

The Impact of Migration and Remittances on Employment in Agriculture in the Gambia

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Abstract

For economic growth and development in any WE African country the GDP progress is depending on the key push-pull factors as migration, personal remittances received, bilateral aids and, absolutely, employment in agriculture which is about 1/3 of the population and not a predominant and protected minority as happens in the industrialized EU and North America. In order to represent the framework of the reciprocal dependencies the present study used the statistics of Gambia from WDI covering the periods from 1960 to 2017 by applying linear regression models. The results confirmed that migration and remittances have significant positive impact on employment in agriculture because new investment in agriculture created new skilled and unskilled employment. The results also found out that employment in agriculture has negative and significant impacts on foreign aids: 10% increase in migration, increases foreign aid by 50.3%. Increasing 10% of remittance, increase economic growth by 0.14% but 10% increases in employment in agriculture, decrease economic growth by 0.04%. To face globalization the economy of the Gambia should use the foreign aid to improve agriculture production and productivity thereby increase economic growth through human capital theory of migration, skilled migration, export and food security, the study recommends.

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Introduction

The population of the Gambia is almost 2 million inhabitants, and one of the smallest and smiling coast countries in West Africa. Thus, it is smallest, but illegal and legal ways of migration shows a major part in the society of Gambia.

The contribution of agriculture is not that big compare to other sectors at 1/3 of the GDP of Gambia. This may be due to the fact that agriculture share of GDP lead to lower rainfall, high temperature. In the Gambia, less than half of the arable land is cultivated in the Gambia. The Gambia produces mainly peanuts, rice, millet, sorghum, corn, sesame, cassava, palm kernel, cattle, sheep and goats¹.

In Gambia, only less than 20% of the proposed budget for 2020 was allocated to agriculture. This cannot do anything for adaptation and mitigation strategies for the existing and future agricultural development.

The development intervention (proxy employment in agriculture) is developed by IOM of Gambia in order to facilitate, protect, reintegrate and assist the migrants that were returned. The returnee benefits lots of facilities such as skills transfer, soft skills given. Personal remittance received have positive and significant impacts on economics in Gambia by using Vector error correction model both in the short run dynamics and in the long run^{1,2}. As it can be seen in both the Fig 1 (2 etc....) and the Table 1 . In 2006 more migration occurred in the Gambia and the remittance as percentage of GDP was at 9.74%. From 2007 to 2008

constant growth of remittance occurred in Gambia. From 2008 to 2009 remittance inflows begin to have an increasing or upward trend for the Gambia. Further, export does not causes growth in Gambia².

For Berthélemy, et al.³ Using World Bank bilateral data to study the effect of total aid on migration-push factor and found out that 10 percent increase in aid, increase migration by 1.5 percent. More aid, more migration of the youth because of the diversification of the aid to unproductive policy intervention. Thus, in the micro studied done on social protection interventions by⁴, revealed no agreement in the literature with development interventions having related with bidirectional effects. In the review of the relevant literature was identified only a migration development intervention by the New Zealand Recognized Seasonal Employment Programme date, which have direct influences on firms or employers' migrants and countries of origin⁵. The evidence base research in connection to migration interventions was found to be reliably fragile in most literatures. The lack of flexibility study to know the demand of skills or unskilled migrates, the labor market evaluation, gender sensitive policy for migration. This is very important in-order to gives unnecessary skills and training for displaced workers in the communities in which migration is the highest impacts factor. Impacts of migration interventions and development, as the studied of meta-analysis of energetic labour market programmes revealed that wage subsidies is directly positive impact on labour market outcomes for immigrants more than the training⁶.

Table 1. Percentage of Remittance Inflows to GDP for Gambia

DATE	Percentage of Gambians' remittance of GDP
1/1/2006	9.74
1/1/2007	6.97
1/1/2008	6.97
1/1/2009	8.86

Sources: Retrieved from FRED Economic data, World Bank October 2019

Experimental Procedure

In this study, the secondary data were collected from WDI. After the data was cleaned up and arranged in excel format. The ID was selected to fill the missing values by using interpolation. The results from the data were imported into Eview, R and Stata. As indicated in Figure 2 below, why we applied linear regression methods; Firstly, after plotting the variables the regression line passed through the mean point as above and therefore we can generalize this to any linear regression line. Secondly, after excluding one outlier in the model, the results are statistically significant with lowest p-values. The mean point is indicated in yellow circle

Materials and Methods

Simple linear Regression Model

Linear regression is a technique to quantify the relationship between the dependent variable and only one independent variable

$$y = \beta_0 + \beta_1 x$$

In this equation, y is the dependent variable, is the variable on the vertical axis of the graph or the explained variable, while x, represents the variable on the horizontal axis or the independent variable. The value β_0 (which can be negative, positive or zero) is called the intercept, while the value β_1 (which can be positive or negative) is called 'slope' or 'coefficient of regression' or rate of change. Both, β_1 and β_0 can be calculated from the following equations:

$$\beta_1 = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sum(x-\bar{x})^2} \quad \text{and} \quad \beta_0 = \bar{y} - \beta_1 \bar{x}$$

Multiple Linear Regression Model

This paper is based on multiple regression analysis in which two or more variables are modeling and analyzing. The multiple regression analysis is to describe the relationship between one dependent variables called response variable and several independent variables called exogenous variables^{7,8}, identified that and at the same time the spreads in which some independent variables have on the dependent variable.

The multiple regression models can be much more accurate than the mono-factorial regression

model. In our study, the dependent variable for the multiple regression analysis is development intervention (employment in agriculture) and the independent variables are net migration, net official aid received, economic growth, and net official development assistance and official aid received. All of the variables were used for the analysis throughout the periods from 1969-2016. Data were collected from WDI and used to obtain the regression equation and calculate the standard error, the t-statistic, the p-value and the R-squared. All these variables measure the goodness of fit or accuracy of the estimates of the model, especially the R-squared, which is called coefficient of determination in which the proportion of how much the total variance is explained by the independent variables in the model. Other tests were also used like F- statistic, t-ratios and p-values to test the hypothesis and indicate the rejection region in the model with degrees of freedom.

If y is a dependent variable and x_1, \dots, x_k are independent variables, then the multiple regression model provides a prediction or forecast of y given x_i of the form

$$y_i = b_0 + b_1 x_{1i} + b_2 x_{2i} + \dots + b_p x_{pi} + e_i$$

Where the assumption on the error terms are exactly as in simple linear regression. In order to estimate the coefficients and se (standard error of the estimate), one follows a process very similar to that followed in the case of only one predictor value. The left hand size variable is the dependent variable and the right hand size variable is the independent variables. The paper used the multiple regression analysis to direct predict the values of development intervention (employment in agriculture) to migration in Gambia.

Empirical Model

Do aid/development interventions/personal remittance affect irregular migration specifically? This is linear regression between aid and net migration and between development intervention and net migration decision and between personal remittances received and net migration.

Does net migration affect total bilateral aid received in Gambia?

$$\text{taid}_{it} = \gamma_0 + \text{NM}_{it}\gamma_1 + \varepsilon_{it} \quad (1)$$

Does personal remittance received affect net migration?

$$\text{NM}_{it} = \gamma_0 + \text{PR}_{it}\gamma_1 + \varepsilon_{it} \quad (2)$$

Do personal remittances received affect economic growth?

$$\text{EG}_{it} = \gamma_0 + \text{PR}_{it}\gamma_1 + \varepsilon_{it} \quad (3)$$

Does net migration affect economic growth?

$$\text{EG}_{it} = \gamma_0 + \text{NM}_{it}\gamma_1 + \varepsilon_{it} \quad (4)$$

Does net migration impacts on development intervention, when we considered employment in agriculture as a proxy for development intervention?

$$\text{EADI}_{it} = \gamma_0 + \text{NM}_{it}\gamma_1 + \varepsilon_{it} \quad (5)$$

Does development affect aid?

$$\text{taid}_{it} = \gamma_0 + \text{EADI}_{it}\gamma_1 + \varepsilon_{it} \quad (6)$$

Does aid affect economic growth?

$$\text{EG}_{it} = \gamma_0 + \text{taid}_{it}\gamma_1 + \varepsilon_{it} \quad (7)$$

Multiple linear regression models between development intervention (proxy agriculture employment), net migration, personal remittances, bilateral aids and economic growth are given below.

Do the net migration, net official aid received, personal remittances received and economic growth affect development intervention (employment in agriculture)?

$$\text{EADI}_{it} = \gamma_0 + \text{NM}_{it}\gamma_1 + \text{taid}_{it}\gamma_2 + \text{EG}_{it}\gamma_3 + \text{PR}_{it}\gamma_4 + \varepsilon_{it} \quad (5)$$

Does aid affect personal remittances received, net migration, development intervention and economic growth?

$$\text{taid}_{it} = \gamma_0 + \text{NM}_{it}\gamma_1 + \text{EADI}_{it}\gamma_2 + \text{EG}_{it}\gamma_4 + \text{PR}_{it}\gamma_4 + \varepsilon_{it} \quad (6)$$

Does net migration affect personal remittances received, aids, development intervention and economic growth?

NM_{it}

$$= \gamma_0 + \text{taid}_{it}\gamma_1 + \text{EADI}_{it}\gamma_2 + \text{EG}_{it}\gamma_4 + \text{PR}_{it}\gamma_4 + \varepsilon_{it} \quad (7)$$

Do personal remittances received affect net migration, aids, development intervention and economic

growth?

$$\text{PR}_{it} = \gamma_0 + \text{taid}_{it}\gamma_1 + \text{EADI}_{it}\gamma_2 + \text{EG}_{it}\gamma_4 + \text{NM}_{it}\gamma_4 + \varepsilon_{it} \quad (8)$$

$$\text{EG}_{it} = \gamma_0 + \text{taid}_{it}\gamma_1 + \text{EADI}_{it}\gamma_2 + \text{PR}_{it}\gamma_4 + \text{NM}_{it}\gamma_4 + \varepsilon_{it} \quad (9)$$

Where:

EADI: Development Intervention (Proxy employment in agriculture)

NM: Net migration

EG: GDP growth

Taid: total aid which is Net bilateral aid flows from DAC donors, United States+ Net bilateral aid flows from DAC donors, European Union institutions+ Net official development assistance and official aid received.

PR: Personal remittance received

Data and Descriptive Statistics

A brief descriptive of the data, the name of the variables, data sources and comment used in this study are presented in the table 2 and to cleaned the data for missing data, where interpolation was used to fill the missing values, because its advantages over the other methods is that, Linear interpolation is quick and easy to use, and may be adequate for well-resolved data comparing to Polynomial interpolation, Cubin Spline Interpolation. The periods 2018-2022 was used for forecasting purpose only. This means that the aim was to know the forecasted economic growth, net migration, personal remittance, employment in agriculture and bilateral aid received in Gambia for the upcoming years.

Results

For all the following tests, 0.05 level of significance was used. The decision rule is: If the value of the probability is higher than the 0.05 level, then we accept the null hypothesis H_0 . If the value of the probability is smaller than the 0.05 level, and then we reject the null hypothesis H_0 . To test the correlation, the test of hypothesis is as follows: H_0 : X and Y are not correlated and H_a : X and Y are correlated.

In the Table 3, the linear correlation coefficient of 0.636 has a p-value of 0.0000 indicating that Development Intervention when we take employment in agriculture as a proxy and economic growth of Gambia are positively correlated. Thus, the linear correlation

Table 2. Sources of data.

Name of Variable	Source	Comment
GDP Current(US\$)	WDI	Current GDP
Net Migration	WDI	Net migration
Personal remittance received	WDI	Personal remittance received(\$)
Employment in agriculture	WDI	Employment in agriculture
Bilateral aid	WDI	Bilateral aid received

Table 3. Linear Correlation Coefficient test of data in Table 8.

Covariance Analysis: Ordinary					
Sample: 1960 2017					
Included observations: 58					
Correlation					
Probability					
	EADI	EG	NM	PR	TAID
EADI	1.0000				
EG	-0.636	1.0000			
	<i>0.0000</i>				
NM	0.141	0.0574	1.0000		
	<i>0.2904</i>	<i>0.6685</i>			
PR	-0.726	0.299	-0.580	1.000	
	<i>0.0000</i>	<i>0.0224</i>	<i>0.000</i>		
TAID	-0.718	0.320	-0.260	0.657	1.000
	<i>0.0000</i>	<i>0.0141</i>	<i>0.042</i>	<i>0.0000</i>	

Sources: Author's own computation by retrieved data from World Bank Using Eview 10

coefficient of 0.057 has a p-value of 0.668 meaning that economic growth and net migration are not correlated in Gambia, because the $p\text{-value} = 0.668 > 0.05$. For the linear correlation coefficient of the relationship between net migration and personal remittance received are positively correlated. Net migration increases, personal remittances received from outside rises at approximately 58% the study confirmed. Current Total aid from donors outside has positively correlated with net migration, personal remittances received, economic growth and even development intervention when we considered employment in agriculture as proxy, because their p-values are less than 0.05.

From table 4. Below, the results found out that personal remittances received from outside has significant positive impacts on economic growth in Gambia. 10% increase in personal remittances from abroad, raises the economic growth in Gambia by approximately 0.11%.

From table 5, in Gambia, migration has positive, but fairly small impact on economic growth. The results of the study confirmed that migration does have impacts on economic growth. If migration increases by 0%, economic growth in Gambia will reduce by 1.8%. This reflects that migration has impact on economic growth of Gambia. If no migration, Youth migration both skilled migrates and unskilled migrates send remittances back home and that remittances is used to do social function, households consumption expenditure-children school fees, health care for children, food, clothing and some used to build houses etc.

Though, foreign aids increase the economic growth in most of the poor countries if aids are the only sources of funding. If total bilateral aids received are utilized in good way, it can be an important sources of income to reduces poverty and improve economic development of Gambia.

As the results generated in Table 6 showed that the statistical analysis of migration has non-significant effect on employment in agriculture. As peoples migrates, those left behind there will be scarcity of employment in agriculture and in- turn will negatively impacts on food security and economic growth. Not only that, but those left behind are mostly women, children, elderly and disable peoples and in that their contribution

to agriculture, food security and nutrition will be minimal. In the likelihoods they can be affected by poverty and hunger, malnutrition and diseases, lack of education especially children etc. That is one sided of the story. Another sides of migrates remittances also help those left behind to have quality education, good health, food security, new agriculture technology etc. In the most of the literatures that links migration and employment in agriculture found out that food security and migration can be direct, due to food insecurity and fluctuations of income.

The results from Table 7 explained that migration and economic growth have non- significant impacts on total aids in Gambia, while remittance and employment in agriculture showed are significant impacts on the total aids in Gambia. 10% increase in migration, increases total aids by 50.3%.

The study confirmed that the total aids, employment in agriculture and economic growth has significant impacts on remittance. From the existing literatures, migration and remittances have both direct and indirect effects on the welfare of the population in the migrant sending countries.

There is empirical evidence that remittances contribute to economic growth, through their positive impact on consumption, savings, and investment in macroeconomic. Remittances can also have negative impact on growth in recipient countries by reducing incentives to work, and therefore reducing labor supply. From Table 7, in Gambia remittance, migration and total aids have significant impacts on economic growth. An increase of 10% of remittance, increase economic growth by 0.14%. Only employment in agriculture has negative impacts on economic growth. 10% increases in employment in agriculture, decrease economic growth by 0.04%. The economy of Gambia should deal more on export to improve agricultural development. For foreign aid can have both negatively and positively contribution to economic growth depending on the utilization of the funds.

Discussion

One of the studies that looks at the impact of migration on economic growth for 22 OECD countries between 1986 and 2006 proved an optimistic, but small impact of the human capital brought by migrants on

Table 4. Estimation of Economic Growth model.

Dependent Variable: EG				
Method: Least Squares				
Sample (adjusted): 1960 - 2017				
Included observations : 58 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.837	2.718	-2.147	0.03**
PR	1.099	0.467	2.349	0.02**

Sources: Author's own computation by retrieved data from World Bank Using Eview.

Table 5. Estimation of Economic Growth model, variables C, NM.

Dependent Variable: EG				
Method: Least Squares				
Sample (adjusted): 1960 2017				
Included observation: 58 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.832	2.235	-0.819	0.4158
NM	5.05E-05	0.000117	0.43053	0.6685

Sources: Author's own computation by retrieved data from World Bank Using Eview

Table 6. Estimation of Employment in Agriculture model, variable EADI.

Dependent Variable: EADI				
Method: Least Squares				
Sample (adjusted): 1960 2017				
Included observations: 58 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.255	0.168	185.883	0.0000
NM	9.4E-06	8.8E-06	1.067	0.2904

Sources: Author's own computation by retrieved data from World Bank Using Eview

Table 7. Estimation of Total Bilateral aid received model, variable taid.

Dependent Variable: taid				
Method: Least Squares				
Sample (adjusted): 1960 2017				
Included observations: 58 after adjustments				
Variable	Coeff.	Std. Error	t-Statist	Prob.
NM	503.446	443.0	1.136	0.2608
EADI	770450.	372676	2.067	0.04**
EG	411198.	439147.1	0.936	0.3533
PR	1033062	1890886	5.463	0.0000

Sources: Author's own computation by retrieved data from World Bank Using Eview

economic growth. The involvement of immigrants to human capital accumulation tends to counteract the impact of population increase on capital per worker, but the net effect is fairly small. An increase of 50% in net migration of the foreign-born makes less than one tenth of a percentage point difference in productivity growth⁸.

Thus, remittances improve the likelihoods of reduction in poverty, increases education enrolment, improve investment, decreases food in-security, improve health. The results confirmed that remittances benefits both individuals, entire countries and the continents' like in sub-Saharan Africa, Asia etc.

In their parts, Galiani, et al.⁹ confirmed that 1% percent increase in the aid to gross net income ratio increases annual real per capita GDP growth by 0.031%. A large number of studies to evaluate the impact of bilateral aid in promoting economic growth and development of recipient countries have been carried out. The results of these studies are differed, depending on the methods, country(ies) and even the time periods. For example, numerous studies¹⁰⁻¹³, deliver evidence that bilateral aid have optimistic impact on growth. Adam¹⁴, and Carden¹⁵ find evidence for unimportant and even negative role of aid on economic growth.

Several studies¹⁶⁻¹⁹ provided an evidence that positive role of aid on economic growth can be realized only when certain conditions such as good macroeconomic condition, political stability and less corruption exist.

A cross-country study of 71 developing countries found that a 10% increase in per capita, official international remittances will lead to 3.5 percent decline in the share of people living in poverty²⁰. Evidence from Latin America, Africa, South Asia, and other regions suggests that remittances reduce the depth and severity of poverty, as well as indirectly stimulate economic activity²¹.

Migration is a choice that influences the welfare of the household, the home community, and in the end the whole economy in various ways²². The welfare implications of migration on the origin country are most often, though not always, sizable and positive. The economic impact of migration has been intensively studied but still often driven by ill-informed insights, which, in turn, can lead to public resentment towards migration. These negative opinions risk efforts to adapt migration policies to the new economic and demographic challenges facing many countries²³. Fig 3-9, Tab 8.

Table 8. Variables and the observation used in this study.

Country Name	Time	taid	EADi	PRI	EGI	NMI
Gambia, The	1960	540000	33.979	-0.46316	-67.033	2033.6
Gambia, The	1961	1430000	33.85	-0.42626	-57.4569	3657.8
Gambia, The	1962	2550000	33.721	-0.38937	-47.8807	5282
Gambia, The	1963	5120000	33.592	-0.35248	-38.3046	6906.2
Gambia, The	1964	2550000	33.463	-0.31559	-28.7284	8530.4
Gambia, The	1965	4370000	33.334	-0.2787	-19.1523	10154.6
Gambia, The	1966	3850000	33.205	-0.24181	-9.57614	11778.8
Gambia, The	1967	3270000	33.076	-0.20492	0	13403
Gambia, The	1968	6260000	32.947	-0.16803	9.576144	13603
Gambia, The	1969	4670000	32.818	-0.13113	2.435523	13803
Gambia, The	1970	1310000	32.689	-0.09424	6.153847	14003
Gambia, The	1971	4530000	32.56	-0.05735	-0.06588	14203
Gambia, The	1972	5880000	32.431	-0.02046	0.241705	14403
Gambia, The	1973	7440000	32.302	0.016432	9.250329	14438.4
Gambia, The	1974	12200000	32.173	0.053323	5.878794	14473.8
Gambia, The	1975	8850000	32.044	0.090214	12.39343	14509.2
Gambia, The	1976	12330000	31.915	0.127106	7.351226	14544.6
Gambia, The	1977	22480000	31.786	0.163997	3.439576	14580
Gambia, The	1978	38280000	31.657	0.200889	6.316446	14640.6
Gambia, The	1979	42380000	31.528	0.23778	-1.32818	14701.2
Gambia, The	1980	66060000	31.399	0.162154	6.27008	14761.8
Gambia, The	1981	86120000	31.27	0.132274	3.321894	14822.4
Gambia, The	1982	58770000	31.141	0.08693	-0.76458	14883
Gambia, The	1983	48390000	31.012	0.328483	10.88323	24025.8
Gambia, The	1984	65790000	30.883	0.867147	3.535257	33168.6

Gambia, The	1985	60220000	30.754	1.40581	-0.81226	42311.4
Gambia, The	1986	1.21E+08	30.625	1.944473	4.091071	51454.2
Gambia, The	1987	1.21E+08	30.496	2.483137	2.454333	60597
Gambia, The	1988	1.03E+08	30.367	3.0218	4.476827	49001.6
Gambia, The	1989	1.16E+08	30.238	3.560464	5.895722	37406.2
Gambia, The	1990	1.15E+08	30.109	4.099127	3.558879	25810.8
Gambia, The	1991	1.15E+08	29.98	4.637791	3.107039	14215.4
Gambia, The	1992	1.34E+08	29.851	5.176454	3.378689	2620
Gambia, The	1993	1.06E+08	29.847	5.715117	3.012101	1182
Gambia, The	1994	87510000	30.405	6.253781	0.154346	-256
Gambia, The	1995	54770000	30.689	6.792444	0.881848	-1694
Gambia, The	1996	42520000	30.329	7.331108	2.223546	-3132
Gambia, The	1997	45510000	30.458	7.869771	4.899999	-4570
Gambia, The	1998	51580000	30.218	8.408434	3.499999	-3352.6
Gambia, The	1999	39500000	30.484	8.947098	6.399999	-2135.2
Gambia, The	2000	60440000	30.301	9.485761	5.5	-917.8
Gambia, The	2001	58320000	30.387	10.02443	5.8	299.6
Gambia, The	2002	73390000	30.988	10.56309	-3.25	1517
Gambia, The	2003	70740000	30.929	11.10175	6.87	-1873.6
Gambia, The	2004	68060000	30.905	6.315495	7.05	-5264.2
Gambia, The	2005	64710000	31.451	5.770552	-2.35173	-8654.8
Gambia, The	2006	81310000	30.959	6.049967	-0.55558	-12045.4
Gambia, The	2007	1.08E+08	30.718	4.349639	3.04325	-15436
Gambia, The	2008	1.17E+08	31.083	4.149896	6.255906	-15436
Gambia, The	2009	1.45E+08	30.883	5.502995	6.665724	-15436
Gambia, The	2010	1.50E+08	30.903	7.496898	5.908336	-15436
Gambia, The	2011	1.76E+08	30.784	6.480762	-8.13044	-15436
Gambia, The	2012	1.62E+08	30.539	7.515829	5.241569	-15436
Gambia, The	2013	1.32E+08	30.23	7.984044	2.872769	-15436
Gambia, The	2014	1.17E+08	30.086	11.20583	-1.40738	-15436
Gambia, The	2015	1.19E+08	29.943	9.865488	4.058074	-15436
Gambia, The	2016	1.01E+08	29.997	14.13313	1.94336	-15436
Gambia, The	2017	3.38E+08	29.94	15.162	4.822611	-15436

Source: WDI

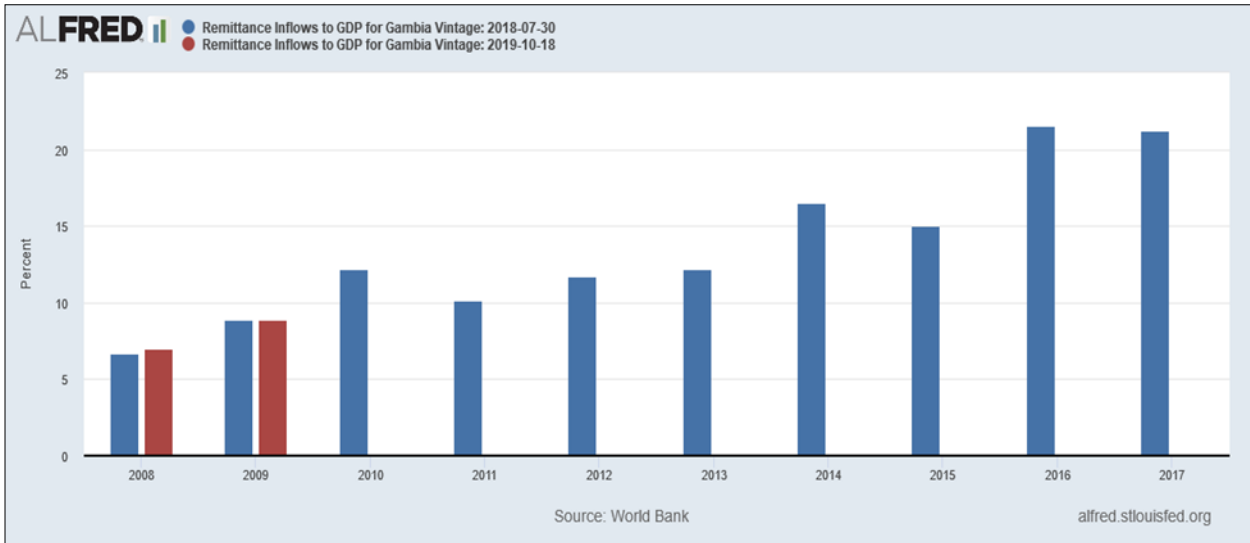


Figure 1. Remittances' inflow to GDP
Own Evaluation from St. Louis Fed

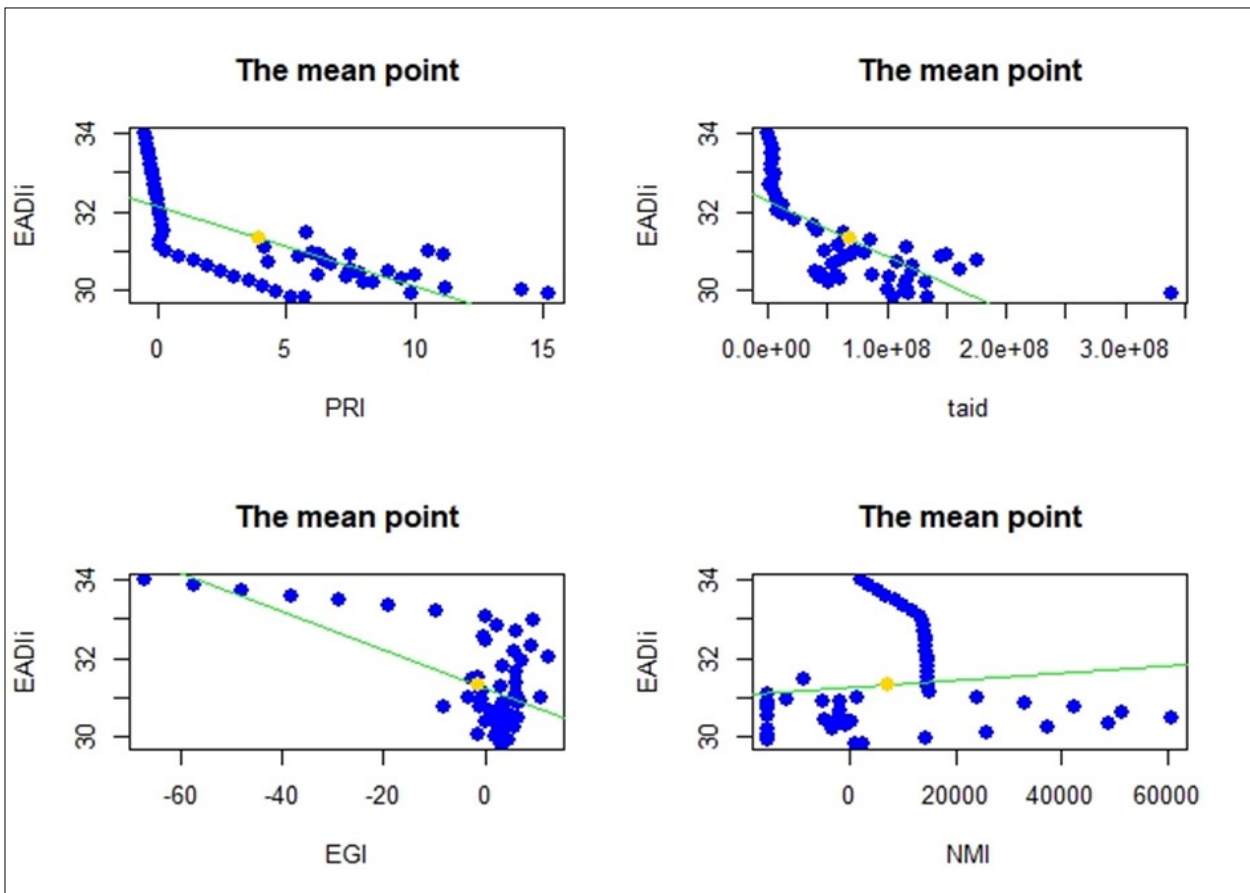


Figure 2. The mean point of the regression line

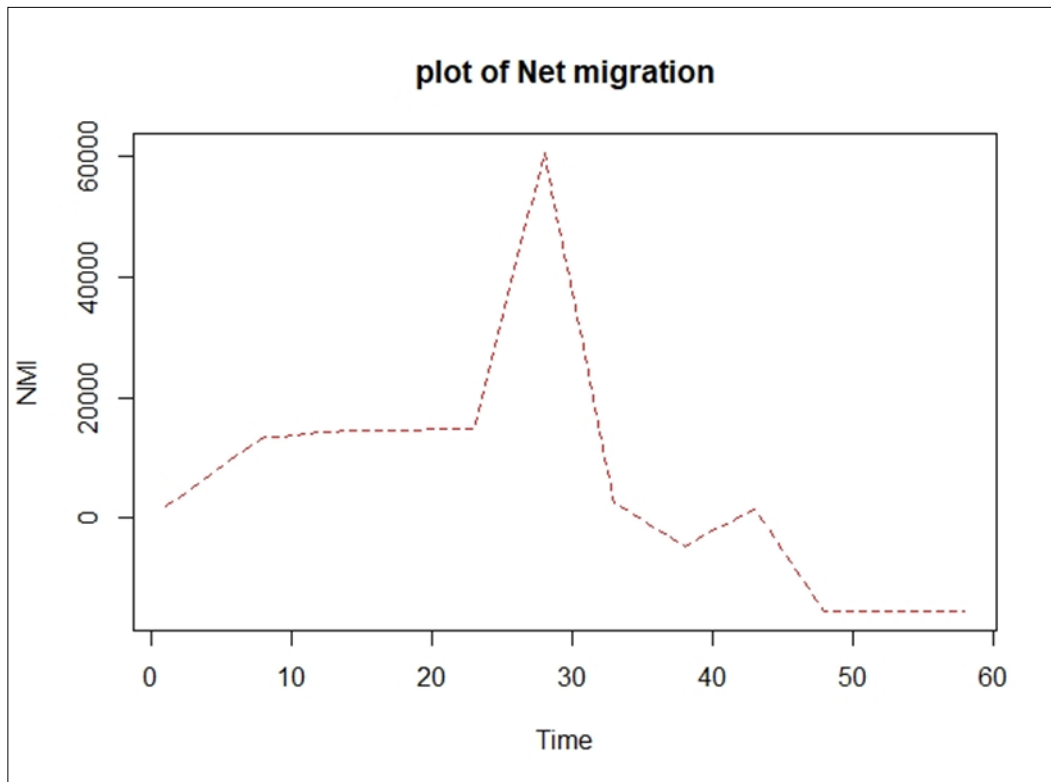


Figure 3. Plot of Net Migration

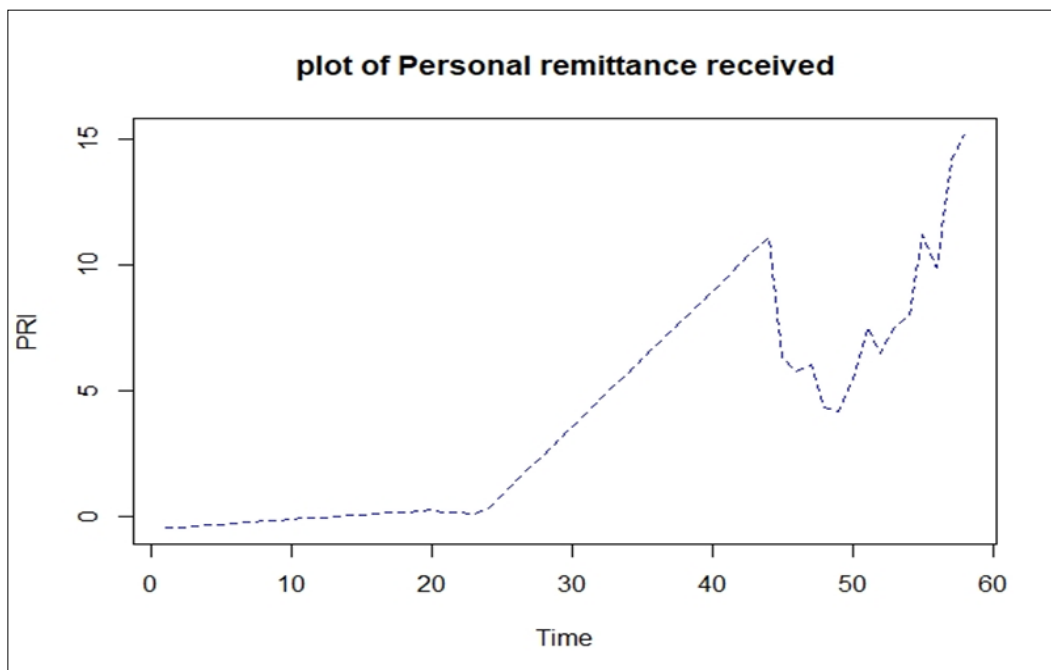


Figure 4. Plot of personal remittances received

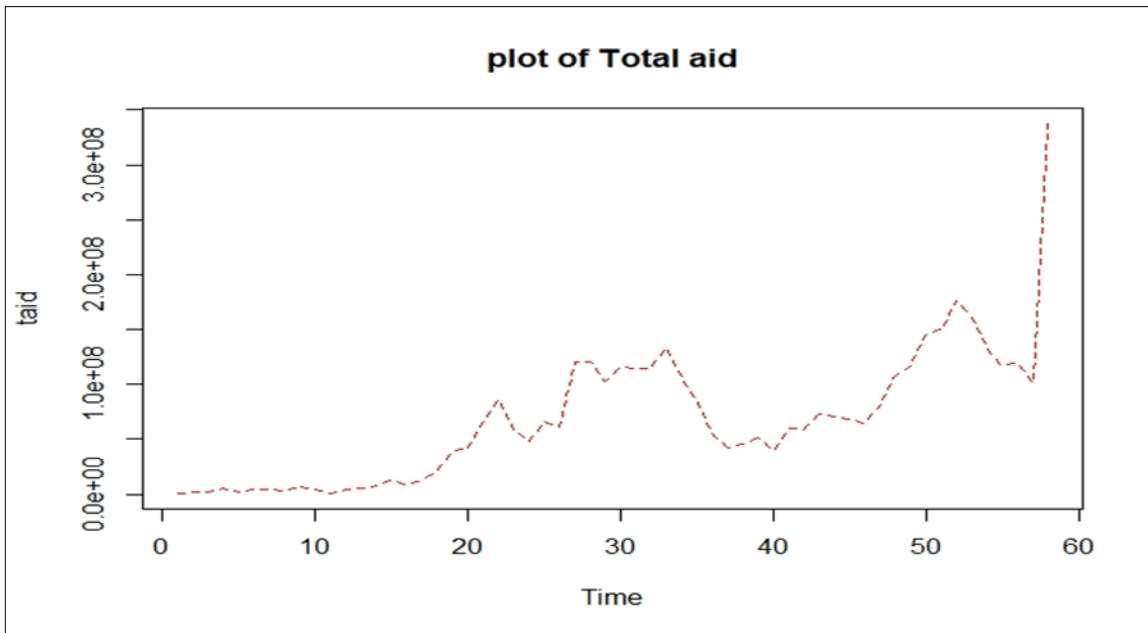


Figure 5. Plot of Total Aid (taid)

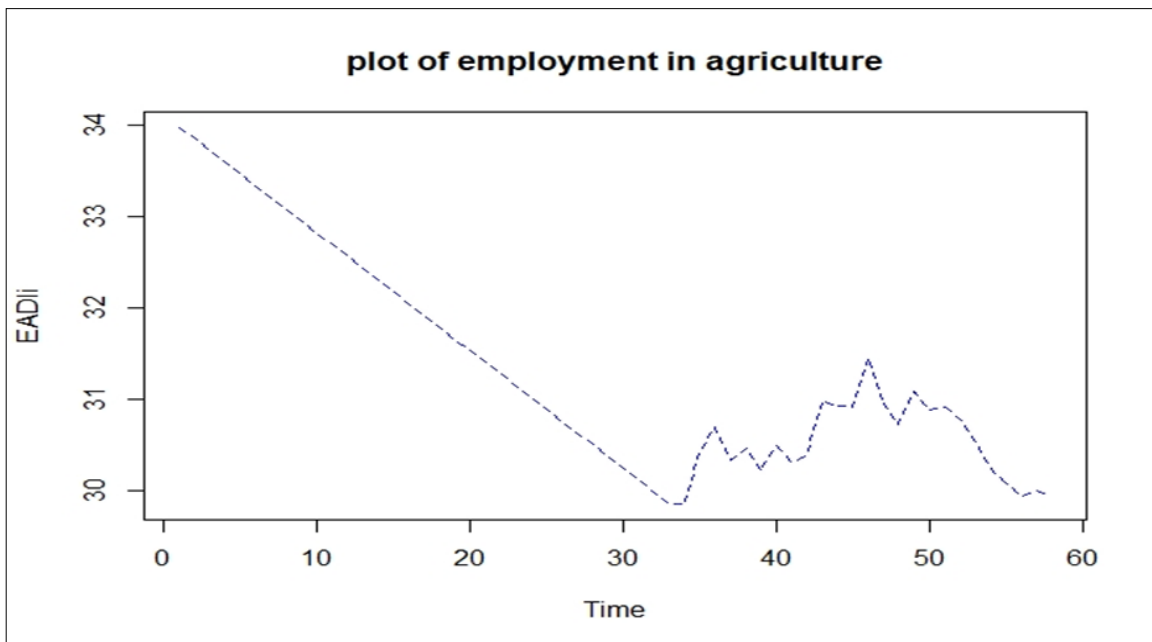


Figure 6. Plot of Employment In Agriculture

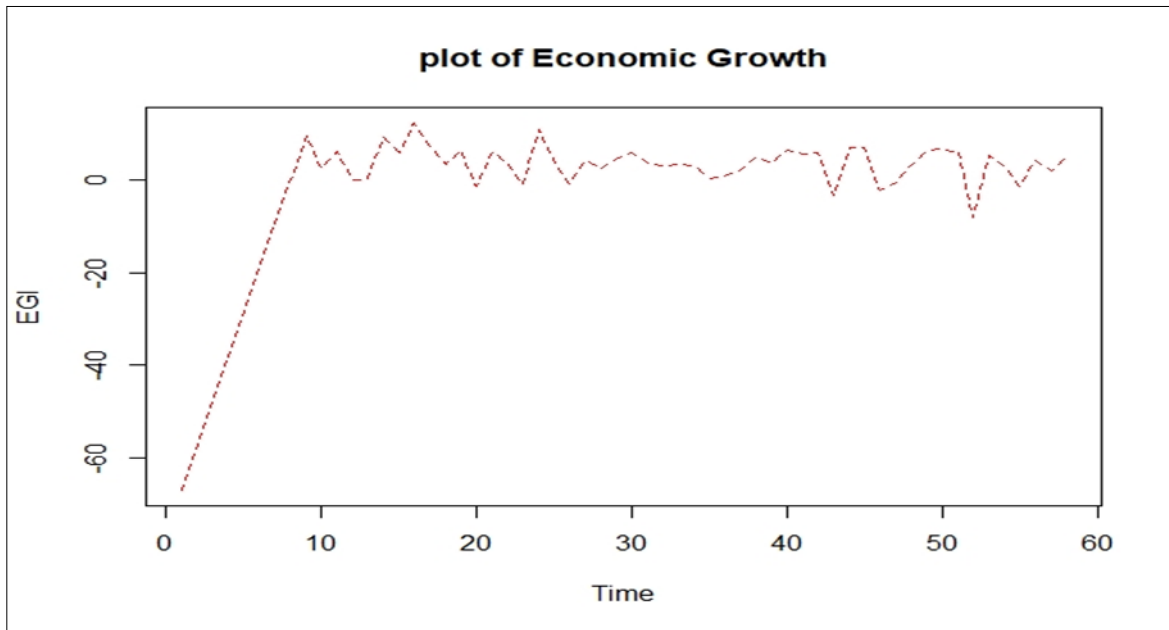


Figure 7. Plot of Economic Growth

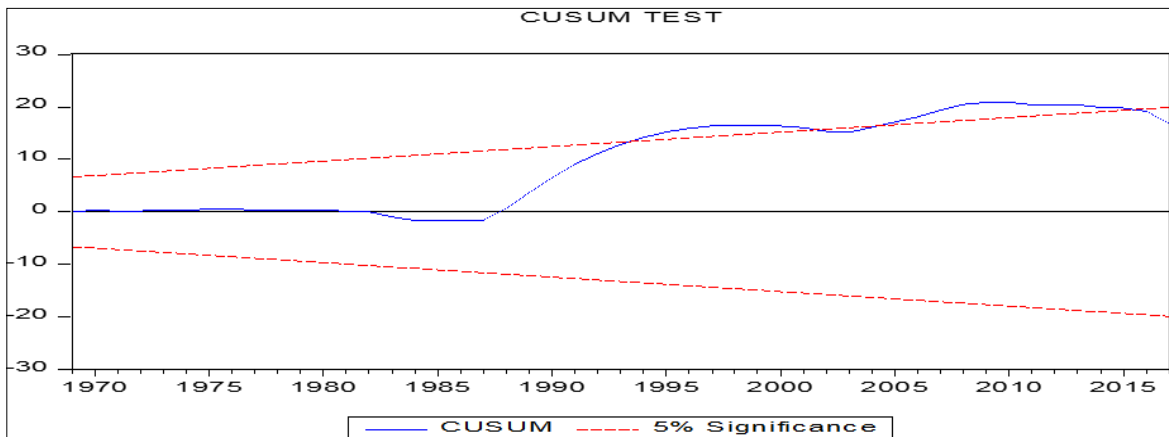


Figure 8. CUSUM test

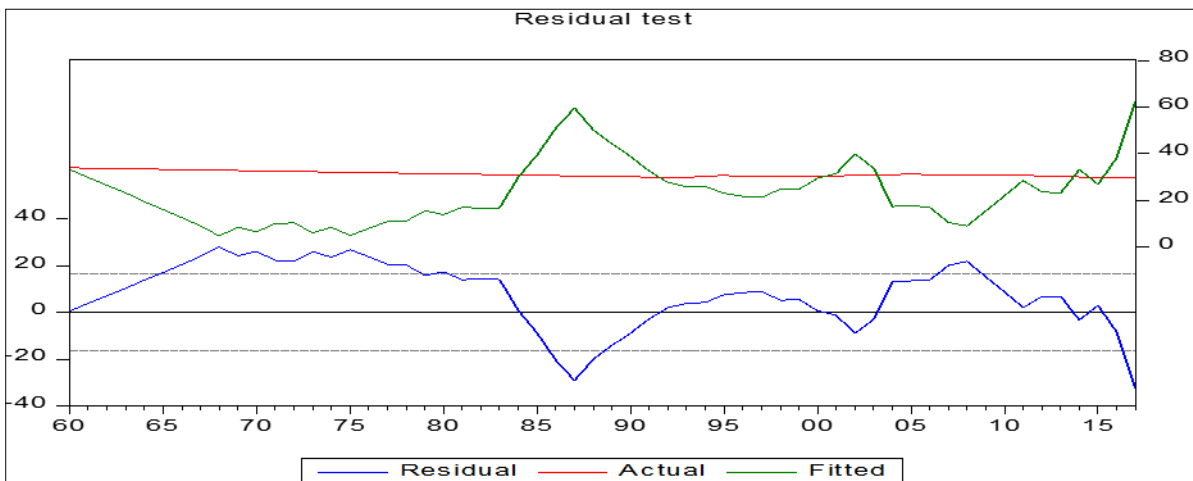


Figure 9. Residual test

Conclusion

When a multiple regression analysis was used, the results confirmed that migration and remittances have significant impact on employment in agriculture in the Gambia. The impact is larger for remittances than migration itself. 10% increase in remittance, increased the employment in agriculture by approximately 0.29%, if other variables remained constant. Bilateral aid has fairly positive significant impacts on employment in agriculture, while economic growth has significant negative impact on employment in agriculture. This is confirmed in the study done by Clemens²⁴ disbelief about the ability of development aid to affect large variations in youth employment. There is empirical evidence that remittances contribute to economic growth, through their positive impact on consumption, savings, and investment in macroeconomic. Remittances can also have negative impact on growth in recipient countries by reducing incentives to work, and therefore reducing labor supply. From table 17, in Gambia; remittance, migration and total aids have positive significant impacts on economic growth. Increases 10% of remittance, increase economic growth by 0.14%. Only employment in agriculture has negative impacts on economic growth. 10% increase in employment in agriculture, decreases economic growth by 0.04%. The economy of Gambia should deal more on better utilizations of aids so that to improve agricultural development.

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References

1. Ceesay E, Sanneh T, Jawo A, Jarju M, Jassey O. (2019) Impact of Personal Remittances Received on Economic Growth in the Gambia. *Asian Basic and Applied Research Journal*, 1(2), 45-58. Retrieved from <http://globalpresshub.com/index.php/ABAARJ/article/view/765>
2. Ceesay EK, Belford C, Fanneh MM, Drammeh H. (2019) Relationship between Export, Imports and Economic Growth: An Export-led Growth Strategy for the Gambia Using The Granger Causality Test. *International Journal of Social Sciences Perspectives*. <https://doi.org/10.33094/7.2017.2019.42.38.47>
3. Berthélemy JC, Beuran M, Maurel M. (2009) Aid and Migration: Substitutes or Complements? *World Development*. <https://doi.org/10.1016/j.worlddev.2009.02.002>
4. Hagen-Zanker J, Himmelstine CL. (2013) What do we know about the impact of social protection programmes on the decision to migrate? *Migration and Development* 2:1, 117-131.
5. Gibson J, Mckenzie D, Rohorua H. (2014) Development Impacts of Seasonal and Temporary Migration: A Review of Evidence from the Pacific and Southeast Asia. *Asia and the Pacific Policy Studies*. <https://doi.org/10.1002/app5.12>.
6. Butschek S, Walter T. (2014) What active labour market programmes work for immigrants in Europe? A meta-analysis of the evaluation literature. *IZA Journal of Migration*. <https://doi.org/10.1186/s40176-014-0023-6>.
7. Constantin C. (2006) *Sisteme informatice de marketing. Analiza ti prelucrarea datelor de marketing. Aplicatii în SPSS*, Infomarket Publishing House, Brasov
8. Boubtane, E., Coulibaly, D., & Rault, C. (2013) Immigration, growth, and unemployment: Panel VAR evidence from OECD countries. *Labour*. <https://doi.org/10.1111/labr.12017>
9. Galiani, S., Knack, S., Xu, L. C., & Zou, B. (2017). The effect of aid on growth: evidence from a Quasi-experiment. *Journal of Economic Growth*. <https://doi.org/10.1007/s10887-016-9137-4>
10. Hansen H, Tarp F. (2001) Aid and growth regression. *Journal of Development Economics*. [https://doi.org/10.1016/S0304-3878\(00\)00150-4](https://doi.org/10.1016/S0304-3878(00)00150-4)
11. Karras, G. (2006). Foreign aid and long-run economic growth: Empirical evidence for a panel of developing countries. *Journal of International Development*. <https://doi.org/10.1002/jid.1187>
12. Asteriou, D. (2009). Foreign aid and economic growth: New evidence from a panel data approach for five South Asian countries. *Journal of Policy Modeling*. <https://doi.org/10.1016/j>

- j.jpolmod.2008.04.012
13. Minoiu C, Reddy S. (2010) developing aid and economic growth; a positive long-run relations. - Wash.?: IMF, 2009. – 33.
14. Adam C S, O'Connell SA. (1999) Aid, taxation and development in Sub-Saharan Africa. *Economics and Politics*. <https://doi.org/10.1111/1468-0343.00060>
15. Carden A. (2010) Can't buy me growth: On foreign aid and economic change. *Journal of Private Enterprise*.
16. Burnside C, Dollar D. (2000) Aid, policies, and growth. *American Economic Review*. <https://doi.org/10.1257/aer.90.4.847>
17. Collier P, Hoeffler A. (2004) Greed and grievance in civil war. *Oxford Economic Papers*. <https://doi.org/10.1093/oep/gpf064>
18. Easterly W, Levine R, Roodman D. (2004) Aid, policies, and growth: Comment. In *American Economic Review*. <https://doi.org/10.1257/0002828041464560>
19. Alfaro L, Chanda A, Kalemli-Ozcan, S, Sayek S. (2004) FDI and economic growth: the role of local financial markets. *Journal of international economics*, 64(1), 89-112. *Journal of International Economics*. [https://doi.org/10.1016/S0022-1996\(03\)00081-3](https://doi.org/10.1016/S0022-1996(03)00081-3)
20. Adam RH, Page J. (2005) Do international migration and remittances reduce poverty in developing countries? *World Development*. <https://doi.org/10.1016/j.worlddev.2005.05.004>
21. Adams RH. (1991). The effects of international remittances on poverty, inequality, and development in rural Egypt. *Research Report - International Food Policy Research Institute*.
22. Azam JP, Gubert F. (2006) Migrants' remittances and the household in Africa: A review of evidence. *Journal of African Economies*. <https://doi.org/10.1093/jae/ejl030>
23. OECD. (2014) Is migration good for the economy? *Migration Policy Debates*.
24. Clemens M A, Postel HM. (2018) Deterring Emigration with Foreign Aid: An Overview of Evidence from Low-Income Countries. *Population and Development Review*. <https://doi.org/10.1111/padr.12184>