

Determinants of Migrants' Remittances in the West Africa Monetary Zones (WAMZ): An Econometric Evaluation

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Abstract

In this study, we empirically investigated the determinants of migrant remittances for the five countries that make up West Africa Monetary Zones (WAMZ). Panel secondary data from World Bank and International Monetary Fund data bases for the period 1990-2016 were used for the analysis. Both descriptive statistics and Pooled Mean Group (PMG) estimator was used for the analysis. The result revealed that remittance inflow into WAMZ was influenced by unemployment rate, the level of financial sector development, exchange rate of domestic currency, real per capita income of recipient country, and the level of development of source country. However, lower migrant remittance was associated with higher per capita income and depreciation of exchange rate in recipient country. The study recommends that the government of countries in the zone should make efforts to develop their financial systems and ensure that exchange rate is market friendly to encourage migrants to remit more money home. To encourage remittance inflows into WAMZ the study recommends that government of WAMZ should strengthen their financial sectors through implementation of appropriate regulatory measures.

Keywords: Determinants, Remittances, West Africa Monetary Zone

Introduction

International remittances have gained increased attention in the development literature. It is accepted as one of the elements that can contribute to the development of receiving countries (Yoshino and Otsuku, 2020). International remittances refer to money and goods that are transmitted to households by migrant workers working in countries outside their home countries (Adam, 2007). Remittances have gained place of importance given the increasing proportion of migrant workers in developing countries that migrated to developed countries in search of better job opportunities. As official development assistance dwindles and uncertainties associated with foreign private capital flows heightened, there is more reliance on international remittance, which has gained popularity in the development process (Mallick and Mahallick, 2015). According to a Report from the Global Development Finance (World Bank, 2014), international remittance remains the second most important source of external funding to developing countries next only to foreign direct investment. Ratha (2011) reported that the value of remittance stood at \$ 93 million in 2003 and rose to \$300 million in 2010. The World Bank estimates revealed that in 2017 official recorded remittances to low-and -middle - income countries stood at \$ 466 billion, which marked 8.5% increase over the 2016 figure of \$ 429 billion (Yashino and Otsuku, 2020). Global international remittance which includes remittance flows to developed countries grew 7% to \$ 613 billion in 2017 from \$ 573 billion in 2016 (Yashino and Otsuku, 2019). Without the financial strength derived from foreign remittances, developing countries will be unable to realize their full economic and development potentials, owing to inherent structural rigidities (Mallick and Mahallick, 2015).

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 the 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.

Despite the increasing remittances inflows and their propensity of closing domestic savings-investment gap, very little attention has been paid to the macroeconomic determinants of remittances as it relates to WAMZ. The results from this study will help identify the macroeconomic determinants of remittances in the WAMZ in view of the political antecedents, economic conditions and colonial heritage of these countries. This will help policy makers target macroeconomic variables of interest to further sustain and harness remittances inflow for the growth of zone.

2.1 Motives for remittances flow

It is always difficult to distinguish between theories of motives for remittances due to their similar predictions (Rapoport and Docquier, 2006). However, some of these theories such as altruism, self-interest, portfolio management, exchange and strategic theory which are basically built on intra-family considerations attempt to explain the motives of remittances flow.

The altruism theory is premised on the assumption that migrants are driven by the need to cater for the welfare of relatives left back at the home country. Johnson and Whitelaw (1974) earlier explained that altruism is a major consideration for remittances flow to any given country. This position was also held by Lucas and Stark (1985), when they opined that the most obvious motive for remitting is pure altruism, that is, the care for those left behind in home country.

Self-interest/inheritance theory is another vital theory that explains the motives for remittances. The theory holds that remittances are influenced by the desire to inherit own assets in the home country and envisaged returning home in the future. The basic issue here is that migrant will remit more if the probability of inheriting properties is higher (de la Brière, Sadoulet, de Janvry and Lambert (2002).

According to Portfolio management/investment theory, remittances are Migrants' savings that are not needed for personal or family consumption, hence repatriated home. Unlike remittances for consumption purposes, remittances of these kinds of savings have an exogenous character related to migration and is not expected to depend on microeconomic factors, rather, it depends relatively on macroeconomic factors in the host and home country. It should also be borne in mind that this theory/model is a generalization of the model proposed by Cox (1987) and Rapoport and Docquier (2006) which includes the determination of the

optimum number of person(s) that the household should send out of home country with the aim of remitting to home country for financing entrepreneurial activities.

Exchange theory as it relates to remittances had also been advanced as an explanation of the motive of remittances. Here, remittances involve Pareto improving exchanges between the migrant and the household base on the services the household members perform on behalf of the migrant. The outcome and division of gains are determined by the agents' (household) relative bargaining powers and their external options which lies somewhere between the market price for such services and the opportunity cost of the recipient (Rapoport and Docquier 2006). Under the exchange theory, non-negativity constraint is binding and the last unit of remittances sent by the migrant to the recipient household does not equate the agents' marginal utilities of consumption, rather, it compensates for the services performed by the household.

The strategic theory was advanced by Stark (1991). It is based on the premise that employers in the migrants' destination country do not have sufficient information regarding the migrants' different skill levels, so the wage employers pay is based on the average product of the whole group of migrants. High-skill workers clearly suffer from this situation and benefit from having a means to persuade workers with lower skills to remain home. Under the strategic motive, high-skill workers act purely out of their self-interest and send remittances to protect their wage from being lowered by the presence of low-skill workers.

3.1 Review of Past Studies

De la Briere, Sadoulet, de Janvry and Lambert (2002) examined two non-exclusive hypotheses about the motivation for remittances by Dominican migrants to their rural parents in the Dominican Sierra. The study sought to find out if insurance contract taken by parents with migrant and investment by migrants in potential bequest are key motives for migrant remittances in the Sierra. Evidence from the study indicated that the relative importance of the two motives was affected by destination, household consumption and gender. The study also found that the insurance motive was mainly fulfilled by female migrants while the investment motive was fulfilled by male and female migrants in the United States of America.

Gupta (2005) examined macroeconomic determinants of remittances in India using auto-regressive distributed lag model. The study found out

that growth in remittances inflows to India was influenced by increase in migration, total earnings of migrants and economic conditions of source countries. The study also found out that remittances are countercyclical, rising during period of economic downturn, and falling during period of economic growth. Also, the political uncertainty; interest rate and currency depreciation have no effect on inflow of remittances to the country.

Schiopu and Siegfried (2006) investigated the determinants of workers' remittances in European Neighboring Region using panel dataset of bilateral flows from 21 Western European countries to 7 European Union (EU) neighboring countries over the period 2000-2005 using correlation analysis. The study found out that GDP differential between remitting and receiving countries and migrants' skill were positively and significantly correlated to average remittance per migrant. The result further revealed that remittances flow was suppressed by a large informal economy in the remitting country, while interest rate differential between sending and receiving countries was not a significant determinant of remittance flows.

Adams (2008) examined the determinants of remittances inflows to developing countries using data on variables such as skill composition of migrants, interest rate, exchange rate and poverty. The study found out that skill composition is a significant determinant of remittances. It was also revealed that the level of poverty in a labour-sending country has no significant effect on the level of remittances received in the recipient country.

Havoli (2009) investigated the determinants of remittances in Kosovo using survey data for 2006. The study found out that remittances inflows to the country were determined by the motive to invest and the perception about the country's business environment. The link between remittance theories was tested through migration duration by estimating a single linear regression model with the OLS technique. The result shows that remittances to Kosovo grew at a diminishing rate and the aspiration to own assets in home countries positively affects remittances inflow.

Bollard, Mckenzie, Morten and Rapoport (2009) examined relationship between education and remitting behavior using micro-data surveys of immigrants from eleven major destination countries. The study found a mixed pattern between education and the likelihood to remit and a strong positive relationship between education and the amount remitted. They thereafter opined that a combination of these two scenarios gives an overall positive effect of education on the amount remitted. Thus, the level of

education of migrants was revealed as a strong determinant of the amount remitted.

Arun and Ulku (2011) investigated the remittances behavior of the South Asia community using data from India, Pakistani and Bangladesh households in Manchester. The result revealed that remittances of the South Asia community in Manchester were primarily determined by employment status, and educational attainments of the emigrants, as well as their rootedness in the United Kingdom and linkage to the home country.

Lin (2011) analyzed the determinants of remittances in Tonga between the period 1994Q1 to 2009Q1 using the system GMM estimator in a dynamic panel data model. The study found out that remittances are influenced by macroeconomic conditions in remitting countries and exchange rate fluctuations. Specifically, the study revealed that remittances growth falls when the Tonga currency appreciates, but increases when growth rate of real GDP increases in remitting country. Further evidence from the study reveals that the determinants of remittances vary with the recipients and macroeconomic factors. Remittances to non-profit organization were more sensitive to currency appreciation and interest rate differentials between Tonga and remitting countries compared to remittances to households.

Ojede, Lam and Okot (2018) examined the macro variables that influence migrant remittances for Uganda economy. The study employs minimum Lagrange multiplier (LM) unit root tests for endogenous structural break combined with ARCH and GARCH models. World price of oil denominated in USA dollar was used to proxy Uganda shilling nominal effective exchange rate. To control for endogeneous bias between remittances and income, rainfall shocks was used to proxy income shock. The result revealed that positive (negative) innovations in income and depreciation (appreciation) in the currency of a recipient developing country and negatively (positively) correlated with remittance inflows.

Yoshino, Taghizadeh-Hesary and Otsuka (2019) explored the determinants of migrant remittances among 12 Asia and Pacific middle-income countries utilizing panel data analyzing technique. The result revealed that per capita gross domestic product in origin countries and wage growth in destination countries were positively correlated with remittances inflow in middle income countries. On the other hand, net foreign direct investment inflows are negatively correlated with remittances inflow. Furthermore, real exchange rate, the level of education, trade openness and political stability were positively associated with migrant remittances inflow in middle –income countries.

Sobiech (2019) used a newly created index of overall financial development in order to measure the importance of remittance given financial development for economic growth in developing countries. The study result showed the less financial developed a country is the smaller the impact of remittances on economic growth. The level of financial development is a significant determinant of remittances inflow.

Bunduchi, Vasile, Comes and Stafan (2019) examined the macroeconomic determinants of remittances in Romania, using panel data model. The results revealed that traditional influences factors such as distance, migration routes diaspora concentration or unemployment rate are less important than wage gap or tax at least for developing origin countries.

Yoshino and Otsuka (2020) assessed the determinants of international remittances using panel data set for 22 Asia-Pacific middle-income countries, most of which were well known migrant sending countries. The data was analyzed with the use of generalized method of moments. The results revealed that gap in the per capita GDP growth rate between origin and destination countries, secondary school gross enrolment ratio, and trade openness were positively associated with remittances inflow. On the other hand, net foreign direct investment inflows are negatively correlated with remittances inflow.

3.2 Theoretical model

The two-gap model is seen as an extension of the Harrod-Domar model developed by Harrod (1939) and Domar (1946) which relates economic growth to the national savings-income ratio (that is the national savings rate) and the national capital output ratio, suggesting a positive relationship between the savings and investment rate, and economic growth. The model which emphasizes the relevance of foreign financial resources in the development process (on the assumption that they supplement domestic resources) identifies two gaps which necessitate inflows of foreign capital and foreign exchange into an economy. The gaps are the savings-gap arising from low level of savings, and the foreign exchange gap arising from low export earnings owing to lack of competitiveness of a country's export in the international market, and high level of imports which engenders depletion of a country's reserves of foreign exchange used for import finance (Aigheyisi, 2016). The savings gap can be closed by inflow of foreign finance such as foreign direct investment, and a host of others), while the foreign exchange gap can be bridged by remittances, official development assistance and aid (Akande and Oluyomi, 2010). The two-gap model can

therefore be used to explain the effect of remittances on economic growth of countries in the West African Monetary Zone, considering that the gaps identified by the model are quite inherent in countries in the Zone.

The mathematical derivation of the two-gap model is presented below:

The Keynesian expenditure-output relation in a pure capitalist economy (where there is absence of government participation in economic activities) is given as:

$$Y = C + I + (X-M) \dots\dots\dots (1)$$

Where:

Y = National Output,

C = Private Consumption,

I = Domestic Investment,

X = Export,

M = Import.

Rearranging (1) by moving M to Left Hand Side (LHS), we have;

$$Y + M = C + I + X \dots\dots\dots (2)$$

The LHS of (2) represents sources of resources used in the economy, while the RHS represents usage of resources in the economy, that is, targets of expenditure.

Subtracting private consumption (C) from both sides of (2), we have:

$$Y - C + M = I + X \dots\dots\dots (3)$$

Aggregate savings in an economy (S) is given as Y-C. Thus (3) can be further expressed as:

$$S + M = I + X \dots\dots\dots (4)$$

The variables on the LHS of equation (4)

are regarded as leakages while those on the Right-Hand Side (RHS) are regarded as injections in the circular flow of income. Collecting terms so as to separate trade variable from real variables, we have:

$$S - I = X - M \dots\dots\dots(5)$$

Equation (5) reveals the dual gap. On the left-hand side of the equation is the *savings gap*, expressing the amount by which savings fall short of desired investment in the economy (where $S < I$); and on the right-hand side is the *foreign exchange gap*, indicating the amount by which payment for import exceeds export earnings, resulting in dearth of foreign exchange (where $X < M$).

According to the model, the savings gap can be bridged by foreign direct investment that is inflow of long-term foreign savings, while the foreign exchange gap can be bridged by foreign aid. In this study, we hypothesize that in addition to FDI and foreign aid, remittances which constitute a sizeable and significant form of foreign finance inflows can also bridge the gaps.

3.3 Empirical model

To examine the macroeconomic determinants of remittance inflows, a model that takes cognizance of various theories and the outcomes of previous empirical research (see Chami, Barajas, Cosimano, Fullenkamp, Gapen & Montiel (2008); Quartey (2006); Vargas-Lundius (2004); Rapoport & Docquier (2006)) was specified. This model hypothesize that remittances inflow is a function of financial sector development, unemployment rate, inflation rate, exchange rate, per capita income and United State Gross Domestic Income. The functional specification of the model is:

$$PRR = f (FD, UNP, INF, EXRT, PCY, USGDI) \dots\dots\dots (6)$$

The stochastic specification of the model is given as:

$$PRR_{it} = \beta_0 + \beta_1 FD_{i,t} + \beta_2 UNP_{i,t} + \beta_3 INF_{i,t} + \beta_4 EXRT_{i,t} + \beta_5 PCY_{i,t} + \beta_6 USGDI_{i,t} + \mu_{i,t} \dots\dots (7)$$

Where:

i = each cross-sectional unit (or country);

t = time;

PRR = Personal remittances received as a percentage of GDP;

FD = Financial Development of recipient country;

UNP = Unemployment rate in recipient country;

INF = Inflation in recipient country;

EXRT = Exchange rate of recipient country;

PCY= Per capita income of recipient country;

USGDI = Gross domestic income of source country (the U.S. being the largest)

μ = Error term.

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

3.4 Justification of the variables used for the analysis

Well-developed financial system enhances the attractiveness of an economy to remittances. The desire to remit to the home economy is

boosted by the assurance of the strength and stability of the domestic financial system. A well-developed financial sector smoothens capital inflows and serve as an impetus for a sustained economic growth in the long-run (Nyamongo, Misatib, Kipyegonb and Ndirangua, 2012). Thus, a strong financial system also eases (facilitates) the process of remitting.

Unemployment is a global phenomenon in scope and nature. It seems no country has been spared (not even United State of America (USA) and it affects both developed and developing economies of sub-Saharan Africa (Iyoha, Adamu and Bello, 2013). However, what is worrisome is its high prevalence rate in most developing countries of the world, for example, Sub Saharan Africa (SSA) (inclusive of WAMZ countries). All things being equal, increase in the rate of unemployment in the home country would engender increase in inflow of remittances to cater for the needs of these individuals who depend largely on relatives living and working outside the home country.

High rate of inflation adversely affects growth. However, a recent strand of the literature is that inflation only adversely affects growth beyond a threshold inflation rate. Below the rate, inflation could positively affect growth. However, inflation rate that is usually above a single digit may exhibit negative effects on a country's economic growth (Arestis and Demetriades, 1996). However, domestic inflation rate is expected *a priori* to be positively related to remittance inflow to the economy. The rationale for this is that with increase in domestic prices, the amount required for investment (where remittance is driven by the desire to invest at home) also increases. This assertion has also been upheld in several studies (see De Haas, 2007 and 2010).

Exchange rate is expected *a priori* to be positively related to remittance inflow to the economy. The rationale for this is that with increase in exchange rate, the amount required for investment (where remittance is driven by the desire to invest at home) also increases.

Per capita income represents the income per head of citizens. It has a high indicative power of the standard of living of the people. Usually, a higher income per head indicates a better standard of living while a lower income per head indicates a poor standard of living *ceteris paribus*. A number of studies have used it to capture standard of living (see Jung 1986; Arestis and Demetriades 1996). It is also expected here to be positively related to remittances inflow especially in developing countries *ceteris paribus*.

We expect a positive relationship between the level of income of source country and the number of remittances there-from. If the economy of the source country is buoyant, remittances from there to recipient countries will be significant, all things being equal.

3.5 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. The panel robust least squares (Panel RLS) estimator was employed to estimate the model for the macroeconomic determinants of remittances in WAMZ, that is, equation (7). The choice of this estimator was informed by the fact that it accounts for biasness introduced in the regression model by outlying observations (outliers) which renders the results from the panel ordinary least squares estimator unreliable. This estimator was employed considering that the amounts of remittances that flow into some countries in the WAMZ are significantly larger than the amounts that flow into others. Prior to the estimation of the specified regression models, the variables were tested for unit root using Levin, Lin and Chu, LLC (2002) homogeneous unit root procedure. This is complemented by the Im, Pesaran and Shin, IPS (2003) heterogeneous unit root testing procedure. Thereafter, the cointegration test was performed to ascertain whether or not long run relationship exists among the variables of the model. For this, we relied on the Kao (1999) residual based cointegration tests.

3.6 Data description

The study used a panel set for the five countries of WAMZ. 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 migrant remittance as a share of the gross domestic product (PRR). The independent variables include inflation rate (INFL), financial development of the recipient country (FD), the exchange rate (EXRT), per capita income

of the recipient country (PCY), gross domestic product for United States of America (USGDI). The variables are briefly described in Table 3.

Table 3: 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)
Inflation rate	The annual percentage change in consumer price index	Cost of living	+	World Development Indicators (WDI, 2018)
Exchange rate	It is the unit of the domestic currency that exchanges for a unit of the United States' Dollar.	Cost of money transfer	±	International Monetary Fund (IMF)
Credit to the private sector as a share of the gross domestic pro	It is measured as the ratio of financial sector credit to the private sector as a percentage of the GDP.	Financial development	+	World Development Indicators (WDI, 2018)
Unemployment rate	It is measured as the percentage of the labour force that is without gainful jobs.	Lack of opportunities	+	World Development Indicators (WDI, 2018)
USA gross domestic income	It is measured as the sum of all incomes earned while producing goods and services within the U. S. borders.	Opportunities in remitting countries	+	World Development Indicators (WDI, 2018)
Per capita income	It can also be referred to as the income that accrues to an individual in a country taking into consideration the Gross National Product and the entire population of the country	Living standard	+	World Development Indicators (WDI, 2018)

Source: Authors' compilation

Table 4: Unit Root Tests of Variables

Variables	Homogeneous unit root		Heterogeneous unit root	
	LLC		IPS	
	Level	First difference	Level	First difference
Prr	-0.53(0.30)	-5.15 (0.00)*	0.36(0.64)	-5.92(0.00)*
INFL	-0.49(0.31)	-2.87(0.00)*	-0.36(0.25)	-3.14(0.00)*
FD	1.06 (0.86)	-4.19(0.00)*	0.14(0.55)	-4.76(0.00)*
PCY	-1.30(0.10)	-4.21(0.01)**	-1.02(0.15)	-3.26(0.00)*
EXRT	2.19 (0.99)	-1.71(0.04)**	1.27(0.90)	-2.85(0.00)*
UNP	-1.45(0.07)***	-2.48(0.00)*	2.24(0.99)	-0.36(-0.03)**
USGDI	-0.46(0.32)	-0.20(-0.04)**	-0.07(0.47)	-1.74(0.04)**

Source: Author's computation using *eviews 8.0*, where ***, ** and * indicate significance 1, 5 and 10 per cent levels respectively.

The panel unit root test results indicate that the variables are of mixed order of integration. The LLC unit root test results are similar to those of the IPS, except that the log of labour which is non-stationary at levels, but stationary at first difference, is stationary at level in the IPS unit root test. Both test results indicate that per capita income growth, gross fixed capital formation and INF are stationary at level, while and personal remittances received is stationary at first difference. The LLC test indicates that INF is stationary at first difference, while the IPS test shows that the variable is stationary at level. Trade openness variable is stationary at level in the LLC test, but stationary at first difference in the IPS test. Exchange rate is stationary at first difference in the LLC test, but stationary at level in the IPS.

Table 5: Kao Residual-based Cointegration Test

Series: PRR FD UNP INF EXRT PCY USGDI

Sample: 1990 2016

Included observations: 162

Null Hypothesis: No cointegration

	t-Statistic	Prob.
ADF	-3.15	0.03

The Kao residual cointegration test result rejects the null hypothesis of no cointegration at the 5% significance level. This is indicated by the ADF t-Statistic of -3.15 which passes the test of statistical significance at the 5% level, with a probability of 0.04, rejecting the null hypothesis of “no cointegration”. Thus it could be reasonably inferred that long run relationship exists between economic growth and its hypothesized determinants in this study. According to the Granger-Engle representation theorem, where two or more variables are cointegrated, the short run

relationship between them can be represented with an error correction model.

Table 6: Panel Robust Ordinary Least Squares (PROLS) Estimation of Determinants of Remittances in WAMZ

Variable	Coefficient	Std. error	Z statistics	Probability
C	-234.0505	67.63869	-3.460305	0.0005
FD	0.244661	0.060248	4.060930	0.0000
UNEM	0.379629	0.120474	3.151127	0.0016
INF	0.002953	0.018960	0.155770	0.8762
EXRT	-0.000554	0.000159	-3.488131	0.0005
PCY	-0.001507	0.000486	-3.100870	0.0019
LOG(USGDI)	7.769341	2.245152	3.460497	0.0005
Coefficient of determination	0.84490			
Adjusted coefficient of determination	0.83760			

Source: Authors' computation

The result of estimation of the model for the macroeconomic determinants of personal remittances received in the WAMZ indicate that the recipient country financial development, the rate of unemployment in recipient country, inflation in recipient country, domestic currency exchange rate, per capita income of recipient country and economic condition of source country (the US States being the largest source country for remittances) are major macroeconomic determinants of the amount of personal remittances received in the WAMZ, as the coefficients of these variables passed the test of statistical significance even at the 1% level.

Financial development of recipient country is positively related to remittances. This suggests that migrants tend to remit money to their countries where the financial system is well developed. This corroborates the result from the study by Bettin, Lucchetti and Zazarro (2012), which found that the amount of money remitted increases with the level of financial development.

The rate of unemployment in recipient country is also positively related to remittances inflow. This indicates that migrants' remittances inflow tend to increase with the rate of unemployment and people who remit money to their home countries where the rate of unemployment is high possibly to enhance their welfare – an indication of pure altruism. This result validates the Pure Altruism theory of remittances.

The effect of inflation in recipient country on remittances inflow in the WAMZ is positive, but not statically significant. This implies that inflation

increases with remittances inflow as corroborated by Zakir and Khan (2013) and Narayan, Mishra and Narayan (2011).

Exchange rate is negatively and significantly related to remittances inflow. Increase in the exchange rate (that is currency depreciation) is associated with decrease in the number of remittances that flow into the Zone. This is not unexpected considering that depreciation of the domestic currency reduces the attractiveness of cash to be held as asset. Consequently, migrants may tend to cut down their remittances to avoid loss of value, or have them saved in form of more valuable currencies in home financial institutions for future investments.

The negative and significant relationship between per capita income and remittances implies that as per capita income of recipient country increases, remittances tend to decrease. This suggests that for most countries in the WAMZ, remittance inflows are basically a response to low per capita income or level of welfare. Hence, when per capita income (which is a measure of welfare, though not a perfect one) begins to rise, the demand for cash from relatives abroad tend to decrease. Thus, remittances also decrease, except for remittances meant for investment purposes. This observation, to some extent corroborates the findings in Hassan and Shakur (2017).

The sign and the significance of the effect of US income on remittances inflows to the WAMZ indicate that economic conditions in the source country is the key determinant of the number of remittances that flow into the WAMZ. A 1% rise in U.S. gross domestic income is associated with 0.08% rise in remittances inflows to the WAMZ. Where there is economic prosperity and high level of economic activities translating into improved income levels in the source countries, there will be increase in remittances to recipient countries, *ceteris paribus*.

The coefficient of determination and adjusted coefficient of determination values of approximately 0.84 indicate the model has high goodness of fit as they indicate that nearly 84% of the systematic variation in the dependent variable (PRR) is explained by the model.

4.2 Study Limitations

One major limitation to this study arises from the non-availability of data on some variables for some years in some of the countries such as Liberia and Gambia. This no doubt constrained the scope of the study.

5.1 Conclusion/ Recommendations

Financial sector development, unemployment rate and USA gross domestic income are positively associated with migrant remittances, while exchange rate and per capita income are negatively associated with migrant remittances. In the light of the findings, the following recommendations are pertinent:

i. Considering that the level of development of the financial system enhances the attractiveness of the WAMZ to remittances, there is need for the governments, through their monetary authorities to strengthen their financial system regulatory apparatus to further deepen the financial system to raise its level of development, this can be enhanced by removing bottle necks for ease of remittances at the receiving countries. This would raise migrants' confidence in the financial system of their home countries and encourage them to remit more cash to be deposited in the financial system.

ii. The negative and significant coefficient of lending interest rate suggests the need for the monetary authorities to wield their instruments of monetary policy to reduce the lending rate. This policy action will ease access to investment loan which ultimately translates to impressive economic growth, *ceteris paribus*.

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