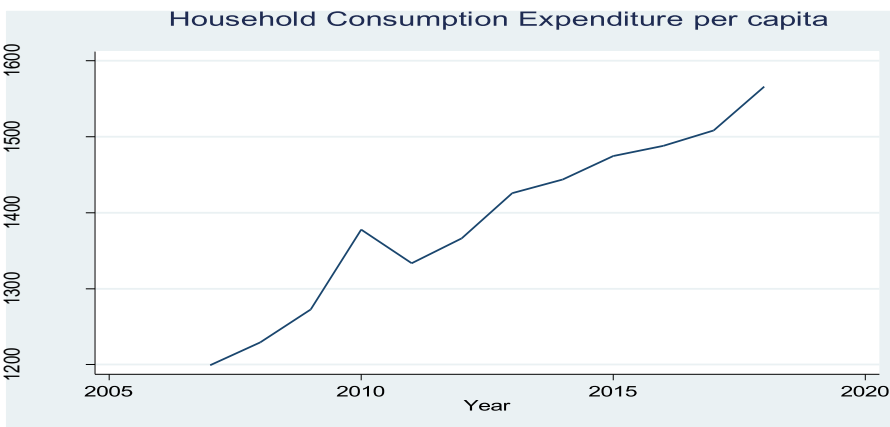


Figure 4. 2 Household Final Consumption Expenditure

The trend of per capita aid noticeable from the graph does not follow a single pattern over time, while it is on the rise in some years, it can be seen to be falling in some others. It first falls sharply around 2008/2009, possibly because of the then global economic recession on even the donors. It rose shortly in 2010 and then went on a steady fall until 2016. The average value in then increased and again in 2017 and 2018 accordingly.



Figure 4. 3 - Foreign Aid per Capita

Remittances per capita to the sub-Saharan Africa has been on the rise. This may be traced to the continued increase in the level in globalization, as well as the favourable immigration policies in Europe and the United States – both of which receive the highest number of emigrants from the sub-Saharan Africa.

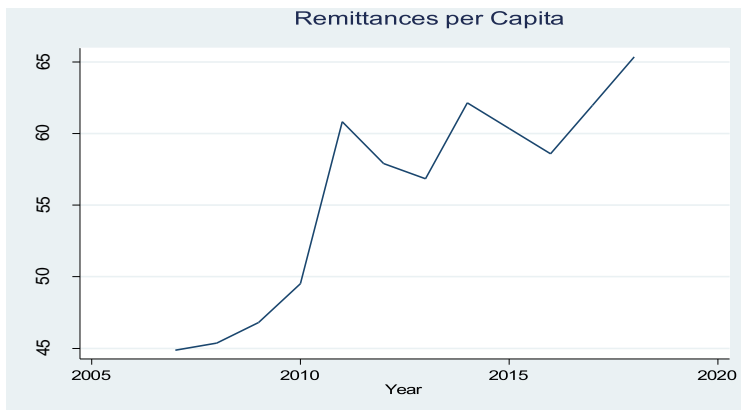


Figure 4. 4 - Remittances per Capita

This graph depicts a rising overall level of per capita GDP. While this may not be taken as an outright improvement in living standard, it points at a growth in the size of the productive capacity of the region possibly due to the trickle-down effect of technological advances in the developed countries.

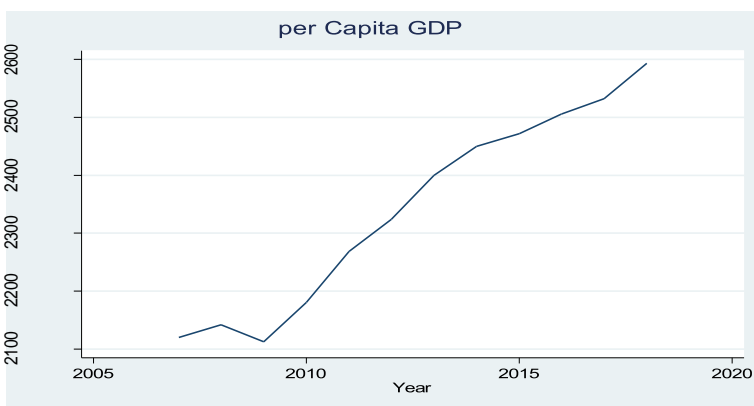


Figure 4. 5 - per Capita GDP

This ratio measures the pressure on the working population, and even though it has been on the downward trend, it has not changed for much over the past 10 years. It currently stands at 78.9 from 85.24 in 2007. This figure, when compared to those of the European Union (54.92), United States (52.71) and even the Middle East and North Africa (55.13), it is still a source of concern as this ratio is still considered high such that it may not allow for productive investment of income.

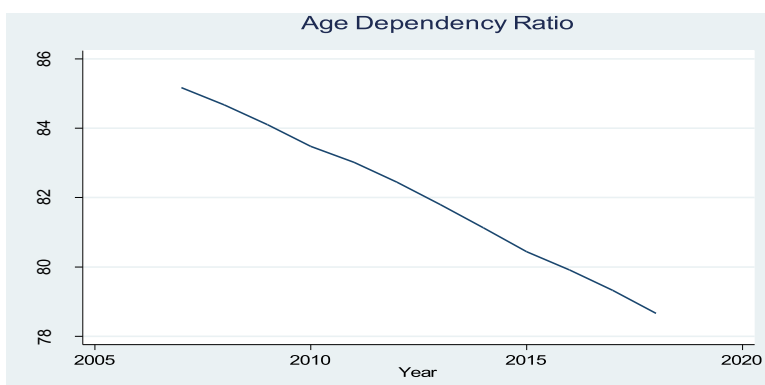


Figure 4. 6 - Age Dependency Ratio

It can be seen from the graph below that on average, the sub-Saharan Africa is increasingly integrating with the rest of the world. This may be because of the many benefits that have been seen to come with being more open to the rest of the world, economically, technologically and in other similar contexts.



Figure 4. 7 - Globalization

The graph below depicts the Labour Force Participation Rate (LFPR). Starting around 69%, the LFPR shows a sharp decline until about 2013, likely reflecting the impact of the 2008 financial crisis. After reaching its lowest point near 68.2%, the rate gradually recovers, displaying a steady increase with minor fluctuations from 2013 onwards. This trend suggests an initial decrease in workforce participation due to economic challenges, followed by a gradual improvement in economic conditions leading to increased labour market involvement.



Figure 4. 8 - Labour Participation Rate

The graph depicts the trend in per capita government education expenditure (PCGEE) from 2007 to 2018. The data shows significant fluctuations over the period. Starting below 70 in 2005, PCGEE rises sharply to over 90 by 2010. This is followed by a decline and subsequent fluctuations, with notable peaks around 2010 and 2015, and a significant dip in 2016. The expenditure demonstrates a volatile pattern, indicating inconsistency in government spending on education per capita over the observed years.

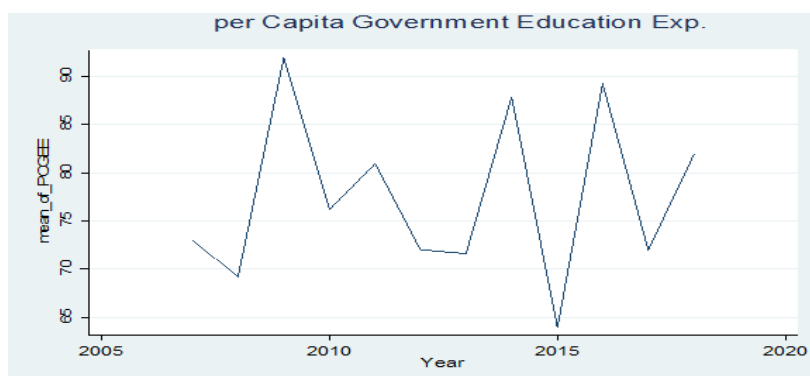


Figure 4. 9 - per Capita Government Education Exp.

The graph illustrates the trend in per capita government health expenditure (PCGHE) from 2007 to 2018. The y-axis shows the mean PCGHE, while the x-axis represents the years. Initially, PCGHE remains relatively stable around 40-45 until 2010. After 2010, there is a noticeable upward trend, with expenditures rising steadily to around 60 by 2015. Following a slight dip in 2015, the expenditure increases sharply, reaching approximately 80 by 2018. Overall, the graph shows a significant and consistent rise in government health spending per capita over the observed period, indicating increasing investment in healthcare.

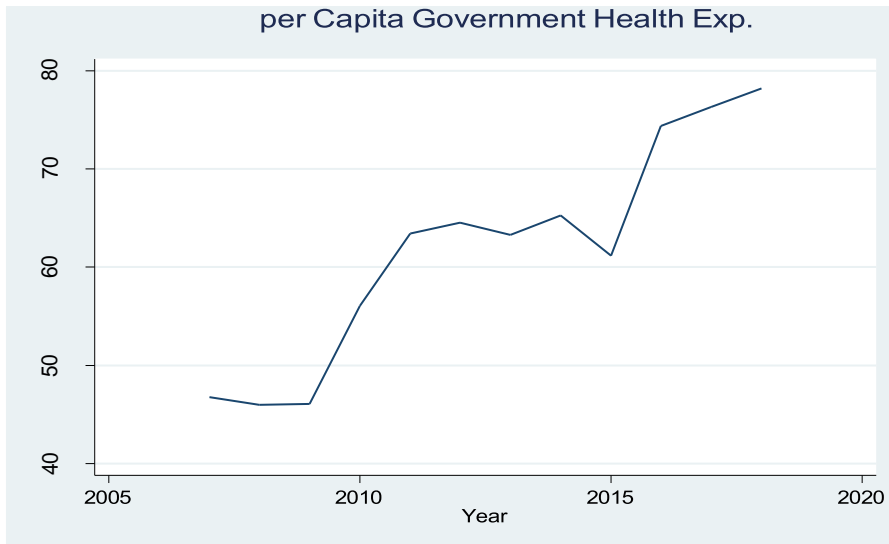


Figure 4. 10 - per Capita Government Health Exp.

Correlation Analysis

The table below shows the correlation analysis results among the study variables, indicating the degree of their joint movement:

1. Aid per capita has a weak negative correlation with poverty headcount.
2. Remittances per capita exhibits a moderate negative correlation with poverty headcount (-0.5349).
3. Per capita GDP, Government Health Expenditure, and Government Expenditure show strong negative correlations with poverty headcount.
4. Labour force participation rate has a weak negative correlation with poverty headcount.
5. Age Dependency Ratio (Age Dep) and Globalization (Glob) display strong correlations, with AgeDep showing a positive relation and others an inverse correlation.

In a robustness check using Household Final Consumption Expenditure per capita (HFCE) as a secondary dependent variable:

1. Aid per capita shows a weak positive correlation (0.22).
2. Remittances per capita and labour force participation ratio have moderate correlations (0.57 and -0.52, respectively).
3. Other explanatory variables show strong positive joint movement with Age Dependency, indicating a negative linear relationship.

High correlations between per capita Government Health Expenditure (PCGHE) and per capita Government Education Expenditure (PCGEE) suggest potential multicollinearity. This issue is addressed by combining these variables into a new measure: per capita Government Welfare Expenditure (PCGWE).

Table 4. 2 - Correlation Analysis (Author's compilation using Stata 14)

Variable	PH C	IHFCE	IaidPerCap	IRemPerCap	IPCGDP	IPCGHE	IPCGEE	AgeDep	Glob	LabFor
PHC	1									
IHFCE	-0.76	1								
IaidPerCap	-0.26	0.22	1							
IRemPerCap	-0.53	0.57	0.38	1						
IPCGDP	-0.76	0.98	0.22	0.52	1					
IPCGHE	-0.65	0.91	0.28	0.47	0.92	1				
IPCGEE	-0.73	0.93	0.26	0.52	0.94	0.95	1			
AgeDep	0.62	-0.87	-0.22	-0.5	-0.82	-0.81	-0.82	1		
Glob	-0.62	0.82	0.26	0.58	0.79	0.77	0.79	-0.78	1	
Lab For	0.45	-0.5	-0.19	-0.39	-0.49	-0.37	-0.41	0.35	-0.38	1

Model Estimation

System GMM estimation results

From the results below, the lagged value of poverty headcount (PHC L1) is significant at 1%, an indication that poverty is persistent in the region and that past levels of poverty is a strong predictor of the current levels of poverty. Although the coefficient of per capita GDP carries a negative, it is statistically insignificant at all levels, pointing to the fact that per capita GDP may not be a good measure of poverty alleviation progress. The coefficient of aid per capita is also not significant, but the positive sign it carries may imply that foreign aid received in fact worsens poverty in the region, a fact which conforms to existing arguments against foreign aid, one of which is that foreign inflow for government leads to unfavourable government decisions outcome (unfavourable for the masses), since the government no longer heavily depend on the taxes of the people and feels less accountable to them. Remittances per capita is significant at 10%, and the negative value of the coefficient implies that *ceteris paribus*, increased remittances will reduce poverty headcount in the region, a finding generally consistent with most existing literatures such as Adams & Page (2005b); Akobeng (2015); Anyanwu & Erhijakpor (2010); Imai *et al* (2014); Wagle & Devkota (2018) . The coefficients of Age dependency, Globalization and Labour force participation rate are all statistically insignificant. For labour market participation, this may be interpreted to mean that the structure of the labour market is both inefficient and underdeveloped, in the case of globalization, it may be argued that the nature and structure of the sub-Saharan Africa economy is such that gains and benefits from increased globalization are not being properly exploited and a population structure that is not the best for economic prosperity, yet rigid.

No of Observations: 251

Number of Groups: 35

Years Dummies: Yes

Number of Instruments: 28

Table 4. 3 - System GMM Results

Variable	Coefficient	Probability Value
PHC L1.	0.9002657	0.000
IPCGDP	-.4662556	0.892
IPCGWE	.6419239	0.742
IAidPerCap	.5411105	0.552
IRemPerCap	-1.028408	0.079
AgeDep	.0746051	0.600
Glob	.0405402	0.643
LabFor	-.0189853	0.674

Specification Tests

From our specification test results, we reject the null hypothesis of first order serially uncorrelated residuals at 10% as $0.1 > AR(1) > 0.05$. The AR (2) statistic indicate that we do not reject the null hypothesis of second order serially uncorrelated errors and that the model does not suffer from second-order autocorrelation. The Hansen statistic at 0.234 is plausible, and we do not reject the null hypothesis of the overall validity of the instruments used.

Table 4. 4 - Specification Tests

Test	Probability Value (<i>p-value</i>)
AR (1)	0.094
AR (2)	0.991
Hansen Statistic	0.234
F-Statistic (1690.56)	0.000

Robustness Checks

The robustness checks for this study will be conducted in two forms. The first is to specify a dynamic panel data model but this time with Household final consumption expenditure per capita (HFCE) as the dependent variable, this is as this variable (HFCE) is also a widely accepted measure of welfare. The results are summarized below:

No of Observations: 217

Number of Groups: 31

Years Dummies: Yes

Number of Instruments: 33

Table 4. 5 - Robustness Check

Variable	Coefficient	Probability Value (<i>p-value</i>)
HFCE L1.	.7703844	0.000
IPCGDP	.1312118	0.222
IPCGWE	.0146699	0.702

IAidPerCap	-.0199922	0.139
IRemPerCap	.0337824	0.064
AgeDep	-.0032081	0.052
Glob	-.0001606	0.813
LabFor	.0000651	0.945

While the persistence of Household consumption expenditure per capita is also established, the result also indicates that at 10% level of significance, remittances have a positive effect on household final consumption per capita while age dependency ratio has a negative effect on household final consumption per capita.

A second form of robustness check is aimed at checking whether the choice to adopt the system GMM Estimator (and not the Difference estimator) is justified. The decision to adopt system GMM was initially informed by the fact that we have missing values in our observations. This robustness check follows the approach outlined in (S. Bond, Hoeffler, & Temple, 2001). It involves first estimating our dynamic autoregressive model by Pooled OLS and Fixed Effect Regressions. The coefficient of the lagged dependent variable on the right-hand side is then harvested, with the coefficient from the Pooled OLS set as an upper bound and that of the Fixed Effect set as a lower bound. The Difference GMM estimation is then applied to the model and the coefficient of the lagged dependent variable is on the right-hand side is retrieved. This coefficient is then compared to the lower bound and upper bound set earlier. Decision rule: if the Difference GMM estimate obtained is close to or below the Fixed Effects estimate (Lower boundary), this suggests that this estimate is biased downwards because of weak instrumentation and prescribes the use of system GMM. The results are presented below:

Pooled OLS Regression Result (Biased-upward)

No of Observations: 228

Table 4. 6 - Pooled OLS Regression results

Variable	Coefficient	<i>p-value</i>
PHC L1	1.010836	0.000

Fixed Effects Regression Results (Biased-downward)

No of Observations: 228

No of Groups: 35

Table 4. 7 - Fixed Effect Regression results

Variable	Coefficient	<i>p-value</i>
PHC L1	0.6572379	0.000

One-Step Difference GMM Results

No of Observations: 193

No of Groups: 31

Table 4. 8 - One-Step Difference GMM Result

Variable	Coefficient	<i>p-value</i>
PHC L1	0.5846384	0.000

Two-Step Difference GMM Results

No of Observations: 193

No of Groups: 31

Table 4. 9 - Two-Step Difference GMM results

Variable	Coefficient	<i>p-value</i>
PHC L1	0.5743217	0.000

Decision

Since the Difference-GMM coefficient of the lagged dependent variable is below the coefficient obtained from the Fixed Effect regression, this is an indication that the coefficient is downward biased possibly due to weak instrumentation, and since system GMM allows for introduction of more instruments, improving efficiency in the process, the case for system-GMM is made. The decision therefore to use system GMM is hereby justified.

One final test here involves ensuring that the coefficient of the lagged dependent variable obtained from the twostep system GMM estimate lies between the upper bound and lower bound set earlier. From the results obtained above, the system GMM coefficient (0.9002647) lies between the Pooled OLS regression estimate (1.010836) and the Fixed Effect Regression estimate (0.6572379). A credible estimate should lie in or within the range of these values, in fact it should be below 1.000 as an estimate above 1.000 imply unstable dynamic, with an accelerating divergence away from equilibrium values. According to S. R. Bond, (2002), these bounds provide a useful check on results from theoretically superior estimators.

Long-run GMM Coefficients

Since our model is a short-run model, it is important to estimate the long run coefficient of the explanatory variables whose short run coefficient are statistically significant in order to determine the long-run effect of such variable on the dependent variable. For this study, only the long run coefficient of remittances per capita will be estimated as it is the only significant variable in the study (apart from the lagged dependent variable). The result is presented below:

Table 4. 10 - Long-run GMM Result

Variable	Coefficient	Std error	<i>z</i>	<i>p-value</i>
lRemPerCap	-10.31148	9.385789	-1.10	0.272

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

The results show that remittances have a significant negative effect on poverty in the short run, with a 1% increase in remittances per capita leading to approximately a 1.03% reduction in poverty headcount. This indicates nearly unit elasticity between remittances per capita and poverty. Foreign aid, however, has no significant effect on poverty during the study period.

In a robustness check using Household Final Consumption Expenditure as the dependent variable, remittances showed a positive but inelastic effect, with a 1% increase in remittances per capita resulting in a 0.034% increase in expenditure per capita. Foreign aid remained insignificant. Additionally, the age dependency ratio negatively affects household consumption, with a 1-unit increase leading to a 0.0032% reduction in expenditure.

Long-run estimates reveal that the poverty-reducing effect of remittances is not significant over time, suggesting that the benefits are short-lived and do not sustain long-term welfare improvements.

Conclusions

This study adds to the literature on poverty's relationship with foreign aid and international remittances. It shows that while poverty persists in the region, foreign aid alone does not significantly impact poverty levels. This may be due to factors such as political instability, poor governance, corruption, misallocation, and institutional weaknesses, which hinder aid effectiveness.

In contrast, remittances are a promising source of external funding, effectively improving living standards and household consumption in the short run. This aligns with previous research such as Adams & Page (2005b); Akobeng (2015); Anyanwu & Erhijakpor (2010); Imai et al (2014); Wagle & Devkota (2018), indicating that remittances may be even more impactful than reported, as informal remittances can constitute 35%–70% of formal flows. Unlike development aid, remittances directly benefit recipients. The insignificance of other variables might suggest that current policy instruments are not effectively addressing poverty. Factors such as inequality in GDP growth distribution, inadequate government spending on health and education, low human capital development, fragmented labor markets, and a dependent population structure could contribute to this issue.

Recommendations

Sequel to results and findings revealed by this study, few useful recommendations shall be made.

1. Foreign aid can worsen poverty by creating dependency, which undermines local initiatives and governance, leading to inefficiencies and corruption. Instead of fostering development, it can perpetuate poverty and hinder domestic growth. To address this, foreign aid should focus on building local capacity and promoting sustainable development through investments in education, infrastructure, and SMEs. Implementing strict accountability and transparency measures will ensure aid effectiveness.
2. Governments should also implement policies limiting the percentage of aid funds spent on non-essential activities, ensuring that funds are used directly for their intended purpose.
3. A 2017 World Bank report noted that about 9.4% of remittances are used for transfer costs, exceeding the 3% UN target. Governments should develop plans to significantly reduce these costs. Lower transfer costs will increase remittance receipts, improve living standards, and boost investment opportunities. Increased formal remittances will also provide more accurate data on inflows.

REFERENCES

1. Adams, R. H., & Alfredo Cuecuecha, J. (2010). The Economic Impact of International Remittances on Poverty and Household Consumption and Investment in Indonesia.
2. Akobeng, E. (2015). Out of inequality and poverty: Evidence for the effectiveness of remittances in Sub-Saharan Africa. *Quarterly Review of Economics and Finance*. <https://doi.org/10.1016/j.qref.2015.10.008>.
3. Alvi, E., & Senbeta, A. (2011). DOES FOREIGN AID REDUCE POVERTY? *Journal of International Development*, 26, 541–555. <https://doi.org/10.1002/jid>.
4. Alvi, E., & Senbeta, A. (2014). Foreign Aid, Growth, and Poverty Relation: A Quantile Regression Approach. *The Journal of Developing Areas*, 48(3), 381–403. <https://doi.org/10.1353/jda.2014.0046>.
5. Anyanwu, J. C., & Erhijakpor, A. E. O. (2010). Do International Remittances Affect Poverty in Africa? *AFRICAN DEVELOPMENT REVIEW*, 22(1), 43. <https://doi.org/10.1111/j.1467-8268.2009.00228.x>
6. Arellano, M., & Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*. <https://doi.org/10.2307/2297968>.
7. Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error components models. *Journal of Econometrics*. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D).
8. Arvin, B. M., & Barillas, F. (2002). Foreign aid, poverty reduction, and democracy. *Applied Economics*, 34(17), 2151–2156. <https://doi.org/10.1080/00036840210136718>.

9. Bassett, G., & Koenker, R. (1978). Asymptotic theory of least absolute error regression. *Journal of the American Statistical Association*. <https://doi.org/10.1080/01621459.1978.10480065>.
10. Bell, A., & Jones, K. (2015). Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data. *Political Science Research and Methods*. <https://doi.org/10.1017/psrm.2014.7>.
11. Bisogno, M., & Chong, A. (2001). Foreign aid and poverty in Bosnia and Herzegovina: Targeting simulations and policy implications. 45, 1020–1030.
12. Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8).
13. Bond, S., Hoeffler, A., & Temple, J. (2001). GMM Estimation of Empirical Growth Models. *Economics Papers*.
14. Bond, S. R. (2002). Dynamic panel data models: a guide to micro data methods and practice. *Portuguese Economic Journal*, 1(2), 141–162. <https://doi.org/10.1007/s10258-002-0009-9>.
15. Bourguignon, F., Fournier, M., & Gurgand, M. (2007). Selection bias corrections based on the multinomial logit model: Monte Carlo comparisons. *Journal of Economic Surveys*. <https://doi.org/10.1111/j.1467-6419.2007.00503.x>.
16. Burnside, C., & Dollar, D. (2000). Aid, Policies and Growth.
17. Capistrano, L. O., & Maria, M. L. C. S. (2010). (DP 2007-06) The Impact of International Labor Migration and OFW Remittances on Poverty in the Philippines. UPSE Discussion Papers.
18. Cattaneo, C. (2009). International migration, the brain drain and poverty: A cross-country analysis. *World Economy*. <https://doi.org/10.1111/j.1467-9701.2009.01178.x>.
19. Claudia, R. (2018). Remittances, Migration and Development in Cape Verde | BUALA. Retrieved December 21, 2019, from <https://www.buala.org/en/to-read/remittances-migration-and-development-in-cape-verde>.
20. Datt, G., & Ravallion, M. (1992). Growth and redistribution components of changes in poverty measures. A decomposition with applications to Brazil and India in the 1980s. *Journal of Development Economics*. [https://doi.org/10.1016/0304-3878\(92\)90001-P](https://doi.org/10.1016/0304-3878(92)90001-P).
21. Davis, P., & Sanchez-Martinez, M. (2014). A review of the economic theories of poverty.
22. Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics*. <https://doi.org/10.1080/00036840500392078>.
23. Freund, C., & Spatafora, N. (2005). Remittances: transaction costs, determinants, and informal flows. *Policy Research Working Paper Series*.
24. Global Monitoring Report. (2016). In *The World Bank Group A to Z 2016*. https://doi.org/10.1596/978-1-4648-0484-7_global_monitoring_report.
25. Goff, M. Le. (2010). How Remittances Contribute to Poverty Reduction: a Stabilizing Effect How Remittances Contribute to Poverty Reduction: a Stabilizing effect. CERDI.
26. Gygli, S., Haelg, F., Potrafke, N., & Sturm, J. E. (2019). The KOF Globalization Index – revisited. *Review of International Organizations*. <https://doi.org/10.1007/s11558-019-09344-2>.
27. Hillebrand, E. (2008). Poverty, growth and inequality over the next 50 years.
28. Jongwanich, J. (2007). Workers' Remittances, Economic Growth and Poverty in Developing Asia and the Pacific Countries. 1–20. Retrieved from <http://www.unescap.org/sites/default/files/wp-07-01.pdf>.
29. Klasen, S., Krivobokova, T., Greb, F., Lahoti, R., Pasaribu, S. H., & Wiesenfarth, M. (2016). International income poverty measurement: which way now? *Journal of Economic Inequality*, 14(2), 199–225. <https://doi.org/10.1007/s10888-016-9324-8>
30. Knauss, S. (2019). The myth of the global middle class, globalization's fallback success story. *Canadian Journal of Development Studies*, 40(2), 182–200. <https://doi.org/10.1080/02255189.2019.1520692>.
31. Kvangraven, I. H. (2016). The changing character of financial flows to sub-Saharan Africa. In *Financial Deepening and Post-Crisis Development in Emerging Markets: Current Perils and Future Dawns* (pp. 223–245). https://doi.org/10.1057/978-1-137-52246-7_11.
32. Maimbo, S. M., & Ratha, D. (2005). Remittances: development impact and future prospects. In *Journal of Economic Literature*.
33. McFadden, D. L., & Dubin, J. A. (1984). An Econometric Analysis of Residential Electric Appliance Holdings and Consumption. *Econometrica*. https://doi.org/10.1088/0954-898X_15_3_001.
34. McKinnon, R. I. (1964). FOREIGN EXCHANGE CONSTRAINTS IN ECONOMIC DEVELOPMENT AND EFFICIENT AID ALLOCA-. *The Economic Journal*, 74(294), 388–409.

35. Naraya, D., Patel, R., Schafft, K., Rademacher, A., & Koch-Schulte, S. (2000). Can Anyone Hear Us? <https://doi.org/10.1596/0-1952-1601-6>.
36. Nyberg-Sorensen, N., Hear, N. Van, & Engberg-Pedersen, P. (2003). The Migration-Development Nexus Evidence and Policy Options State-of-the-Art Overview. *International Migration*. <https://doi.org/10.1111/1468-2435.00210>.
37. OECD. (2011). Measuring aid 50. (April).
38. OECD. (2014). Modernising Official Development Assistance (ODA) WHAT HAS CHANGED? OECD-DAC High Level Meeting.
39. OECD. (2018). Development at a glance.
40. Peković, D. (2017). The effects of remittances on poverty alleviation in transition countries. *Journal of International Studies*, 10(4), 37–46. <https://doi.org/10.14254/2071>.
41. Ravallion, M., & Chen, S. (1997). What can new survey data tell us about recent changes in distribution and poverty? *World Bank Economic Review*. <https://doi.org/10.1093/wber/11.2.357>.
42. Richard H Adams, J. (2011). *Journal of Development Studies* Evaluating the Economic Impact of International Remittances on Developing Countries Using Household Surveys: A Literature Review. <https://doi.org/10.1080/00220388.2011.563299>.
43. Schmidt-Hebbel, K., Loayza, N., Servén, L., Attanasio, O., Bosworth, B., Deaton, A., Schiantarelli, F. (2000). What Drives Private Saving Across the World? WHAT DRIVES PRIVATE SAVING AROUND THE WORLD? <https://doi.org/10.1162/003465300558678>.
44. The World Bank Group. (2018). The Poverty Puzzle Overview. *Poverty and Shared Prosperity 2018*. The World Bank Group. <https://doi.org/10.1596/978-1-4648>.
45. Vacaflores, D. E. (2018). Are remittances helping lower poverty and inequality levels in Latin America? *Quarterly Review of Economics and Finance*, 68, 254–265. <https://doi.org/10.1016/j.qref.2017.09.001>.
46. Gupta, S., Pattillo, C. A., & Wagh, S. (2009). Effect of Remittances on Poverty and Financial Development in Sub-Saharan Africa. *World Development*. <https://doi.org/10.1016/j.worlddev.2008.05.007>.
47. Woodruff, C. (2001). Firm Finance from the Bottom Up: Microenterprises in Mexico. *Conference on Financial Markets in Mexico*.
48. World Bank. (2010). *The State of the Poor: Where are the Poor and where are they Poorest?*
49. World Bank. (2019). *MIGRATION AND REMITTANCES Recent Developments and Outlook*.
50. Yontcheva, B., & Masud, N. (2014). Does Foreign Aid Reduce Poverty? Empirical Evidence from Nongovernmental and Bilateral Aid. *IMF Working Papers*. <https://doi.org/10.5089/9781451861198.001>

APPENDIX

Appendix 1: Preliminary Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
PHC	430	38.78121	22.89301	0	88.87
HFCE	384	1388.887	1474.285	188.64	7252.2
AidPerCap	443	43.67986	56.56385	-97.91	472.54
RemPerCapita	440	57.73082	81.43902	.02	445.06
PCGDP	443	2341.139	2978.026	210.78	14385.3
PCGEE	280	84.87225	120.5033	5.89	666.19
PCGHE	384	59.51664	98.89804	1.14799	486.8866
AgeDep	444	82.17608	15.70847	41.28	111.78
Glob	442	43.16767	12.67985	19.18	79.33
LabFor	432	68.4947	11.57082	42.71	90.34
PGCWE	279	127.8619	204.6939	4.14706	1146.512

Skewness/Kurtosis tests for Normality

----- joint -----

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi
PHC	430	0.5459	0.0000	46.70	0.000
HFCE	384	0.0000	0.0000	.	0.000
AidPerCap	443	0.0000	0.0000	.	0.000
RemPerCapita	440	0.0000	0.0000	.	0.000
PCGDP	443	0.0000	0.0000	.	0.000
PCGEE	280	0.0000	0.0000	.	0.000
PCGHE	384	0.0000	0.0000	.	0.000
AgeDep	444	0.0000	0.0838	36.51	0.000
Glob	442	0.0000	0.8145	29.84	0.000
LabFor	432	0.0375	0.0000	31.96	0.000
PGCWE	279	0.0000	0.0000	.	0.000

	PHC	lHFCE	lAidPerCap	lRemPerCap	lPCGDP	lPCGEE	lPCGHE	AgeDep	Glob	LabFor
PHC	1.0000									
lHFCE	-0.7644	1.0000								
lAidPerCap	-0.2559	0.2198	1.0000							
lRemPerCap	-0.5349	0.5734	0.3751	1.0000						
lPCGDP	-0.7632	0.9816	0.2230	0.5158	1.0000					
lPCGEE	-0.7278	0.9341	0.2641	0.5205	0.9413	1.0000				
lPCGHE	-0.6496	0.9055	0.2794	0.4729	0.9171	0.9499	1.0000			
AgeDep	0.6172	-0.8690	-0.2222	-0.5025	-0.8233	-0.8197	-0.8114	1.0000		
Glob	-0.6180	0.8203	0.2584	0.5770	0.7917	0.7957	0.7740	-0.7770	1.0000	
LabFor	0.4537	-0.5036	-0.1862	-0.3974	-0.4875	-0.4149	-0.3661	0.3531	-0.3784	1.0000

Appendix 2: Model Estimation

Dynamic panel-data estimation, two-step system GMM

```

Group variable: C_ID                Number of obs   =          251
Time variable : Year                Number of groups =           35
Number of instruments = 28          Obs per group: min =           1
F(20, 34) = 1690.56                avg =          7.17
Prob > F = 0.000                    max =          11
  
```

PHC	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
PHC					
l1.	.9002657	.084677	10.63	0.000	.7281813 1.07235
lPCGDP	-.4662556	3.413517	-0.14	0.892	-7.403358 6.470846
lPCGWE	.6419239	1.930613	0.33	0.742	-3.281553 4.565401
lAidPerCap	.5411105	.9014342	0.60	0.552	-1.290824 2.373045
lRemPerCap	-1.028408	.567657	-1.81	0.079	-2.182026 .1252094
AgeDep	.0746051	.140767	0.53	0.600	-.2114679 .360678
Glob	.0405402	.0867595	0.47	0.643	-.1357764 .2168568
LabFor	-.0189853	.0446716	-0.42	0.674	-.1097688 .0717982
y_1	0	(omitted)			
y_2	-1.876786	30.77527	-0.06	0.952	-64.41965 60.66608
y_3	-1.545961	30.57413	-0.05	0.960	-63.68007 60.58814
y_4	-1.784412	30.70336	-0.06	0.954	-64.18116 60.61233
y_5	-2.105869	30.72199	-0.07	0.946	-64.54046 60.32872
y_6	-1.98158	30.69465	-0.06	0.949	-64.36062 60.39746
y_7	-2.194016	30.60703	-0.07	0.943	-64.39499 60.00696
y_8	-1.666101	30.42784	-0.05	0.957	-63.50291 60.1707
y_9	-2.293273	30.25857	-0.08	0.940	-63.78608 59.19954
y_10	-1.790162	30.04961	-0.06	0.953	-62.85831 59.27799
y_11	-1.995478	30.10718	-0.07	0.948	-63.18064 59.18968
y_12	-1.843222	29.99157	-0.06	0.951	-62.79343 59.10699
_cons	0	(omitted)			

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for orthogonal deviations equation

Standard

FOD.(Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/4).(L.PHC L.lAidPerCap L.AgeDep L.lPCGWE L.lRemPerCap) collapsed

Instruments for levels equation

Standard

Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12

_cons

Arellano-Bond test for AR(1) in first differences: z = -1.68 Pr > z = 0.094

Arellano-Bond test for AR(2) in first differences: z = 0.01 Pr > z = 0.991

Sargan test of overid. restrictions: chi2(7) = 8.35 Prob > chi2 = 0.303
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(7) = 9.27 Prob > chi2 = 0.234
 (Robust, but weakened by many instruments.)

Dynamic panel-data estimation, two-step system GMM

```

Group variable: C_ID                Number of obs   =       217
Time variable : Year                Number of groups =       31
Number of instruments = 33          Obs per group: min =       1
F(20, 30) = 75809.86              avg =       7.00
Prob > F = 0.000                   max =       11
  
```

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lHFCE					
L1.	.7703844	.1116876	6.90	0.000	.5422878 .998481
lPCGDP	.1312118	.1051782	1.25	0.222	-.0835908 .3460144
lPCGWE	.0146699	.0379909	0.39	0.702	-.0629179 .0922577
lAidPerCap	-.0199922	.0131476	-1.52	0.139	-.0468432 .0068588
lRemPerCap	.0337824	.0175658	1.92	0.064	-.0020917 .0696566
AgeDep	-.0032081	.0015888	-2.02	0.052	-.0064529 .0000368
Glob	-.0001606	.0006724	-0.24	0.813	-.0015338 .0012125
LabFor	.0000651	.0009307	0.07	0.945	-.0018356 .0019658
y_1	0	(omitted)			
y_2	0	(omitted)			
y_3	-.0105744	.0092095	-1.15	0.260	-.0293827 .008234
y_4	.0033254	.0101174	0.33	0.745	-.0173372 .0239879
y_5	-.0098149	.0118876	-0.83	0.416	-.0340927 .014463
y_6	-.0216269	.0123415	-1.75	0.090	-.0468317 .0035778
y_7	-.0067531	.0107317	-0.63	0.534	-.0286702 .015164
y_8	-.0345648	.0102828	-3.36	0.002	-.0555652 -.0135645
y_9	-.0284839	.0115556	-2.46	0.020	-.0520836 -.0048843
y_10	-.0380126	.0194963	-1.95	0.061	-.0778294 .0018041
y_11	-.0434855	.0188824	-2.30	0.028	-.0820485 -.0049226
y_12	-.0219285	.0201863	-1.09	0.286	-.0631543 .0192974
_cons	.820076	.4035176	2.03	0.051	-.0040169 1.644169

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for orthogonal deviations equation

Standard

FOD.(Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(3/5).(L.lHFCE L.lAidPerCap L.AgeDep L.lPCGWE L.lRemPerCap) collapsed

Instruments for levels equation

Standard

Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12

_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.(L.lHFCE L.lAidPerCap L.AgeDep L.lPCGWE L.lRemPerCap) collapsed

Arellano-Bond test for AR(1) in first differences: z = -1.46 Pr > z = 0.144

Arellano-Bond test for AR(2) in first differences: z = 0.65 Pr > z = 0.513

Sargan test of overid. restrictions: chi2(12) = 15.62 Prob > chi2 = 0.209

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(12) = 11.26 Prob > chi2 = 0.506

(Robust, but weakened by many instruments.)

Long-run Estimate

_nl_1: (_b[lRemPerCap])/(1-_b[L1.PHC])

```

-----
> --
> | PHC | Coef. Std. Err. z P>|z| [95% Conf. Interva
> | 1] |
-----
> --
> | _nl_1 | -10.31148 9.385789 -1.10 0.272 -28.70729 8.0843
> | 29 |
-----
> --
  
```

Pooled OLS Regression

Linear regression

Number of obs	=	251
F(18, 232)	=	1874.75
Prob > F	=	0.0000
R-squared	=	0.9807
Root MSE	=	3.1445

PHC	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
PHC					
L1.	1.010836	.0132061	76.54	0.000	.9848172 1.036855
lPCGDP	.2633881	.3828337	0.69	0.492	-.490887 1.017663
lPCGWE	-.0680636	.4323544	-0.16	0.875	-.9199064 .7837791
lAidPerCap	.0890581	.2514474	0.35	0.724	-.4063541 .5844702
lRemPerCap	.2092405	.2060892	1.02	0.311	-.1968052 .6152861
AgeDep	-.0221074	.0228696	-0.97	0.335	-.0671661 .0229514
Glob	-.0126133	.0349231	-0.36	0.718	-.0814203 .0561937
LabFor	-.0009281	.0179959	-0.05	0.959	-.0363844 .0345281
y_1	0	(omitted)			
y_2	.0433259	.6106177	0.07	0.943	-1.159739 1.246391
y_3	.422035	.5448748	0.77	0.439	-.6515002 1.49557
y_4	.0364858	.8345295	0.04	0.965	-1.607739 1.680711
y_5	-.6003306	.7758483	-0.77	0.440	-2.128939 .9282782
y_6	.1505448	.9755256	0.15	0.877	-1.771477 2.072566
y_7	-.507887	.4971169	-1.02	0.308	-1.487327 .4715535
y_8	-.0992728	.4021063	-0.25	0.805	-.8915195 .692974
y_9	-.3606004	.241367	-1.49	0.137	-.8361517 .1149509
y_10	.2984164	.2841159	1.05	0.295	-.2613606 .8581934
y_11	0	(omitted)			
y_12	-.0620724	.2590007	-0.24	0.811	-.5723664 .4482217
_cons	-1.3295	4.868301	-0.27	0.785	-10.92123 8.26223

Fixed Effect Regression

Fixed-effects (within) regression

Number of obs	=	251
Group variable: C_ID		
Number of groups	=	35

R-sq:

within	=	0.7449	min	=	1
between	=	0.8209	avg	=	7.2
overall	=	0.8146	max	=	11

corr(u_i, Xb)	=	-0.5758	F(18,34)	=	177.95
			Prob > F	=	0.0000

(Std. Err. adjusted for 35 clusters in C_ID)

PHC	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
PHC					
L1.	.6572379	.0611755	10.74	0.000	.5329143 .7815616
lPCGDP	-7.420162	2.856762	-2.60	0.014	-13.2258 -1.614523
lPCGWE	-.4658635	.5066676	-0.92	0.364	-1.495536 .563809
lAidPerCap	.5634851	.7817199	0.72	0.476	-1.025161 2.152131
lRemPerCap	-.1846048	.4038218	-0.46	0.650	-1.00527 .6360599
AgeDep	.0349653	.0732642	0.48	0.636	-.1139255 .1838562
Glob	-.0238192	.0309654	-0.77	0.447	-.0867484 .03911
LabFor	.7425404	.1999022	3.71	0.001	.3362901 1.148791
y_1	0	(omitted)			
y_2	.1524285	1.253884	0.12	0.904	-2.39577 2.700627
y_3	.2283318	1.083365	0.21	0.834	-1.97333 2.429994
y_4	.4972304	1.084493	0.46	0.650	-1.706724 2.701185
y_5	-.073418	.8455891	-0.09	0.931	-1.791862 1.645026
y_6	.6150878	1.375223	0.45	0.658	-2.179702 3.409878
y_7	.0293896	.7725163	0.04	0.970	-1.540552 1.599332
y_8	.3571605	.6552986	0.55	0.589	-.9745664 1.688887
y_9	-.2645139	.5312538	-0.50	0.622	-1.344152 .8151237
y_10	.092604	.3276482	0.28	0.779	-.5732572 .7584652
y_11	-.0414436	.1771557	-0.23	0.816	-.4014674 .3185801
y_12	0	(omitted)			
_cons	10.68885	21.70977	0.49	0.626	-33.4307 54.8084
sigma_u	11.581078				
sigma_e	2.669346				
rho	.94955348	(fraction of variance due to u_i)			

One step Difference GMM

Dynamic panel-data estimation, one-step difference GMM

```

Group variable: C_ID                Number of obs   =      216
Time variable : Year                Number of groups =       32
Number of instruments = 173         Obs per group:  min =        0
F(20, 32) = 377.48                  avg =        6.75
Prob > F = 0.000                    max =        10
  
```

PHC	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
PHC						
L1.	.5846384	.0769008	7.60	0.000	.4279965	.7412803
lPCGDP	-11.62224	4.204774	-2.76	0.009	-20.18709	-3.057397
lPCGWE	-.7724813	.8985314	-0.86	0.396	-2.60273	1.057767
lAidPerCap	1.030282	1.000598	1.03	0.311	-1.007868	3.068433
lRemPerCap	-.7102644	.5916811	-1.20	0.239	-1.915479	.4949505
AgeDep	.0817664	.1336871	0.61	0.545	-.1905453	.3540781
Glob	-.0165033	.0285173	-0.58	0.567	-.0745911	.0415844
LabFor	.7886518	.2496846	3.16	0.003	.280061	1.297243
y_1	0	(omitted)				
y_2	-2.119235	1.014624	-2.09	0.045	-4.185957	-.0525129
y_3	-2.04301	.9350612	-2.18	0.036	-3.947667	-.1383523
y_4	-1.588696	.9587507	-1.66	0.107	-3.541608	.3642148
y_5	-1.886974	1.029996	-1.83	0.076	-3.985007	.2110596
y_6	-1.065501	.7343794	-1.45	0.157	-2.561383	.4303806
y_7	-1.565292	.4447819	-3.52	0.001	-2.471283	-.6593006
y_8	-1.08097	.5635612	-1.92	0.064	-2.228907	.0669661
y_9	-1.781604	.6293824	-2.83	0.008	-3.063614	-.499594
y_10	-1.443667	.8807948	-1.64	0.111	-3.237787	.3504539
y_11	-1.379937	.9856275	-1.40	0.171	-3.387595	.6277202
y_12	-1.200064	1.195189	-1.00	0.323	-3.634583	1.234455

Instruments for orthogonal deviations equation

Standard

FOD.(Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(1/11).(L.PHC L.lAidPerCap L.AgeDep L.lPCGWE L.lRemPerCap)

Arellano-Bond test for AR(1) in first differences: z = -1.83 Pr > z = 0.067

Arellano-Bond test for AR(2) in first differences: z = 0.27 Pr > z = 0.790

Sargan test of overid. restrictions: chi2(153) = 154.17 Prob > chi2 = 0.458
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(153) = 14.78 Prob > chi2 = 1.000
 (Robust, but weakened by many instruments.)

Two-step Difference GMM

Dynamic panel-data estimation, two-step difference GMM

```

Group variable: C_ID          Number of obs   =    215
Time variable : Year         Number of groups =    31
Number of instruments = 183   Obs per group: min =    0
F(20, 31)                   =    1.74                avg =    6.94
Prob > F                     =    0.081                max =    10
  
```

PHC	Coef.	Corrected Std. Err.	t	P> t	[95% Conf. Interval]
PHC					
L1.	.5743217	.1841884	3.12	0.004	.198667 .9499765
lPCGDP	-6.795722	8.179893	-0.83	0.412	-23.47872 9.88728
lPCGEE	-1.322357	2.368012	-0.56	0.581	-6.151951 3.507236
lAidPerCap	.1408178	1.140126	0.12	0.903	-2.184485 2.466121
lRemPerCap	-.613049	.7383679	-0.83	0.413	-2.11896 .8928624
AgeDep	-.2000383	.2902319	-0.69	0.496	-.7919702 .3918936
Glob	-.0373361	.0428359	-0.87	0.390	-.1247005 .0500283
LabFor	.4875808	.4396746	1.11	0.276	-.4091414 1.384303
y_1	0	(omitted)			
y_2	0	(omitted)			
y_3	.6549307	.6007843	1.09	0.284	-.5703769 1.880238
y_4	.40743	1.32327	0.31	0.760	-2.291397 3.106257
y_5	.108066	1.713518	0.06	0.950	-3.386677 3.602809
y_6	-.5149333	1.488451	-0.35	0.732	-3.55065 2.520783
y_7	-.8447347	1.74632	-0.48	0.632	-4.406378 2.716908
y_8	-.7355921	2.047732	-0.36	0.722	-4.911969 3.440785
y_9	-1.665267	2.310077	-0.72	0.476	-6.376701 3.046166
y_10	-1.82003	2.684429	-0.68	0.503	-7.29496 3.654899
y_11	-2.14391	3.097008	-0.69	0.494	-8.460301 4.17248
y_12	-2.298327	3.538317	-0.65	0.521	-9.514771 4.918117

Instruments for orthogonal deviations equation

Standard

FOD.(Glob LabFor y_1 y_2 y_3 y_4 y_5 y_6 y_7 y_8 y_9 y_10 y_11 y_12)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(1/11).(L.PHC L.lAidPerCap L.AgeDep L.lPCGWE L.lRemPerCap)

Arellano-Bond test for AR(1) in first differences: z = -1.51 Pr > z = 0.131

Arellano-Bond test for AR(2) in first differences: z = 0.31 Pr > z = 0.754

Sargan test of overid. restrictions: chi2(163) = 155.08 Prob > chi2 = 0.659
 (Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(163) = 14.44 Prob > chi2 = 1.000
 (Robust, but weakened by many instruments.)