Migrant's Remittances and Economic Growth in the West Africa Monetary Zones

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Abstract
Remittances constitute an important source of foreign capital for developing countries. It has the potential to smooth consumption and stimulate investment and welfare among recipient countries. Countries of West Africa Monetary Zones (WAMZ) have experienced increased receipt of migrant remittances and paradoxically slow economic growth performance. In this study, we empirically investigated the short-run and long-run impacts of migrant remittance on economic growth performance for WAMZ. Panel secondary data from World Bank and International Monetary Fund for the period 1990-2016 were used for the analysis. Descriptive statistics and Pooled Mean Group (PMG) estimator were used for the analysis. The result showed significant short-run and long-run growth effects of remittances in the WAMZ. In the short-run, remittance has positive relationship with real per capital gross domestic product, but in the long-run the relationship becomes negative which may be due to the fact that remittances were not expended on investment projects, it breeds laziness, intensify income inequalities and causes significant brain drain. Short-run determinants of economic growth among countries of WAMZ were human capital and trade openness. Determinants of long-run economic growth among countries of WAMZ were labour, capital formation, human capital, trade openness and interest rate. The study recommends that a large portion of remittances should be channeled to profitable investments. To this end, the government should provide the enabling environment necessary for business to thrive.

Keywords: migrant remittance, economic growth, West Africa Monetary Zones.

JEL Classification: G23, O17, O22, O4

1. Introduction

Capital inflows such as remittances, Official Development Assistance (ODA), Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI) and loans have been identified as vital means of supply of additional funds for domestic investment and foreign exchange earnings in the quest for accelerated economic growth of a given country. Besides other capital inflows, remittances play a key role in bridging the foreign exchange gap in the economy, thereby helping to facilitate international trade especially importation of capital and intermediate

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goods required to boost domestic production capacities (Siddique, 2010; Obadan, 2012).

Remittances flows are mainly influenced by migrants who leave their local communities/country to another in the quest for greener pastures. Over the years, there has been a continuous increase in migrants to advanced regions of the world from virtually all the countries of the West African Monetary Zone (WAMZ). For example, Migration and Remittance Fact book (2011) revealed that there were about 4.6 million new migrants annually compared with about 2 million per annum between 1990 and 2000; and 3.6 million per annum between 2010 and 2013.A cursory look at this and other similar reports shows that countries of WAMZ contribute significantly to the upward trend within the West African Sub-region. This, no doubt, has resulted in the continuous increase in remittances inflows to these countries.

Remittances inflow to WAMZ countries has been in the upward direction in the last two decades. World Bank (2003) initially hinted that remittances represent the second most important source of external finance in developing countries (inclusive of WAMZ countries). In corroboration, Ratha (2011) placed the value of migrant remittance at about $93 billion in 2003 and about $300 billion in 2010. With respect to WAMZ, official figures from the World Bank's World Development Indicators (2015) revealed that remittances inflow outweighs FDI and Official ODA inflows. In particular, Migration and Remittances Fact book (2011) places Nigeria as one of the highest remittance recipient countries in 2007, 2008, 2009 and 2010 among sub-Saharan Africa (SSA). Also, Quartey (2006) opined that remittances are becoming potential sources of foreign exchange and its magnitude exceeds the amount of ODA to Ghana. As at 2008, total remittances flows to Ghana stood at $1.9billion (Bank of Ghana 2009). Upward trend in remittances inflow had also been reported in other WAMZ countries such as Liberia, Gambia, Sierra Leone and Guinea in recent times. The trends in net remittances flows to WAMZ between 2004 and 2015 revealed that most of the countries recorded positive flows (World Bank, 2016).

In spite of the increasing volume of migrants' remittances that flow into countries of WAMZ, the growth rate of countries in the sub-region has remained low compared to other countries in Africa receiving even less volume of remittances. Despite the increasing importance of remittances, its relationship with growth, especially in WAMZ has not been adequately studied. Therefore, the problem of the study derives from the need to have a better understanding of the impact of remittances on economic growth for countries of WAMZ.

So far, there seems to be inconclusive research findings on the impacts of remittances inflows on economic growth in less developed countries. While some studies reported positive relationship between remittances and economic growth (see Pradham, Upadhyay and Upadhyay,2008; Fayisa and Nsiah (2010b) and de Haas, 2007), others reported negative relationship (see Barajas, Chami, Fullenkamp, Gapen and Montiel, 2009).Thus, although significant theoretical and empirical studies substantially advance understanding of the impact of remittances on economic growth, they did not lead to a consensus, which means there are still unresolved issues in the area of study which has provided the motive for further studies. Again, a cursory survey of the extant literature shows that more of these studies were carried out in North Africa, Asia, and Latin America countries. This calls for a revisit on the issue particularly with respect to WAMZ countries where few studies exist. Furthermore, the few studies conducted for WAMZ did not examine the short-run and long-run impacts of remittances on economic growth. This study undertook a comprehensive analysis of the impact of remittance on economic growth among countries of WAMZ.

2. Trends in remittances in WAMZ

This sub section takes a look at trends in remittances flows to WAMZ Countries.

Table 1. Trends in Remittances Flows ($'Million) in WAMZ Countries (2004-2015)

Years	Ghana		Nigeria		Gambia		Guinea		Sierra Leone		Liberia	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
2004	82	n/a	2,270	21	61	1	42	48	25	3	58	0.2
2005	99	n/a	14,640	68	59	1	42	60	2	2	32	0.2
2006	105	n/a	16,932	102	64	1	30	52	16	4	79	0.2
2007	117	n/a	18,011	54	56	15	15	39	42	4	62	0.3
2008	126	n/a	19,206	58	65	3	62	56	23	3	58	0.5
2009	114	n/a	18,368	47	80	8	52	45	36	3	25	1
2010	136	n/a	19,745	47	116	58	46	41	44	11	31	1
2011	2,135	n/a	20,617	76	108	37	65	39	59	21	360	1
2012	2,155	8	20,543	39	141	48	66	51	65	20	516	471
2013	1,864	5	20,797	50	181	n/a	93	81	70	9	383	435
2014	2,008	9	20,829	54	138	n/a	121	n/a	62	7	506	310
2015	2,100	2,607	21,060	1,057	136	20	131	26	48	7	641	299

Years	Ghana		Nigeria		Gambia		Guinea		Sierra Leone		Liberia	
Total	11041	2629	213,018	1673	1205	192	765	538	492	94	2751	1519.4

Source: World Bank's World Development Indicators (2016)

Table 2. Trends in Net Inflows of Remittances in WAMZ Countries, ($'Million) (2004-2015)

| Years	Ghana	Nigeria	Gambia	Guinea	Sierra Leone	Liberia
2004	n/a	2,249	60	-6	22	58
2005	n/a	14572	58	-18	0	32
2006	n/a	16,831	63	-22	12	79
2007	n/a	17,957	41	-24	38	62
2008	n/a	19,148	62	6	19	58
2009	n/a	18,321	71	7	32	24
2010	n/a	19,697	58	5	34	30
2011	n/a	20,541	71	26	38	359
2012	2147	20,504	93	16	44	45
2013	1859	20,747	n/a	12	61	-52
2014	1999	20,775	n/a	n/a	55	196
2015	-507	20,003	116	105	41	342
Total	5498	211345	693	107	396	1233

Source: World Bank's World Development Indicators (2016). *Na- not available.*

Tables 1 and 2 show the trends in remittance inflows and outflows and the net remittances flows in the WAMZ between 2004 and 2015. Tables 1and 2 reveal that apart from Guinea which recorded negative net remittances in 2004, 2005, 2006 and 2007, other countries in the Zone recorded positive net remittances in all the years under review (2004-2015) as shown above. Both Tables (1 and 2) also show that Nigeria received the largest amount of remittances in the Zone. This could be attributed to the fact that Nigeria ranks among the top countries with the highest number of citizens living outside the shores of their countries (World Bank, 2014). Following Nigeria in the amount of remittances received among the countries in the Zone within the period is Ghana. This also could be attributed to the population of Ghanaians in the Diasporas engaged in productive activities outside of the shores of the country. Liberia, Gambia, Sierra Leone and Guinea followed in a descending order in terms of amount of remittances received within this period (see Tables 1 and 2 for details).

Table 3. Trends in Remittances Inflows as Percentage of GDP in WAMZ Countries between 2004 and 2015

Years	Ghana	Nigeria	Gambia	Guinea	Sierra Leone	Liberia
2004	0.93	2.59	10.50	1.14	1.73	12.31
2005	0.92	13.04	9.50	1.42	0.15	5.79
2006	0.52	11.64	9.74	1.01	0.83	13.05
2007	0.47	10.82	6.97	0.36	1.94	8.39
2008	0.44	9.23	6.71	1.36	0.90	6.84
2009	0.44	10.84	8.86	1.13	1.44	2.17
2010	0.42	5.35	12.15	0.98	1.69	2.43
2011	5.40	5.01	11.93	1.27	2.00	23.29
2012	5.14	4.46	15.45	1.17	1.70	29.72
2013	3.90	4.04	19.99	1.49	1.42	19.70
2014	5.20	3.66	21.28	1.40	1.24	25.12
2015	13.16	4.38	19.25	1.39	1.56	31.50

Source: World Bank's World Development Indicators (2016)
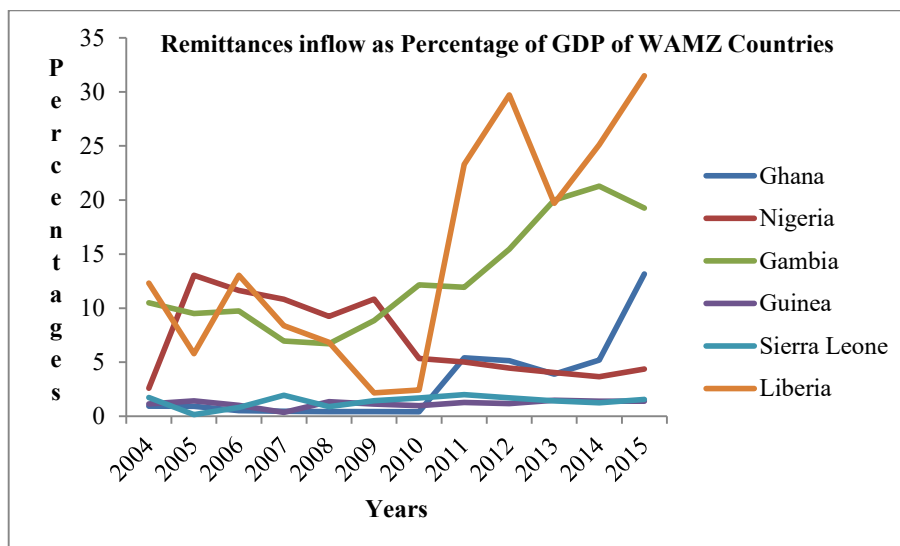
Figure 1. Trends in Remittances Inflows as Percentage of GDP in WAMZ Countries between 2004 and 2015 (Graphical Representation)

Table 3 and figure 1 show the trend in remittances inflows as percentage of GDP of countries in the WAMZ between 2004 and 2015. From the figure, it can be observed that remittances represent a significant proportion of GDP in virtually

all the WAMZ countries. In particular, it can be observed from the figure that remittance as a percentage of GDP was high in Gambia and Liberia between 2004 and 2015.This could be attributed to the small size of their economies in relation to the volume of remittances inflow. The rebasing of the GDP from 2010 in Nigeria shot up the GDP figures; this made the remittances/GDP ratio to become smaller.

3. Theoretical literatures

There are several theories that explain the nexus between remittances and economic growth. Some of these theories are developmental theory, the dependency theory, and the two gaps theory. The development theory was propounded in the 1950s and 1960s. The theory assumed that through capital transfer, industrialization and the adoption of western values, developing countries would be able to accelerate their developmental process. The notion was that if developing countries are interested in development, they should abandon their tradition, values and culture and adopt those of the western culture (Coetzee & Wood, 2001; Massy et al; 1993). They argue that migration will result in the transfer of investment capital through remittances and expose traditional/primitive society to more liberal ideas that will aid their development (DeHass, 2007, 2010).

The dependency theory can be traced to 1970s and the 1980s. It holds that remittances create dependence from sending to receiving countries and as well as receivers depending on senders (Binford, 2003). It opined further that migration drains the human capacities of home communities/countries and leads to under development (De Hass, 2007). Rather than encouraging economic growth, remittances lead to inequalities in areas where there is a large inflow of remittances (Lipton, (1980) as cited in Oluwafemi and Ayandibu 2014).

Harrod-Domar growth model showed that both savings rate and capital-output ratio determine full capacity growth rate of a closed economy. This was extended to two-gap theory as canvassed by Chenery and Bruno (1962) and Chenery and Strout (1966) through the introduction of foreign exchange shortage. The two-gap model emphasized the vital role of foreign transfers in determining the level of investment in developing countries. The model posits that development may be hampered by the existence of the savings and foreign exchange gaps in developing countries. Thus, these gaps can be filled by foreign savings in the form of remittances inflows. In addition, since domestic investments have constant import component which limit the amount of foreign exchange that can be accumulated

from exports and the inherent constraint of investments whenever output is below its potential level, remittances inflows help close this gap by way of additional resources. This then implies that remittances inflows are likely to foster economic growth, as they expand receiving country capacity to import capital goods.

3.1 Review of Past Studies

Hadeel (2012) examined the positive and negative impact of remittances on economic growth in Middle East and North African (MENA) countries viz. Algeria, Egypt, Jordan, Libya, Morocco, Oman, Syria Lebanon and Tunisia covering the period 2000 to 2010 in a panel data analysis. He found that all MENA countries experienced major increase in remittances inflow in the last two decades. He opined further that remittances represent more than 10 percent of each of the country's GDP and thereafter found that remittances have both positive and significantly impact on economic growth for the set of countries studied.

Nahia (2015) examined the empirical evidence of the impact of remittances on economic growth in Kenya between 1993 and 2014. He employed Granger causality and Auto regressive distributed lag model to determine the effect of remittances on economic growth in Kenya. He found a positive and significant effect of remittances on economic growth. The study concluded that economic growth in Kenya was largely driven by international remittances.

Okodua (2012) investigated the effects of migrant workers' remittances on output growth among SSA countries between 2000 and 2011 using system General Methods of Moments (GMM). The study found a negative and statistically insignificant link between remittances and output growth across the sampled countries over the study period. The reason attributed for this was that most remittances inflows were not channeled into productive ventures. It was then concluded that remittances may not be relied upon to promote growth in SSA region. The study recommended that policy measures be put in place to encourage remittances inflows to productive sector of the economy.

Similarly, Abdenour, Mohammed, Lakhdar and Rima (2014) investigated the impact of migrant's remittances on economic growth in Algeria. Their research covered 1970 to 2010 in a Vector Error Correction Model (VECM). They found that remittances have a negative impact on Algerian Economy in both short and long-run. Similarly, Balde (2009) estimated the impact of migrants' remittances on

economic growth in a sample of 28 SSA countries. The study period covers 1980 to 2004 in a two-stage least squares (2SLS)/instrumental variable estimator. A negative relationship was found, and that remittances have no direct impact on economic growth in SSA, but could affect it indirectly through its effect on investment or education.

Barguellil and Zaiem (2013) examined the effect of migrants' remittances and its interaction with education on economic growth in Tunisia using OLS technique. The study also employed Johansen' Trace test and co-integration analysis and established that the variables are co-integrated. The result further revealed that remittances negatively and significantly affect economic growth, but when interacted with education, its effect becomes positive and statistically significant.
Simeon, Sasi and Mark (2014) found that on the average there was no association between remittances and growth in developing countries. This result was from the finding in Island Developing States (SIDs) while looking at remittances and growth in developing countries. The findings hold for SIDs located in sub-Saharan and pacific regions but not for those in Latin America and the Caribbean. The study also revealed a negative growth in the absence of remittances receipts in Pacific SIDs.

Investigating the impact of remittances on economic growth in Tunisia between 1970 and 2010, Jouini (2015) employed ARDL co-integration approach and found a negative impact, and that there was no impact between remittances and economic growth in the long-run and that there was no bi-directional causality between remittances and growth in the short-run.

3.2 Theoretical model

Endogenous growth theory emerged in the 1980s basically in an attempt to bring on board the sources of technical progress and a sustained productivity growth within the general equilibrium framework of neoclassical growth theory (Ogujiuba and Adeniyi, 2005). It holds that economic growth is primarily the result of endogenous and not exogenous factors as held by neoclassical and Harrod-Domar growth models. The model main contributors Romer (1986) and Lucas (1988) pushed that growth is as a result of 'the learning by doing' effect which occurs between both physical and human capital. For instance, Lucas (1988) assumed that investing in education leads to production of human capital which is a very crucial determinant of the development process. Also, Romer (1986) revealed his dissatisfaction with the classical and neoclassical theories when he opined that they were only attempting to over simplify what is a complex process. This model

as such suggests that developing countries such as WAMZ countries should indulge in trade as well as encourage more capital inflow from other countries in other to be able to devise new knowledge in research and technology for economic growth.

Consider the basic neoclassical growth function given as:
$$Y = AK^{\alpha} L^{\beta} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(8)$$

Where:
Y= represents output/real GDP,
A= Total factor productivity,
K= is capital,
L= represent labour
While α and β represent the elasticity of output with respect to capital and labour respectively.

If we assume asymmetry across firms which imply that each firm uses same level of capital and labour and thereafter divide through by labour (L), the growth function is then expressed in per capita terms as shown in equation (1) and (2) below:
$$Y/L = A(K/L)^{\alpha}(L/L)^{\beta} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$
$$y = Ak^{\alpha} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

In empirical studies, the endogenous growth theory takes into consideration variables such as trade openness, exchange rate, and human capital development (Ogundipe, Ojeaga and Ogundipe, 2014). This implies that other variables such as trade openness, exchange rate and human capital development can enter into the growth function as input through Total factor productivity. Also, remittances features in the specification of an augmented model incorporating other hypothesized determinants of growth within an endogenous growth framework. These include: openness of the domestic economy, domestic investment, human capital accumulation and macroeconomic policy environment.

3.3 Empirical Model

In light of the above and following the works of Qayyum, Javid and Arif (2010), Matuzeviciute and Butkus (2016) and Upadhyay and Upadhyay (2011), Okodua (2012) we specify our growth model functionally with modifications as:

$$y_{g,t} = F \ (gfcf, \ labor, \ hk, \ prr, \ inf, \ topen \ intr)………………..……….(3)$$

The econometric specification of the long-run model is presented as:

$$y_{git} = \beta_0 + \beta_1 gfcf_{i,t} + \beta_2 log(labor)_{i,t} + \beta_3 hk_{i,t} + \beta_4 prr_{i,t} + \beta_5 inf_{i,t} + \beta_6 topen_{i,t} + \beta_7 intr_{i,t} + \mu_{i,t} ……………………………………………………………………(4)$$

Where:
$y_{gi,t}$ = Growth rate of real GDP per capita (proxy for economic growth) of recipient country
gfcf = Gross fixed capital formation as a percentage of GDP of recipient country
labour = Labour force of recipient country
hk= Human capital
prr = Personal Remittances Received as a percentage of GDP in recipient country
inf = Inflation rate in recipient country
topen = Trade openness of recipient country
intr = Lending interest rate;
μ= Error term.

The *a priori* expectations are: $\beta_1 > 0, \ \beta_2 > 0, \ \beta_3 > 0, \ \beta_4 > 0, \ \beta_5 < 0, \ \beta_6 > 0, \ \beta_7 < 0$

The expected positive sign on the coefficient of remittances is based on the assumption that remittances supplement investment and consumption expenditure in the home economy, thereby enhancing economic growth. Thus, all things being equal, remittances positively affect growth (see Ocharo, 2015; Kumar and Stauvermann, 2014).

3.4 Method of analysis

The nature of the study necessitated the use of panel data for the period 1990-2016. Panel data has the propensity of identifying parameters in the occurrence of measurement error as well as having robustness to omitted variables and the efficiency of parameter estimates. For estimation of model one and two, the pooled mean group (PMG) estimator developed by Pesaran, Shin and Smith (2001) was employed. The choice of this methodology is informed by the need to investigate the long-run and the short-run (dynamic) effects of remittances on

economic growth in the WAMZ. It is called Pooled Mean Group estimator because it involves both pooling and averaging. The estimator allows for heterogenous dynamics by allowing the intercepts, short-run coefficients and error variances to differ freely across groups but imposes a homogenous long-run relationship between the dependent variable and the explanatory variables for countries in the sample by constraining the long-run coefficients to be the same (Pesaran, *et al.*, 2001). The Pooled Mean Group (PMG) estimator is the panel data form of the single equation ARDL (Bounds test).

3.5 Data description

The study used a panel set for the 5 countries of WAMZ from 1990 to 2016. The study focuses on countries of WAMZ comprising Nigeria, Gambia, Ghana, Sierra Leone, and Liberia. The focus on WAMZ is based on the fact that WAMZ as a monetary union is instrumental in promoting regional integration and development in sub-Saharan Africa and provides an institutional framework that facilitates policy discussion and implementation. The period of the study is from 1990 – 2016. This was informed by the availability of data. Also, this period recorded high proportion of migrants from WAMZ and huge increased remittances inflows compared to previous decades (UNDP, 2009; UNDESA, 2012; World Bank, 2016). The dependent variable is growth rate of real GDP per capita. The independent variables include inflation rate (INFL), gross fixed capital formation as percentage of GDP (gfcf), labour force (labour), human capital (hk), personal remittances as a percentage of GDP (prr), trade openness (topen) and lending interest rate (intr). The variables are briefly described in Table 4.

Table 4. Data description and sources

Variables	Description	Proxy for	Apriori signs	Source (s)
Migrant remittances as share of the Gross Domestic Product (GDP)	The share of private remittances in GDP	Private remittances	Not applicable	World Development Indicators (WDI, 2018)
Real GDP per capita	Growth rate of real GDP per capita	Economic growth performance	Positive	World Development Indicators (WDI, 2018)
Gross fixed capital formation as a share of the GDP	The share of gross fixed capital formation in the GDP	Investment rate	Positive	World Development Indicators (WDI, 2018)
Trade as a share of the GDP	It measures the share of trade (import plus	Trade openness	Positive	International Monetary Fund (IMF)

Variables	Description	Proxy for	Apriori signs	Source (s)
	export) to the GDP			
Inflation rate	The annual percentage change in consumer price index	Cost of living	Positive	World Development Indicators (WDI, 2018)
Secondary school enrolment rate	Number of children enrolled in secondary schools who are of official secondary school age	Human capital development	Positive	World Development Indicators (WDI, 2018)
Lending interest rate	It is the amount charged on top of the principal by a lender to a borrower for the use of assets	Cost of investment	Positive	International Monetary Fund (IMF)
Labour	The number of persons who are within the working age	Labour force	Positive	International Monetary Fund (IMF)

Source: Authors' compilation

4. Result

Table 5. Descriptive Statistics of Key Variables (Pooled Data)

	PCYG	GFCF	LABOUR	HK	PRR	INF	TOPEN	LINTR
Mean	1.203738	16.23112	9642813	35.50376	4.359521	15.60864	73.46238	23.03512
Minimum	-50.23014	- 2.424358	282798.0	11.09207	0.003560	- 35.83668	20.72252	13.48939
Maximum	91.64805	- 2.424358	57352456	69.80530	31.50344	110.9458	311.3553	62.83333
Std dev.	11.14344	7.543925	15112914	14.38291	6.351530	17.65583	42.50713	8.418405
Skewness	2.281031	0.629636	1.832874	0.336336	2.224431	2.678375	3.467839	2.351387
Kurtosis	32.41987	5.501049	4.937773	2.721378	8.011530	13.69557	17.81740	10.51757
Jarque-bera	5982.803	49.65974	116.0505	1.700797	252.6064	804.8810	1728.630	330.9008
Probability	0.000000	0.000000	0.000000	0.427245	0.000000	0.000000	0.000000	0.000000

Source: Authors' computation

The descriptive statistics of variables used for the study shows that economic growth rate of the WAMZ within the period under review (1990 to 2016) averaged 1.20%. The highest growth rate recorded in the region within the period

under review was 91%, while the lowest was -50%. Average gross fixed capital formation as a percentage of GDP between 1990 and 2016 was 16.23%. This was quite low and it reflects the low level of investment in WAMZ. The minimum for the period was -2.42, (implying capital depreciation), while the maximum was 51.46%. Labour force in the zone averaged 9, 642,813, and ranged between 282,798 and 57,352,456. Secondary school enrolment rate proxied for human capital, within the period averaged 35.50%, and ranged between 11.10% and 69.8%. Average (mean) personal remittances received as a percentage of GDP within the period was 4.35%. Period maximum was 31.50%, while period minimum was 0.003%. Inflation in the Zone averaged 15.61% within the period under consideration. This shows that inflation in the Zone has been quite high. Countries in the sub-region have been quite open to trade. This is indicated by the high degree of trade openness which averaged 73.46%, and ranged between 20.72% and 311.36% between 1990 and 2016. Lending interest rate in the Zone ranged from 13.49% to 62.83%, and averaged 23.04%. The high lending interest rate in the zone may have tended to adversely affect investment and economic growth in the region.

Short and long-run models of the effects of remittances on economic growth for WAMZ

The results of estimation of the long-run and the short-run relationship between economic growth and personal remittances receive and other hypothesized growth determinants in the WAMZ are presented in Table 6.

Table 6. Estimated Long-run and short-run models

Long-run equation			
Variable	**Coefficient**	**T-ratio**	**Prob.**
Gfcf	0.10	2.78	0.05
Log(Labour)	2.60	3.25	0.00
Hk	0.28	3.02	0.00
Prr	-0.34	-2.84	0.04
Inf	-0.07	-0.90	0.37
Topen	0.17	3.59	0.00
Intr	-0.47	-1.96	0.08
Short-run equation			
Cointeq.	-0.63	3.20	0.00
d((gfcf)	0.21	0.68	0.51
d(log(Labour))	1.60	1.13	0.43
d(hk)	0.17	3.11	0.00
d(Prr)	0.33	3.14	0.00

d(Inf)	-0.03	-0.50	0.67
d(topen)	0.17	3.59	0.00
d(Intr)	0.27	1.06	0.32
Mean of dependent var = -0.08; S.D of dependent var = 7.72; S.E. of Regression = 5.03			

Source: Authors' computation

The estimated long-run model indicates that gross fixed capital formation positively and significantly affect economic growth in the long-run. The effect is significant at the 5% level. This conforms to *a priori* expectation. A unit rise in capital formation is associated with 0.1% rise in the growth rate of per capita income. This suggests that increase in the rate of capital formation in the WAMZ will enhance its economic growth in the long-run.

Labour supply and secondary school enrolment rate (proxy for human capital development) also positively and significantly affect economic growth in the WAMZ in the long-run. The effects are highly significant, even at the 1% level. These are in sync with the postulation of the human-capital augmented Solow growth model. Increase in labour supply and human capital will engender enhancement of economic growth in the long-run. Specifically, a unit rise in labour supply and human capital development are respectively associated with 2.60% and 0.28% rise in economic growth rate in the WAMZ.

Personal remittances as a percentage of GDP is negatively related to growth rate of real per capita income. This suggests that personal remittances negatively affect economic growth in the long-run, and the effect is significant as the coefficient easily passes the test of statistical significance even at the 5% level. The negative effect of remittances on economic growth in the long-run could be associated with the adverse growth effect of brain-drain resulting from emigration which constitutes the base of remittances. It could also be attributed to the fact that it undermines productivity and growth in low income countries as it is often spent on consumption goods usually dominated by foreign goods, than on productive investment (Ahlburg and Brown, 1999). Moreover, the long-run adverse effect of remittances on economic growth in the WAMZ could be attributed to the overvaluation of the currency engendered by large remittances, and the possible increase in inflation caused by large inflow of remittances as found in previous studies such as Narayan, Narayan and Mishra (2011) and Tufail (2013), this hurts long-term economic growth particularly for developing countries (Rodrik, 2008). The adverse effect of remittances on economic growth in the long-run in the WAMZ could also be attributed to income inequality and the reduction in labour supply it could engender as it has the tendency to encourage voluntary

unemployment (Orrenius, *et al*, 2009). This observation corroborates the findings in the study by Jouini (2015) and Chami, Fullenkamp and Jahjah (2005).

The long-run growth effect of inflation in the WAMZ is negative, but not statistically significant. In conformity with theoretical prediction, trade openness positively and significantly affects economic growth. The effect is highly significant, even at the 1% level. This suggests that greater integration of the economies of WAMZ countries with the global market will enhance economic growth in the Zone. This is in sync with results from previous empirical studies such as those of Iyoha and Arodoye (2014), Aigheyisi (2016) and Iyoha and Okim (2017).

The long-run effect of interest rate on economic growth in the WAMZ is negative and statistically significant at the 10% level. A 1% increase in the interest rate is associated with 0.47% decrease in the rate of growth of per capita income. This suggests that higher lending interest rates adversely affect economic growth in the long-run. This corroborates previous studies such as Okodua (2012).

The short-run effects of capital and labour on economic growth are positive, but not statistically significant, as their coefficients do not pass the test of statistical significance at the conventional levels. The short run effect of human capital development on economic growth is also positive and significant at the 1% level, as in the long-run. This implies that human capital is a key determinant of economic growth in both short- and long-run.

In contrast to the long-run growth effect of remittances which is negative and significant, the short-run growth effect of remittances in the WAMZ is positive and significant at the 5% level. This suggests that though remittances contributes to economic growth in the short-run as a result of its effect on consumption, its long-run effect on economic growth could be adverse if it is not spent on productive investment. This is in tune with apriori expectations and modernization theory of capital inflow which holds that capital inflow (in this case, remittances inflow) spurs economic growth.

The short- run growth effect of trade openness in the WAMZ is positive and significant at the 1% level. This suggests that openness of the economies of the Zone to global trade will enhance their growth, not only in the long-run, but also in the short run. The short-run effects of other variables (inflation and interest rate) on economic growth are statistically, not significant.

The coefficient of the error correction term is negatively signed, and statistical significant as expected. Hence it will rightly act to restore equilibrium in the model in the event of short run deviation from it. The absolute value of the coefficient indicates that over 63% of short-run deviation from the equilibrium position is corrected annually to restore equilibrium in the model. Hence the speed of adjustment to equilibrium is quite high.

Country –specific Estimates

Though the PMG estimator constrains the long-run relationship between the dependent variable and the explanatory variable to be the same across all the cross sections, it however allows variability in the short-run relationships. The estimated short-run effects of remittances and the other hypothesized growth determinants on economic growth in each country of the WAMZ are summarized in Table 7.

Table 7. Estimated short-run model for each country

Dependent Variable is D(PCYG)						
Regressors	Gambia	Ghana	Guinea	Liberia	Nigeria	Sierra Leone
Cointeq01	-0.65***	-0.43***	-0.72***	-0.69***	-0.67***	-0.25***
	(17.60)	(-20.10)	(-17.19)	(-39.47)	(-14.32)	(-37.28)
d(gfcf)	0.55	0.46	0.76*	0.29	0.03	0.55*
	(1.39)	(1.23)	(1.98)	(1.23)	(1.46)	(1.85)
d(log(labour))	1.65**	2.34***	1.84*	3.12***	0.03**	2.20**
	(2.23)	(6.53)	(1.89)	(5.32)	(2.51)	(2.46)
d(hk)	0.45***	0.18**	0.45*	0.45***	0.53**	0.64***
	(3.13)	(2.46)	(1.98)	(3.12)	(2.16)	(4.75)
d(prr)	0.11**	0.21***	0.16*	0.24***	0.54***	0.44***
	(2.34)	(4.27)	(1.91)	(5.90)	(6.54)	(5.91)
d(inf)	-0.12	-0.22	-0.12*	-0.27	-0.17	-0.31***
	(-1.47)	(-1.57)	(-1.88)	(-1.42)	(-1.54)	(-4.82)
d(topen)	0.32**	0.45*	0.26**	0.55***	0.47***	0.45**
	(2.56)	(1.87)	(2.21)	(4.86)	(5.65)	(2.41)
d(intr)	-0.13**	-0.42***	-0.13*	-0.15***	-0.12**	-0.33***
	(-2.24)	(-4.27)	(-1.82)	(-4.45)	(-3.54)	(-4.83)
C	-0.14	1.18**	-0.24*	1.41	1.83	1.32
	(-0.02)	(2.63)	(-1.94)	(0.32)	(0.30)	(0.25)

*, **, *** indicate statistical significance at 10%, 5% and 1% level respectively.
Source: Authors' computation.

We observe that the error correction coefficient is negative and highly statistically significant for all countries. This implies that short-run relationship exists between growth rate of real gross domestic product and the explanatory variables. Hence the variables will converge in the short- run in all countries in the WAMZ.

The short-run effect of capital formation on economic growth is positive in all countries of the WAMZ. However, the effect is only significant (at the 10% level) in Guinea and in Sierra Leone. A unit increase in the capital-output ratio is associated with 0.76% rise in economic growth in Guinea; a unit rise in capital-output ratio is associated with 0.55% rise in the growth rate of real gross domestic product in Sierra Leone.

Labour is positively and significantly related to growth rate of real gross domestic product in all countries of the WAMZ in the short-run. This suggests that increase in labour supply positively affects economic growth in all countries in the Zone.

The coefficient of remittances as variable in all countries of the WAMZ is positive, and statistically significant. This suggests that remittances positively affect economic growth in the short- run in WAMZ countries. However, the short -run effect of inflation on economic growth is only significant in Guinea and Sierra Leone. The growth effect of inflation in Gambia, Ghana, Liberia and Nigeria is not significant in the short- run.

Trade openness positively and significantly affects economic growth in all WAMZ countries in the short-run. This suggests that the economies of these countries could benefit by their integration with the global market. The short run growth effect of interest rate is negative   in all countries of the WAMZ. This may be attributed to the adverse effect of higher lending interest rate on domestic investment, which is a key requirement for economic growth.

5. Suggestion for further areas of research

This study has created the need for further research work on remittances and economic growth in WAMZ. This can be carried out in research area outlined below:
i.   The impact of remittances inflow on household welfare in WAMZ.
ii.   The impact of remittance on financial development in WAMZ.
iii.   Remittances inflow and poverty reduction in WAMZ.
iv.   Efficacy of mediums/channels of remittances inflow to WAMZ.

5.1 Conclusion / Recommendations

Migrant remittances positively affect economic growth in the WAMZ in the short-run. However, its long-run growth impact is negative. This was attributed to several factors including the Dutch Disease effect, reduction in labour supply, the

brain drain effect, income inequality and the fact that remittances were more expended on consumption, which negatively affects economic growth in the zones. In the light of the findings, the following recommendations are pertinent:

i.   Countries of WAMZ should endeavor to channel remittances received into productive investments as this would enhance economic growth in the zone.

ii. There should be increased investment in capital formation by both the public and private sectors. Policies should be implemented to enhance the domestic investment climate and enhance the attractiveness of the zone to foreign investment.

iii. The government of WAMZ through their monetary authorities should strengthen their financial system regulation apparatus to further deepen the financial system to raise its level of development.

iv. Countries of WAMZ should endeavor to adopt trade liberalization.

v.   The monetary authorities should wield their instruments of monetary policy to reduce the lending rate.

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