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Abstract

This paper identifies the core macroeconomic factors responsible for explaining the changing levels in international remittances received by SSA countries. A set of annual panel data on 36 SSA countries, covering 1980-2009, was used in a 'system' Generalised Method of Moments following Blundell and Bond (1998) dynamic panel-data estimation technique. In order to provide a more detailed insight into the possible dynamics of varying impact of macroeconomic variables that explain remittances received in SSA, decade-based (1980-89, 1990-99, and 2000-09), as well as an overall study period, 1980-2009, estimations were carried out. It was found that both migrant home-country and host-country macroeconomic environment impact on remittance inflows in SSA with a varying impact overtime. In absolute terms, generally, whilst the impact of real exchange rate, migrant income, and institutional quality has been increasing on remittances overtime, the effects of family income and the rate of inflation has be decreasing overtime.

1.0 INTRODUCTION

Even though remittances received by developing countries have more than doubled during the last decade, in terms of absolute volume, Africa experienced only a marginal rise. For instance, official migrant remittances to Africa amounted to US$9 billion (out of which SSA received $1.86

billion) in 1990; and by 2003, migrant remittance flows to Africa had reached US$14 billion (out of which SSA received $5.96 billion). The rising trend in official migrant remittance flows to SSA continued, reaching US$ 10 billion in 2005; attaining an all-time high of US$ 21.6 billion in 2008 before dropping slightly to US$ 20.7 billion in 2009 following the global financial crisis which led to economic recession in the industrialised world. Despite this positive trend, SSA remains the least recipient of migrant remittances, receiving only 5 percent of global remittances as compared to East Asia and Pacific (20.7 percent), South Asia (18 percent), LAC (13.7 percent), Europe and Central Asia (11.0 percent) and MNA (7.7 percent). In fact, as at the end of 2009, SSA, as a sub-region, receives far less remittances (US$20.74 billion) than any of the world's top-three migrant remittance-recipient countries - India (US$49.26 billion), China (US$47.55 billion) and Mexico (US$22.16 billion)[1].

Meanwhile, the world acknowledges that reported migrant remittances received by developing countries are far less than the actual amount received, estimated to be at least 50 percent higher (World Bank, 2006). Freund and Spatafora (2005) posit that SSA receives the highest informal remittances, representing 45-65 percent of what is officially reported unlike 5-20 percent in the case of Latin America. The adverse repercussions of increasing flow of migrant remittances to SSA, and the developing world as a whole, through informal channels cannot be underestimated. These include money laundering, sponsorship of anti-government groups for self-centred interest, financing terrorist activities, creation or expansion of existing informal financial markets such as the 'underground' foreign exchange market, *de facto* dollarisation, and arbitrary growth in money supply in remittance-receiving countries. Ultimately, the continuous inflows of remittances through the informal channels can undermine the economic and political stability of the remittance-receiving countries, and at the same time threaten the peace and security of the world.

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[1] Authors' compilation from World Bank (2010) Remittance Database

Certainly, several factors, ranging from micro to macro, might have accounted for the relatively low receipt of official migrant remittances by SSA. From macroeconomic perspective, this paper explores the factors that inhibit the optimal inflows of migrant remittances through official channels to SSA as a sub-region. The fundamental question is: What role can macroeconomics play in attracting official migrant remittances to SSA? As far as the sub-region is concerned, this study is novel in the measurement of migrant remittances and by providing an insight into the time-dependent changing role of macroeconomic factors affecting migrant remittances over the past three decades. With this research gap in mind, with respect to SSA, this paper seeks to determine the impact of macroeconomic factors on official migrant remittance inflows; and to examine if the impact of these macroeconomic factors on migrant remittances varies overtime.

This paper proceeds with a background discussion to motivate the study and outline its objectives. This is followed by a review of the theoretical and empirical literature. In Section 3, stylised facts are presented, whilst Section 4 formulates the empirical model and the methodology adopted in analysing the data. Presentation and discussion of empirical results are in Section 5, whilst Section 6 concludes with policy implications.

2.0 LITERATURE REVIEW

2.1 Theoretical Review of Macroeconomic Determinants of Remittances

Macroeconomic models on the determination of remittances take their root directly from microeconomic theories of altruism and self-interest. Russell (1986), Elbadawi and Rocha (1992), Lianos (1997), Vargas-Silva and Huang (2006), and Coulibaly (2007) argue from theoretical viewpoint that macroeconomic variables can play an influential role in the determination of remittance flows. From the perspective of altruism at the macro-level, remittances are higher when

negative shocks associated with higher rates of underemployment and unemployment occur in migrant's native country as the desperate macroeconomic conditions compel active labour to travel outside in search for greener pastures. In this context of pure altruism, lower growth in real income (or economic recession), higher rate of inflation, bad governance and weak institutions, exchange rate instability and private sector limited access to credit in labour-exporting countries, stimulate higher inflow of migrant remittances (Wahba, 1991; Vargas-Silva and Huang, 2006). As a result, growth in real *per capita* GDP in the developing world relative to the income growth rate in the industrialised world, adversely affects remittance inflows as global income disparity narrows (Swamy, 1981; Brown, 1997).

The microeconomic theory of self-interest motive underlying the flow of migrant remittances can be transformed and directly related to a portfolio choice theory at the macro-level. The portfolio choice theory suggests that as economic conditions in labour-exporting countries improves relative to the rest of the world; more migrant remittances are received in the labour-exporting countries through higher savings and investment by migrants (Russell, 1986; Wahba, 1991; Coulibaly, 2007). Higher real average income growth in the home country signals improved economic condition and bigger potential market which are required for increased private investment and the emergence of a vibrant entrepreneurial society. Consequently, self-interest-seeking migrants remit more funds home for business and investment purposes when potential market size at their home countries expands; and when the expected returns on investment at home are relatively high. This implies that if, for example, real deposit interest rates are high and attractive in labour-exporting countries, remittance inflows are likely to increase as migrants (especially those with the intention of returning home in the future) may increase their marginal propensities to save and invest at home in a bid to augment their expected lifetime utility at home. Additionally, stronger exchange value of home-country currency in

the international market and stability in domestic prices (low inflation) in labour-exporting countries symbolise a conducive investment climate at home, which ultimately attract rational and risk-averse migrants to increase the amount remitted for investment purposes.

In theory, Russell (1986) and Funkhouser (1995) argue that political risk factors in labour-exporting countries can determine the inflow of remittances in these countries. The impact of political risk in a home country on remittances received is dependent upon the motive behind remittances. Whilst it may be positive or zero when remittances are driven by altruism, from pure self-interest motive, its impact is expected to be negative. In furtherance of Russell's proposition, we argue that political uncertainty, not only at labour-exporting countries but also migrant-host countries can potentially influence the inflow of remittances in a labour-exporting country inversely. When the assumptions of rationality and risk-aversion behaviour of migrants hold, then high political uncertainties in labour-importing countries should increase remittances received by labour-exporting countries, as migrants' hedge.

The McKinnon (1973) and Shaw (1973) theory of financial liberalisation postulates that deregulation and abandonment of repressive financial policies breed competition and efficiency in the financial market, enabling financial institutions to pay attractive returns on deposits. Through the pursuit of financial liberalisation policies, therefore, financial institutions are encouraged to develop cost-saving strategies and innovative products for resource mobilisation from domestic and external sources. Consistent with the McKinnon-Shaw theory, Russell (1986), Sander and Maimbo (2003) and World Bank (2006) assert that the implementation of restrictive economic policies such as exchange rate restrictions in labour-exporting countries does not attract higher inflow of international remittances. Conversely, a liberalised financial sector and improved financial development in labour-exporting countries are imperative in attracting higher remittances from migrants.

Also, at the macro-level, migrant remittances are driven by mixed motives in so far as the altruistic and self-interest theories are not mutually exclusive. This might be the most important reason why although, theoretically, remittances can be analysed from the altruistic and portfolio perspectives, in all the macro-level studies reviewed on the determinants of remittances, analysts did not specify empirical models on either pure altruistic motive or pure self-interest motive.

2.2 Empirical Review of Macroeconomic Determinants of Remittances

Since Lucas and Stark (1985) initiated the debate on the determinants of remittances, the motivation for providing empirical evidence has remained unending. Though the motives behind remitting might differ across time, households and countries, generally it is believed that growth in migrant income and negative shocks at migrant home countries have a direct relationship with remittances. For instance, with respect to home-country's economic performance, many studies including El-Sakka and McNabb (1999), de la Brière *et al*. (2002), Bouhga-Hagbe (2006), Yang and Choi (2007), and Singh *et al*. (2010) provide evidence on countercyclical property of remittances. In sharp contrast, Higgins *et al*. (2004) and Aydaş *et al*. (2004) conclude that remittances exhibit procyclical behaviour as they tend to rise with improvements in GDP *per capita* and the growth rate of remittance-receiving countries. Sayan (2006) also finds that in most cases, remittances tend to be acyclical or procyclical.

Empirical literature suggests that the number of migrant workers outside home country[2], differences in wage rates at home and abroad, economic condition at native country, exchange rate

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[2] Freund and Spatafora (2005) find that a 100 percent rise in migrant stock causes a 75 percent rise in remittance inflows, but Elbadawi and Rocha (1992) and Aydaş *et al*. (2004) observe that the importance of migrant stock in determining remittance inflows declines overtime as a result of ageing labour force.

fluctuations, interest rates, political risk, facilities or mechanisms of international money transfer and the economic conditions in the country of residence influence remittance flows. With respect to official flow of remittances, the level of financial development as reflected in the cost of funds transfer, existence or absence of dual exchange rate, availability of financial infrastructure and innovative products, in labour-exporting countries is also important. As observed by the IMF (2005), the level of economic activities in the migrant's resident country is important because improved economic conditions in the host country improves the ability of migrants to increase their employment and earnings prospects which put them in a better position to be able to remit more money home. Similarly, during periods of recessions at home, migrants may be compelled to increase remittances in a bid to mitigate the adverse effects of the negative economic shocks at home. Jadhav (2003) analyses the determinants of workers' remittances to India using a log-linear regression specification involving oil prices, US GDP, interest rate differential measured as the difference between nominal domestic interest rate and LIBOR, and exchange rate depreciation as explanatory variables. The estimated results show that oil prices and exchange rate depreciation positively impact on remittance flows to India. In a similar fashion, Gupta (2005) in an attempt to analyse a more complete model to unearth the determinants of remittances in India included a trend, number of migrants, changes in country rating, and return on domestic stock market. The findings show that, in India, the main determinants of remittances are migration, gross migrant earnings, and economic environment in migrant resident country. The Indian drought dummy variable was found to have a positive impact on the cyclical component of remittances. In this study, Gupta (2005) did not find political uncertainty, interest rates, and exchange rate depreciation to significantly affect remittance flows to India.

El-Sakka and McNabb (1999) in an attempt to explain nominal remittances received by Egypt included real income levels of the sending and receiving countries, interest rate differentials, rate of inflation in Egypt, and the black market premium for foreign exchange as regressors in a single equation following the Ordinary Least Squares (OLS) procedure. The empirical results show that whereas remittances increase with Egyptian rate of inflation and income abroad, they decline with the black market premium. Bouhga-Hagbe (2004) analyses workers' remittance flows to Morocco using cointegrating and error-correction models. He finds that, over the long run, remittance inflows are positively correlated with wage levels in the source country proxied by wage levels in France, whilst they negatively correlated with real GDP growth in Morocco. Likewise, for Sri Lanka, Lueth and Ruiz-Arranz (2007a) using quarterly data from 1996 to 2006, found that remittances are positively correlated with oil price, but behave strongly pro-cyclically, and decline with the currency depreciation. Lueth and Ruiz-Arranz (2007a), thus, conclude that remittances to Sri Lanka appear to be less of a hedge against shock than widely conceived. For Ghana, Adenutsi and Ahortor (2008) using quarterly data from 1983(4) to 2005(4) find that, in the short run as well as in the long run, migrant remittance inflows are enhanced through effective monetary policy formulation, higher interest rates and lower price levels, but the overall impact of exchange rate depreciation is mixed – positive in the short run and negative in the long run.

Swamy (1981) and Adams and Page (2005) show a significant relationship between remittance inflows and the number of emigrants resident abroad and the distance between the source country and the remittance-receiving country. In particular, Adams and Page (2005) find that the distance between the host and the home countries of migrants has a negative impact on both migration and remittances, because long distances make it expensive and unattractive to maintain strong economic and social ties. Also, the personal characteristics of a migrant especially the level of

education which directly impacts on migrant earnings, determines the volume of remittances. However, Elbadawi and Rocha (1992) and Aydaş *et al.* (2004) find that the number of migrants loses its importance as a determinant of remittances overtime. Meanwhile, Pinto *et al.* (2000), Hadjimichael *et al.* (1998), and Becsi and Wang (1997) conclude from various empirical studies that financial development and economic growth are crucial determinants of remittance inflows. With particular reference to financial infrastructure, Wahba (1991) concludes that financial institutions play a crucial role in attracting remittances.

Russell (1986), and Chipeta and Kachaka (2005) reveal that the decision to remit depends on different factors over the business cycle rather than the altruistic motive of smoothing consumption of recipients. In particular, Chipeta and Kachaka (2005) reaffirm an earlier observation by Russell (1986) that, from macroeconomic perspective, the inflow of remittances depends on deposit interest rate differentials of the home country and the main host country of migrants, the rate of inflation, political atmosphere, the level of economic activity in the host country and the exchange rate in the home country.

In the most comprehensive panel study on SSA involving 36 countries for the period, 1990-2005, Singh *et al.* (2010) find that the size of migrants, quality institutions, and migrant income are positive determinants of remittance inflows whilst family income, real effective exchange rate, and interest rate differential affect the inflow of migrant remittances negatively.

From a more general perspective, World Bank (2006) underscores that the fact that government policies clearly affect remittance inflows. World Bank (2006: 93) concludes that "in the remittance-receiving countries, these policies include tax exemptions for remittance income; improved access to banking services by recipients; incentives to attract investments by the Diaspora; access to foreign exchange or lower duties on imports; support for the projects of migrant

associations; and help for migrants in accessing financial systems. In the remittance-source countries, they include policies affecting access to banks, access to foreign exchange, support to migrant groups, types of immigration regimes, and co-operation with receiving countries".

In summary, empirical results from various macroeconomic studies on remittance inflows reveal that, at the initial stage, remittances are likely to be: (i) countercyclical in so far as they increase during economic downturns in recipient countries; (ii) driven more by an altruistic motive than by an investment motive; (iii) stimulated by life-sustaining motives for which reason they are more for transactions motive (consumption) than for investment motive; and (iv) relatively insensitive to interest rate differentials between home and abroad. At the stages of migration where self-interest motive most likely emerges stronger than altruism, remittances flow procyclically; or acyclically, because altruism and self-interest are of equal importance to the remitting migrant. Other macro-variables that have been of empirical relevance to remittance flows to developing countries include the rate of inflation as a measure of financial instability in the home country, return in the stock market or return on property which is one of the measures of degree of financial sector development, black market premium, exchange rates, fiscal policies, and default risk which is often proxied by domestic political uncertainty, geopolitical conditions, or rating downgrades by established credit rating institutions.

3.0 REMITTANCE FLOWS TO SSA: SOME STYLISED FACTS

In line with the altruistic theory, migrant remittance inflows are expected to be countercyclical; procyclical in conformity with the self-interest motive, and acyclical in manifestation of the mixed motive (or tempered self-interest) in the recipient countries. Figure 1

shows the trends in migrant remittances received, household consumption and income in SSA between 1980 and 2009.

Figure 1: Trends in Migrant Remittances, Household Consumption and Income in SSA, 1980-2009
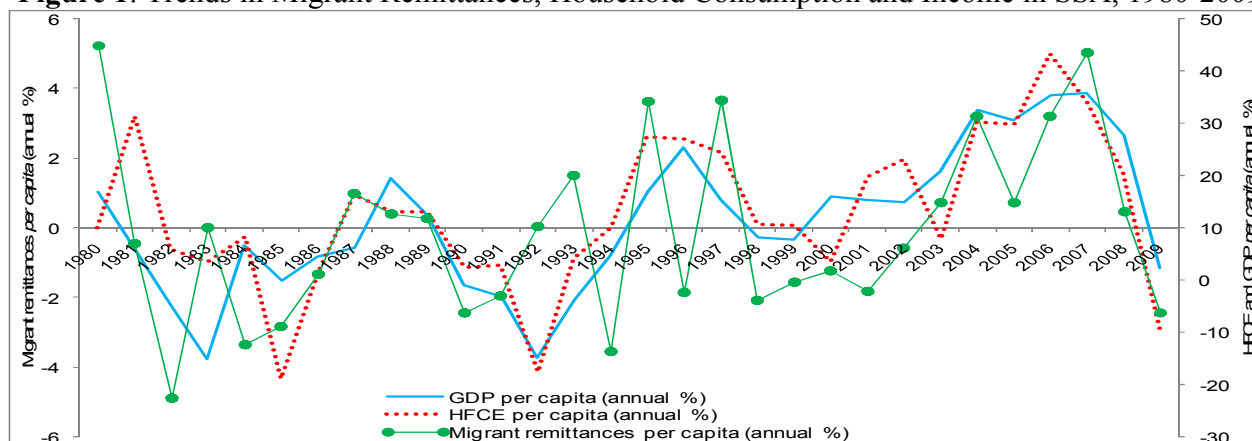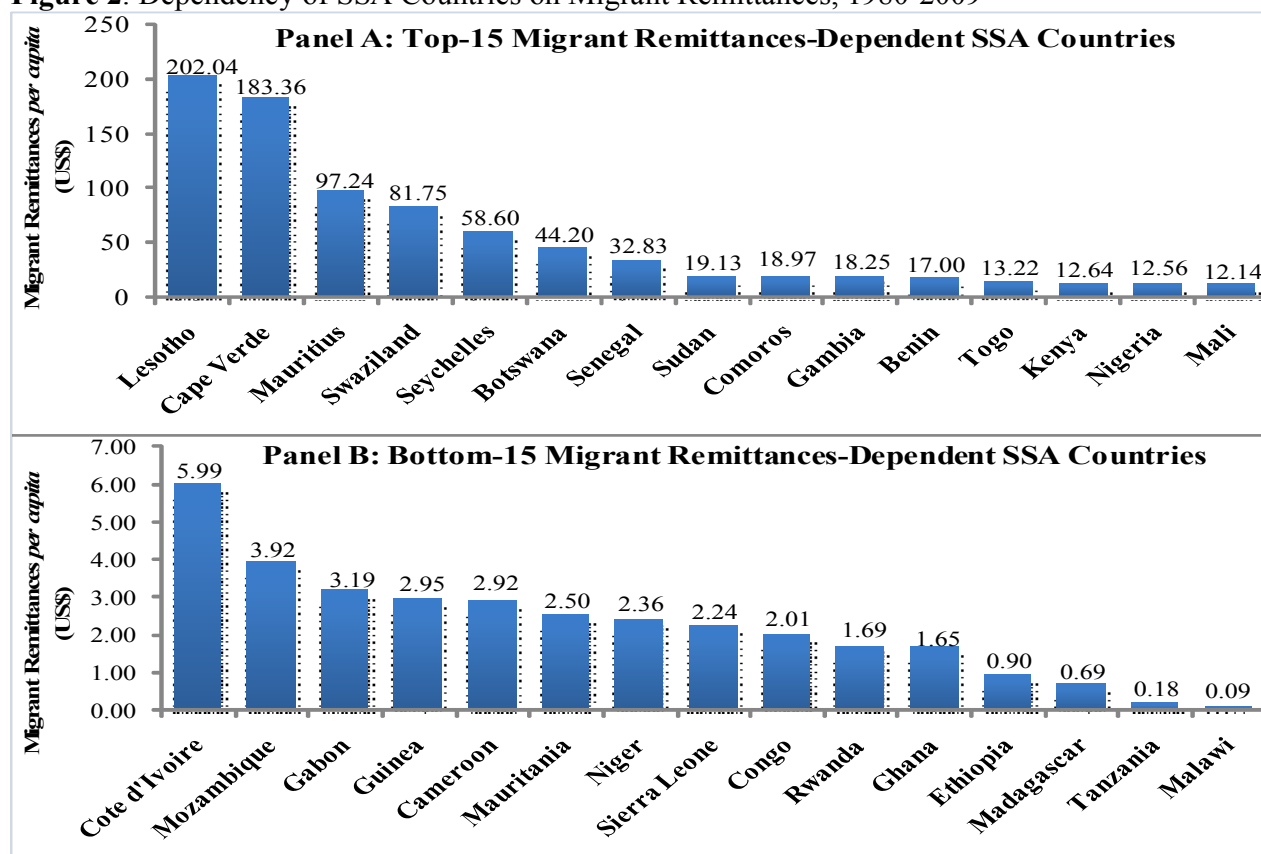

*Source: Author based on WDI (October 2010). **Note**: HFCE denotes household final consumption expenditure*

With reference to Figure 1, there is a fairly strong evidence of procyclicality in the growth of migrant remittances *per capita* and GDP *per capita* in SSA in the past three decades. Between 1993 and 1997, there appear to be acyclicality in the inflow of migrant remittances *per capita* as against GDP *per capita* growth in SSA. The trends in the annual growth in household final consumption expenditure *per capita* and migrant remittances *per capita* reconfirm the procyclicality in the flow of remittances to SSA since 1980. The procyclicality in the flow of migrant remittances in relation to household final consumption expenditure can be attributed to altruistic motive driving remittances. Therefore, with reference to income growth and remittances growth, it can be argued that migrant remittances received by SSA are procyclical. Furthermore, as revealed in Figure 1, in terms of growth in *per capita*, the flow of migrant remittances to SSA is not stable but erratic, especially in the 1990s. This suggests that, in understanding the cyclical trend in remittances, the use of the

growth rate in the flow of remittances, (as depicted in Figure 1) should be seen as more relevant or appropriate.

Figure 2 shows the composition and the level of dependency on migrant remittances in the 36 SSA countries sampled for the empirical analysis in this study.

Figure 2: Dependency of SSA Countries on Migrant Remittances, 1980-2009

Figure 2 Panel A reveals that, with the exception of Cape Verde, countries in the southern part of the sub-region *viz*. Lesotho, Mauritius, Swaziland, Seychelles and Botswana, dominate the top-6 migrant remittance dependent countries. The remaining top-15 migrant remittance-dependants (Cape Verde, Senegal, Sudan, Gambia, Benin and Togo) are predominantly West African countries.

Comoros is the only country from the eastern part of the sub-region listed among the top-third remittance-dependants. Also, although majority of the top-15 leading remittance-dependent countries are small in geographical and population size, Botswana and Sudan are relatively large.

The geographical background of the bottom-third of migrant remittance-dependent countries is quite heterogeneous, but with West Africa countries dominating with five countries (Guinea, Mauritania, Niger, Sierra Leone, and Ghana) out the 15 in this category. Central and Eastern Africa has four countries (Cameroon, Congo, Rwanda, and Ethiopia) with Southern Africa having three countries (Madagascar, Tanzania and Malawi) among countries with least dependency on migrant remittances. Again, Panel B is dominated by countries with relatively large geographical size such as Cameroon, Mauritania, Niger, Congo, Madagascar and Tanzania. Despite this, Guinea, Sierra Leone, Rwanda and Malawi, with relatively small geographical size are also included in this category of least dependants.

In terms of income status, there is no distinctive pattern of dominance in either category as relatively high-income countries such as Gabon, Cameroon and Congo are listed among the least migrant remittance-dependants just as other higher countries like Seychelles, Cape Verde, Mauritius and Botswana are listed among the high migrant remittance-dependants. Thus, with reference to SSA migrant remittances flow to both high-income and low-income SSA countries and do not depend necessarily on the geographical size or location of the country. Impliedly, some macroeconomic policies should be responsible for the changing and unequal flow of migrant remittances received by SSA as a sub-region.

Theoretical as well as empirical literature suggests the inclusion of both home-country and the host-country factors in identifying the macroeconomic factors that explain migrant remittances received by developing countries. Most empirical works on macroeconomic determinants of

remittances tend to use the US as the migrant-host country. Few others including Elbadawi and Rocha (1992), Lianos (1997), Bouhga-Hagbe (2004), Akkoyunlu and Kholodilin (2006) and Akkoyunlu (2010) made attempts at using countries other than the US as the migrant-host nation in country-specific studies at the macro-level with focus on bilateral remittances. In the case of SSA countries, however, majority of their migrants, at least 70 percent, migrate to reside in other SSA countries as shown in Table 1. This makes the pattern of migration among citizens of SSA exceptional compared to the rest of the world. Notwithstanding the fact that SSA still serves as the main host of its 'own migrants', the most important source of international remittances to the various SSA countries is the SSA migrants residing in countries outside the sub-region (Ratha and Shaw, 2007; Bollard *et al*., 2010). Table 1 presents a list of the 36 sampled SSA countries and the main host of their citizens living outside SSA.

A key feature in the pattern of SSA international migration as shown in Table 1 is that most of its emigrants reside in Europe rather than the Americas. Factors such as distance or travelling cost, geopolitical history or former colonial relationship, lingual Franca and religious affinities underlie the choice of destination of SSA international migrants. For instance, international migrants from Francophone SSA countries such as Benin, Cameroon, Comoros, Congo, Côte d'Ivoire, Mauritania and Senegal are hosted by France with which they have common language. These SSA countries were also colonised by France in the past. The same trend is easily visible in the case of migrants from Portuguese speaking countries (São Tomé and Príncipe and Guinea-Bissau) and migrants from English speaking countries such as Kenya, Botswana, Malawi, Namibia, South Africa, and Uganda. On religious affinities, SSA migrants from Muslim-dominated countries such as Burkina Faso, Benin, Niger and Sudan are commonly resident in countries like Jordan, Pakistan and Saudi Arabia with common religion dominance.

Table 1: Host Countries of SSA Migrants Resident outside SSA

Migrant Home-Country	Top-5 SSA Migrant Host Countries in the World					Top-3 Non-SSA Host Countries		
	1	2	3	4	5	1: Host	2	3
Benin (BEN)	NIG (27.71)	BFA (12.68)	TOG (12.45)	CIV (10.60)	GAB (5.59)	**FRA (2.22)**	GER (1.30)	PAK (1.07)
Botswana (BSW)	RSA (18.01)	NAM (16.96)	GBR (12.47)	ZIM (11.64)	USA (9.58)	**GBR (12.47)**	USA (9.58)	AUS (4.27)
Burkina Faso (BFA)	CIV (72.47)	GUI (11.03)	GHA (5.13)	DRC (1.38)	PAK (1.06)	**PAK (1.06)**	GER (1.03)	FRA (0.37)
Cameroon (CAM)	FRA (22.62)	FRA (22.62)	GAB (17.74)	NIG (9.91)	GER (5.43)	**FRA (22.62)**	USA (7.53)	GER (5.43)
Cape Verde (CPV)	POR (22.52)	USA (13.83)	FRA (6.65)	GER (6.61)	MZQ (8.44)	**USA (13.83)**	FRA (6.65)	GER (6.60)
Comoros (COM)	FRA (43.14)	UGA (22.47)	GER (7.01)	TZA (4.68)	LBY (2.59)	**FRA (43.14)**	GER (7.01)	USA (0.50)
Congo Republic (CON)	SUD (47.91)	TZA (16.03)	FRA (8.34)	BEL (2.68)	GER (2.29)	**FRA (8.34)**	BEL (2.68)	GER (2.29)
Côte d'Ivoire (CIV)	FRA (27.38)	BFA (19.72)	GER (5.95)	BEN (6.56)	GUI (5.40)	**FRA (27.38)**	GER (5.95)	USA (4.57)
Ethiopia (ETH)	USA (25.65)	ISR (20.67)	SAU (7.72)	CAN (5.08)	SWE (3.40)	**USA (25.65)**	ISR (20.67)	SAU (7.72)
Gabon (GAB)	SUD (47.30)	FRA (19.69)	SLE (4.39)	GER (3.44)	KEN (3.66)	**FRA (19.69)**	GER (3.44)	USA (0.92)
Gambia (GAM)	ESP (12.18)	USA (11.95)	NIG (8.45)	GBR (7.72)	SEN (3.67)	**ESP (12.18)**	USA (11.95)	GBR (7.73)
Ghana (GHA)	CIV (31.91)	NIG (13.06)	BFA (9.74)	GUI (8.69)	USA (7.31)	**USA (7.31)**	GBR (5.97)	GER (2.27)
Guinea (GUI)	CIV (23.74)	LIB (12.11)	SEN (18.69)	BFA (11.17)	GAM (6.57)	**GBR (1.45)**	GER (1.34)	USA (1.15)
Guinea-Bissau (GBS)	SEN (25.45)	GAM (13.36)	POR (16.72)	FRA (6.34)	BFA (5.81)	**POR (16.72)**	FRA (6.34)	GER (4.45)
Kenya (KEN)	GBR (28.54)	TZA (27.04)	UGA (7.35)	USA (9.85)	GER (5.38)	**GBR (28.54)**	USA (9.85)	GER (5.38)
Lesotho (LSO)	MZQ (46.02)	ZIM (19.45)	RSA (16.18)	MWI (2.38)	TZA (1.72)	**GER (0.82)**	USA (0.81)	PAK (0.71)
Madagascar (MAD)	FRA (51.55)	REU (12.88)	GER (8.64)	ZIM (4.22)	COM (3.82)	**FRA (51.55)**	REU (12.88)	GER (8.64)
Malawi (MWI)	ZAM (19.03)	TZA (18.93)	RSA (17.65)	ZIM (12.91)	GBR (8.30)	**GBR (8.30)**	GER (1.93)	USA (1.38)
Mali (MLI)	CIV (30.82)	BFA (27.74)	GUI (10.32)	NIG (5.77)	GHA (5.22)	**FRA (2.73)**	GER (1.37)	USA (0.45)
Mauritania (MRT)	SEN (34.21)	NIG (10.32)	FRA (8.78)	BFA (7.68)	GUI (7.56)	**FRA (8.78)**	ESP (3.21)	GER (2.72)
Mauritius (MRS)	FRA (18.41)	RSA (18.39)	GBR (15.63)	AUS (9.70)	GER (6.53)	**FRA (18.41)**	GBR (15.63)	AUS (9.70)
Mozambique (MZQ)	TZA (22.78)	ZIM (19.98)	MWI (19.16)	RSA (17.74)	POR (8.97)	**POR (8.97)**	GER (2.07)	GBR (0.50)
Namibia (NAM)	MZQ (23.07)	RSA (17.28)	ZIM (13.13)	TZA (1.50)	GBR (5.14)	**GBR (5.14)**	USA (4.19)	GER (1.88)
Niger (NGR)	BFA (27.84)	CIV (26.25)	NIG (11.89)	GUI (10.79)	GHA (5.16)	**GER (1.10)**	PAK (1.06)	FRA (0.73)
Nigeria (NIG)	SUD (23.76)	USA (13.74)	GBR (8.60)	CAM (8.39)	GHA (5.14)	**USA (13.74)**	GBR (8.60)	GER (2.91)
Rwanda (RWA)	UGA (42.17)	TZA (27.94)	KEN (4.89)	BEL (2.83)	GER (1.87)	**BEL (2.83)**	GER (1.87)	USA (1.16)
São Tomé & Príncipe	POR (54.97)	CPV (15.94)	GER (9.30)	BFA (3.00)	GUI (2.93)	**POR (54.97)**	GER (9.30)	FRA (1.02)
Senegal (SEN)	GAM (20.56)	FRA (18.32)	ITA (9.58)	MRT (8.48)	GER (5.30)	**FRA (18.32)**	ITA (9.58)	GER (5.30)
Seychelles (SEY)	GBR (17.40)	RSA (18.69)	AUS (14.55)	ZIM (6.24)	TZA (5.18)	**GBR (17.40)**	AUS (14.55)	CAN (6.15)
Sierra Leone (SLE)	USA (22.87)	LIB (18.31)	GBR (18.18)	GHA (5.00)	GER (4.50)	**USA (22.87)**	GBR (18.18)	GER (4.50)
South Africa (RSA)	GBR (18.15)	MZQ (16.04)	AUS (10.12)	USA (8.99)	ZIM (7.37)	**GBR (18.15)**	AUS (10.12)	USA (8.99)
Sudan (SUD)	SAU (32.05)	UGA (24.31)	JOR (3.78)	USA (3.43)	EGY (2.64)	**SAU (32.05)**	JOR (3.78)	USA (3.43)
Swaziland (SWZ)	MZQ (28.48)	RSA (17.05)	ZIM (14.53)	GBR (7.43)	USA (5.46)	**GBR (7.43)**	USA (5.46)	GER (2.30)
Tanzania (TNZ)	UGA (20.46)	RSA (18.31)	GBR (11.48)	ZIM (8.81)	CAN (6.95)	**GBR (11.48)**	CAN (6.95)	USA (4.47)
Togo (TOG)	NIG (36.10)	BEN (12.05)	BFA (8.75)	GUI (8.84)	GAM (6.61)	**FRA (6.38)**	GER (2.02)	USA (1.63)
Uganda (UGA)	GBR (32.41)	TZA (23.82)	USA (7.38)	CAN (6.48)	GER (6.06)	**GBR (32.41)**	USA (7.38)	CAN (6.48)

Source: Author's compilation from Parson et al. (2007). **Note**: *AUS, CAN, ISR, ITA, LIB, DRC, EGY, REU, SWE, ZAM, ZIM, JOR, and LBY stand for Australia, Canada, Israel, Italy, Liberia, Democratic Republic of Congo, Egypt, Reunion, Sweden, Zambia, Zimbabwe, Jordan and Libya respectively.*

4.0 EMPIRICAL MODEL AND METHODOLOGICAL APPROACH

In line with the modified Vargas-Silva and Huang (2006) theoretical framework, a dynamic panel-data model is formulated based on Blundell and Bond (1998) Generalised Method of Moment (GMM) estimation procedure. Equation (1) constitutes the baseline specification of the empirical 'system' dynamic panel-data model involving the 36 sampled SSA countries:

$$R_{it} = \alpha_i + \rho R_{i,t-l} + x'_{it}\beta + \varepsilon_{it} \qquad \textbf{(1)}$$

where the residuals (ε_{it}) are white noise such that $\varepsilon_{it} \sim N(0, \sigma_\varepsilon^2)$ and $|\rho| < 1$; $i = 1, 2, 3, ..., N$ is an index for individual sampled SSA countries, implying $N = 36$; $t = 1, 2, 3, ..., T$ is an index for time-variant periods, in this case, years, so that $T = 10$ for decade-based estimations such as 1980-89, 1990-99, and 2000-09; whilst $T = 30$ for the overall-study period, 1980-2009. The endogenous variable R is a measure of migrant remittances. When deflated by population, R is redefined as REMPC in the specific estimated models. In determining the factors that influence the actual volume of remittances received by SSA, the natural logarithmic form of the endogenous variable (lnREM) was used. Macroeconomic factors influencing migrant remittance inflows as a percentage of GDP (REMGDP) were also explored to make room for comparison with previous studies.

x'_{it} as row vector of explanatory variables excluding the lagged dependent variable, has the dimension k where $k = n \times 1$ with n being the number of exogenous variables. The exogenous variables are real deposit interest rate of a typical SSA country (RIR), real exchange rate (RXR), migrant's income (MGY), family income(FMY), home-country CPI-based inflation rate (INF), bank credit to the private sector as a percentage of GDP in the home country (PSC) and institutional quality (INS). For the overall sample, a dummy (D1) was introduced to capture post-September 11, 2001 such that $D1 = 0$ for 1980-2001, and $D1 = 1$ for 2002-2009. The introduction of this time dummy (D1) is also important as it helps to prevent any possible cross-individual correlation or contemporaneous correlation. ρ unknown parameter of the lagged endogenous variable; β unknown parameter vector of the k exogenous variables; l is the number of significant lags carried by the endogenous variable; and α_i individual specific fixed effects. This model is also based on the assumptions that: (i) the error term is orthogonal to the exogenous variables so that, $E(x'_{it}\varepsilon_{it}) = 0$; (ii) the error term $(i.i.d)$ is uncorrelated with the lagged endogenous variable implying that

$E(R_{i,t-1}\varepsilon_{it}) = 0$; and (iii) the exogenous variables might be correlated with the individual effect in which case $E(x'_{it}\alpha_i) \neq 0$.

The choice of the dynamic panel-data model is informed by the fact that data on remittance inflows in most SSA countries are more consistently available across countries only in recent years such that the panel has small T and large N. The small T large N dimension of the panel data is also underscored by the fact that a decade-by-decade analysis was carried out prior to estimating for the overall-study period so as to find out, whether or not, the macroeconomic factors that pull remittances to SSA have been consistent over the past three decades. Another justification for the dynamic panel-data estimation approach is that the relationship under consideration is linear; the left-hand side variable is singular and dynamic; the explanatory variables are not strictly exogenous; there are fixed individual effects; and there are heteroskedasticity and autocorrelation within the cross-sectional units but not across them (Behr, 2003; Roodman, 2006). The selection of the 36 SSA countries was based strictly on data availability.

The study employed Blundell-Bond (1998) 'system' GMM estimation technique, because by allowing for more instruments, the estimated coefficients of the 'system' GMM are not only more efficient, but also more consistent than other alternative techniques of dynamic panel-data analysis. To test for the joint validity of the instruments used, the Sargan-Hansen test for over-identifying restrictions was performed after the GMM estimation (Bond, 2002; Roodman, 2006). Besides, Arellano-Bond test was performed to detect autocorrelation in the idiosyncratic disturbance term, a situation which rendered some lags invalid as instruments.

4.1 Data Measurement, Sources and Expected Impact on Remittances

A low frequency highly-balanced panel data from secondary sources was used in this study. The relevant annual series were collated on 36 SSA countries for the period 1980-2009. The key variable of focus and whose measurement posed the greatest challenge is migrant remittances. The sample size was determined strictly by availability of consistent data on relevant variables particularly migrant remittances. The choice of the start date was contingent upon the desire to cover as many countries as possible for higher representation of the population rather than covering longer periods with limited coverage of sample units. The upper limit of the study period was based on the fact that annual data from the main sources - the World Bank and the IMF - are often published with approximately one year lag.

For this study, migrant remittances is defined as the sum of *workers' remittances* recorded in the current account of the balance of payments (BoP) under the heading "current transfers"; and *compensation of employees* recorded under the "income" sub-category of the current account. Data on migrant remittances were obtained mainly from the *World Development Indicators* (*WDI*) published by the World Bank based on the *Balance of Payments Statistics Yearbook* (*BoPS*) of the IMF. Others sources such as estimates based on IMF country-specific desks were used to fill missing data where possible[3].

The rest of the relevant variables are the traditional macroeconomic variables which were obtained essentially from the *International Financial Statistics Yearbook* / CD-ROM (*IFS*) and *World Economic Outlook (WEO)*, as well as the *WDI*. In Table A1 in the Appendix, further information on the description, measurement and sources of the specific variables used in this study is provided.

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[3] In a recent study, Singh *et al*. (2010) used a similar approach to obtain remittances data on 36 SSA countries.

5.0 EMPIRICAL RESULTS AND DISCUSSIONS

To be able to compare the results from this study with similar studies, estimations were carried out following the common practice where remittances as a percentage of GDP (REMGDP) and USA was assumed to be the migrant host nation. The results of these estimations are presented in Table A2 in the Appendix. These results show that the use of various migrant host countries compares almost effectively with using USA as the migrant host nation except in two cases[4]. In the estimation involving USA as the migrant host nation credit to the private sector and real deposit interest rate of the home are non-positive with the former being statistically insignificant. In the other estimation involving the use of various migrant host nations, private sector credit is a positive determinant of migrant remittances in SSA whilst real deposit interest rate, though bearing the same negative sign as is in the case of the USA as a host nation, is statistically insignificant. On a lesser note, the Wald statistics of 947703.11 and the Arellano-Bond autocorrelation test on the first-difference errors at order-2 probability value of 0.79 for the specific migrant-host nation, compared with 167000 and 0.77 respectively, obtained in the estimation involving USA as a host nation shows that the former estimation is relatively more efficient. Therefore, for policy relevant studies, the use of 'true' migrant host country rather than the generally assumed use of USA as the migrant-host nation should be more appropriate.

In addition to the above, this study has proven beyond doubt that the measure of migrant remittances in *per capita* terms (REMPC) yields a more reliable result than migrant remittances as a percentage of GDP (REMGDP). Table A2 shows that with a Wald statistic of 947703.11 and

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[4] Many reasons can be assigned to the close comparison of the two results. They include: (1) USA might have tougher rules and regulations on international money transfers compared with other migrant host nations for security reasons following 9-11 terrorist attack on the former. (2) Money transfer costs might be cheaper in USA than in the other nations hosting migrants. (3) USA might have a better financial infrastructure with wider migrant access to alternative official cross-border money transfers than the other SSA migrant host nations such as Pakistan, Saudi Arabia, Portugal, Spain, Belgium, France, Germany and Great Britain. (4) SSA migrants in USA might be more skilful and economically viable, and hence with higher incomes than their counterparts in Europe and the rest of the world. (5) The cost of living in USA might be less than the average cost of living in Europe, Pakistan and Saudi Arabia.

Arellano-Bond autocorrelation test probability value of 0.79, the estimated REMPC model is more efficient than the estimated REMGDP model. Apart from this, the signs of the estimated coefficients of the explanatory variables in the REMPC appear more reasonable than those of the REMGDP model. For instance, in the estimated REMPC model, both family income and migrant income have positive impact on migrant remittance inflows in SSA, but these two key variables negatively influence REMGDP in SSA. Furthermore, whereas in the estimated REMPC model inflation and real interest rate have negative effects on remittances in SSA, both have a positive individual effect on remittances received in SSA in the REMGDP model. Again, real exchange rate appreciation promotes remittance inflows in the estimated REMPC model but this variable does explain variations in REMGDP in SSA. The contradictory result might be caused by the fact although SSA is the least recipient of official migrant remittances in absolute and in *per capita* terms; the sub-region emerges as the third highest recipient of remittances in terms of GDP due its low productivity. Clearly, the results produced from REMGDP model is misleading, whilst those obtained from the estimated model involving the natural log of gross migrant remittances received in absolute terms (lnREM) are less efficient than REMPC model. However, from the signs of the estimated coefficients obtained, the results of the REMPC and lnREM models are more comparable and consistent with our *a priori* expectations.

The main result upon which policies are prescribed in this paper is presented in Table 2. The estimation is on migrant remittances received by SSA countries during the overall sample period study (1980-2009) as well as decade-by-decade (1980-89; 1990-99 and 2000-09) estimation was effected. In each of these estimations, remittances were measured in *per capita* terms, which represent the closest proxy for remittances per migrant as revealed in Figure A1. Also, for each of these estimations, arbitrary country was not chosen as a migrant host-country as done in many

previous studies. In other words, this study used non-SSA country with the highest percentage of migrants from the various SSA countries as the migrant host country.

Table 2: Estimated Results of Migrant Remittances

Group variable: Ccode			Number of groups = 36	
Time variable: Year			Observations per group = 26	
Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure				

	1980-89	1990-99	2000-09	1980-2009
Migrant Remittances *per capita* lag 1 (REMPC_1)	1.21508	0.66833	0.94741	0.9625832
	(446.57)***	(380.20)***	(317.54)***	(546.45)***
Migrant Remittances *per capita* lag 2 (REMPC_2)	-0.30830	0.13259	-0.24022	-0.0938861
	(-299.28)***	(163.86)***	(-186.48)***	(-80.49)***
Institutional quality (INS)	-0.35279	-0.35544	-0.91922	-0.4658319
	(-11.21)***	(-14.39)***	(-4.01)***	(-13.18)***
Family income (lnFMY)	15.54592	-9.10698	-7.11860	1.804659
	(43.50)***	(-38.04)***	(-9.88)***	(6.42)***
Migrant income (lnMGY)	2.55504	5.34068	111.068	13.41313
	(5.10)***	(6.43)***	(43.01)***	(12.21)***
Rate of inflation (INF)	-0.23752	0.12132	-0.09028	-0.0345296
	(-9.11)***	(7.82)***	(-4.18)***	(-2.28)**
Bank credit to private sector (PSC)	-0.15912	0.36099	-0.15891	0.0135631
	(-7.95)***	(50.15)***	(-16.17)***	(2.37)**
Real exchange rate (RXR)	-0.00304	-0.00425	-0.00452	-0.0019367
	(-5.59)***	(-5.37)***	(-8.62)***	(-8.44)***
Real deposit interest rate (RIR)	-0.21215	0.06368	0.08024	-0.0246698
	(-9.09)***	(4.10)***	(3.42)***	(-1.48)
Dummy for September 11, 2001 (D1)	……….	……….	……….	5.282013
	……….	……….	……….	(81.28)***
Constant term (constant)	-112.028	2.56537	-104.2971	-139.8153
	(-34.36)***	(0.30)	(-41.12)***	(-13.60)***

Number of instruments	51	51	51	442
Number of observations	288	285	286	1003
Wald $\chi^2(\bullet)$	[9]; 654000***	[9];173000***	[9]; 388000***	[10];947703.11***
Arellano-Bond test for zero autocorrelation in first-difference errors (order 2):				
	-1.1085{0.27}	-1.6198{0.11}	-0.7091{0.48}	-0.2703{0.79}
Sargan-Hansen test of over-identifying restrictions:				
$\chi^2(\bullet)$	[41];24.10{0.98}	[41];29.07{0.92}	[41];28.39{0.93}	[431];31.06{0.99}

Source*: Author's estimation* ***/**** denotes 5 percent and 1 percent respectively.*

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Each of the estimated results presented in Table 2 comprised 36 countries with 51 and 442 valid instruments for decade-based analysis and the overall study period analysis respectively. The number of observations for the various decade-based analyses ranged between 285 and 286, whilst 1003 was reported for the overall study period analyses. The probability of the Wald statistic for each estimated model was 0.000; suggesting that, for the strongly balanced panel-data empirical models, each regressand was jointly explained by the set of regressors at one percent level of statistical significance. The various test statistics reported by the Arellano-Bond point to the fact that, at one percent level of statistical significance, the idiosyncratic residual generated from the two-step Blundell-Bond system GMM estimation does not suffer from second-order autocorrelation in any of the estimated results. To provide further proof that the estimated models are statistically efficient with unbiased and reliable estimated parameters, the Sargan-Hansen test for over-identifying restrictions was conducted. The reported Sargan-Hansen test statistic for each estimated model confirms the selected instruments for each empirical model as valid, and none of the estimated models suffered from endogeneity bias.

The estimated results on the macroeconomic determinants of official migrant remittance inflows in SSA presented in Table 2 shows that current remittances sent by SSA migrants is determined by past remittances, migrant income and home country factors *viz.* institutional quality, family income, rate of inflation, credit to the private sector, real bilateral exchange rate, and real deposit interest rate. Apart from these, tougher regulations aimed at clamping down on the use of informal money transfer channels by migrants has, since 2002, contributed to the increasing inflow of official remittances to SSA in recent years. The two most important determinants of official migrant remittances to the SSA over the 1980-2009 period are the growth in real income of the migrant and law enforcement in the migrant's host country that discourages the use of unofficial

money transfer channels to remit. This finding is consistent with previous results obtained by Gupta (2005) for India and Vargas-Silva and Huang (2006) for Mexico and for other migrants in the US.

The amount remitted by a migrant over the immediate past two years also affect the inflow of official remittances. Whilst the immediate past year positively impact on the current level of migrant remittance inflows, the impact of the past two years is negative on current level of official remittances received by the sub-region. This seems to support the view that new migrants often remit more in the initial stages of their migration when the social ties and nostalgia of home are strong. Therefore, from an individual migrant's perspective, remittances are likely to decay overtime, and indeed, after a second of generation of migrants, so that the stability in the flow of remittances is mainly sustained by a new generation of migrants as found by Elbabdawi and Rocha (1992) and Lozano-Ascenio (1993).

Turning to the domestic macroeconomic environment, overall, the leading determinant of official migrant remittances is improved economic performance which is reflected in higher growth in real GDP *per capita* (FMY). This could mean migrants driven by self-interest motive remit more funds home as the economic prospects of the home country improves. This finding is in sharp contrast with the results obtained by Singh *et al*. (2010) for 36 SSA countries. The reasons for this contrasting result can be ascribed to differences in the measurement of remittances, scope and methodology. For instance, although in Singh *et al*. (2010), 36 SSA countries were used just as in this study, the dynamic panel-data model which caters for endogeneity was estimated in this study rather than the fixed-effects model. Also, unlike Singh *et al*. (2010), study is wider in scope – covering 1980-2009 compared with 1990-2005 in the case of the former. Again, whilst remittances data in this study is measured consistently to include only workers' remittances and compensation of employees, in Singh *et al*. (2010), measurement of remittances was inconsistent across countries with

migrant transfers used either as a single measure of remittances for some countries or as a third component of remittances, depending upon its availability. Furthermore, remittances *per capita* (the closest approximation for remittances per migrant) were used in this study rather than remittances as a percentage of GDP used in Singh *et al*. (2010) (see Table A2 for evidence).

Migrants from the sub-region also tend to remit home for the loss of confidence in their governments as institutional quality negatively impact on migrant remittances. This could imply that the sub-region actually suffers from 'forced' migration due to weak institutions and poor governance so that these 'forced migrants' are under pressure to remit more funds home as institutional quality becomes worse. In this case, altruistic motive of remittances outweighs the self-interest motive as a driving force behind remittance inflows. This finding is in contrast with Singh *et al*. (2010) who found a positive effect of institutional quality on 36 SSA countries as a result of variation in coverage, modelling technique, and the measurement of the remittances as aforementioned.

Lower rate of inflation, stronger real bilateral exchange rate, and higher access of the private sector to bank credit at home are important factors influencing higher inflows of officially reported remittances in SSA over the period, 1980-2009. Official migrant remittances received in *per capita* terms by SSA increased by 1.805 percent when family income goes up by one percent. With a one percent reduction in the rate of inflation, remittances *per capita* received in SSA increased by 0.035 percent. A one percent increment in private sector credit as a ratio of GDP in SSA has the tendency of pulling at least 0.014 percentage rise in migrant remittances received *per capita*. This result confirms earlier works by Elbadawi and Rocha (1992), and Adenutsi and Ahortor (2008).

A marginal appreciation of the real exchange rate of the domestic currency of a typical SSA country against the national currency of its migrant host-country by 0.002 points increases the inflow of official remittances in SSA. Though this finding is in affirmation of the result obtained by Lueth

and Ruiz-Arranz (2007), it is in contrast with Adenutsi and Ahortor (2008) for Ghana; and Singh *et al*. (2010) for 36 SSA countries who found depressing effects of appreciation of local currency on remittances received. Apart from differences in estimation techniques and scope as regards the sample size or study period, unlike real bilateral exchange rate used in this study, nominal exchange rate was in Adenutsi and Ahortor (2008), whilst Singh *et al*. (2010) used real effective exchange rate (REER).

For this overall period, real deposit interest rate is not statistically significant in explaining variations in *per capita* migrant remittances received by SSA. This result is in contrast with those obtained by Lianos (1997) for Greece, and Adenutsi and Ahortor (2008) for Ghana. The contradiction in the result obtained in this study and aforementioned could emerge from the differences in analytical techniques and scope of the study. Lianos (1997), for instance, used real discount rate or real deposit rate; but Adenutsi and Ahortor (2008) used nominal official rate; whilst this study used the real deposit rate.

Consistent with the result obtained by Singh *et al*. (2010) for 36 SSA countries, this finds that, for the overall study period, 1980-2009, official remittance inflows are positively influenced by the level of financial development as reflected in the access of the private sector to bank credit. A one percent improvement in private sector access to bank credit can stimulate about 0.014 percent rise *per capita* migrant remittance inflows.

With the exception of initial remittances, institutional quality, growth in migrant income and real bilateral exchange rate[5], this study has shown that family income, rate of inflation, bank credit to private sector and real deposit interest rate have varying impact on migrant remittances *per capita* received by SSA countries in the 1908s, 1990s and the 2000s. For instance, increases in family

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[5] Even in this case, in absolute terms, there has been consistent increasing impact of institutional quality, migrant income and real bilateral exchange rate on remittances *per capita*.

income promoted higher inflows of migrant remittances in the 1980s, but impeded the inflow of remittances in the 1990s and the 2000s. In the 1980s, increases in real deposit rate, private sector credit, and rate of inflation impeded higher inflow of migrant remittances. In the 1990s, however, higher rate of inflation in the home country as well as higher real deposit interest rate and private sector credit positively impacted on the inflow of official remittances in SSA. Real deposit interest rate maintained its positive impact on remittances between 2000 and 2009, whereas higher rates of inflation and private sector credit were deterrent to migrant remittances in SSA. Evidently, the impact of home country macroeconomic variables on migrant remittance flows to SSA in the 1980s and the 2000s was quite different from the 1990s, probably because, as revealed the Figure 1, migrant remittance flows to SSA was the most volatile in the 1990s.

6.0 CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

This paper examined the macroeconomic factors that influence the flow of remittances to SSA. Given the results obtained, the study concludes generally that:

i. Both host-country and home-country macroeconomic environments play a key role in the amount of official remittances received in SSA during the past 30 years. Of these, however, host country variables notably migrant income and the enforcement of laws and regulations banning the use of informal channels in remitting seem more crucial.

ii. Remittances from SSA migrants are driven by both altruism and self-interest motives, but the dominance of these motives overlap each other overtime. This might be the underlying reason why in the 1980s, the pattern of remittance flows was countercyclical; but has since 1990s been somewhat procyclical.

iii.   Unlike in the past, in more recent years (2000-2009), stronger institutions and higher real deposit rates are crucial to receiving increased migrant remittances through official channels. In other words, as real deposit rate and the peace and governance issues are improved at home, all other things remaining equal, SSA migrants will be induced to remit more funds through official money transfer channels.

iv.   Overall, higher growth in family income, improved access of the private sector to bank credit, and stronger domestic currency in the international market are indispensable to attracting higher inflows migrant remittances.

v.   From the 'positive' changing trend in the flow of official remittances to SSA, it can be concluded that financial market liberalisation which has led to higher competition among financial institutions including banks could be an underlying factor in remittance-recipient countries. For instance, through the implementation of financial market liberalisation programme in SSA, most banks within the sub-region underwent restructuring towards profitability. Consequently, real deposit interest rates which, hitherto, were negative are now generally positive whilst government directed credit which in the past crowded-out private sector borrowing has reduced to encourage the business sector, and indeed, migrants to be saving and investing at home.

The conclusions of this study are imperative with a number of relevant policy implications on devising strategies for attracting higher inflow of remittances to SSA through the formal financial sector. The key policy implication is that since host-country factors are exogenous to remittance-recipient countries and these countries host migrants from other parts of the developing world with higher receipts of remittances, SSA cannot attribute its low receipt of officially reported remittances merely to macroeconomic factors in the migrant host-countries. Impliedly, the low receipt of migrant

remittances by SSA countries should be ascribed to absence of relevant and effective macroeconomic policies on the mobilisation of remittances from their citizens living abroad. Explicitly, countries that are receiving higher official migrant remittances today are doing so largely because these countries have put some policy measures in place for this specific purpose. Therefore, to mobilise increased remittances from SSA migrants through official channels, this study recommends that SSA countries should design attractive policies that would motivate its nationals living and working outside the sub-region to conveniently remit home. More specifically, policymakers in SSA should:

i. advance stable and credible macroeconomic policy environment through reduction in the rate of inflation, improvement in economic performance which reflects in higher real *per capita* income, and stronger national currency in the international financial market so as to encourage private sector savings and investment. Self-interest seeking migrants may be encouraged to remit more funds home for investment purposes if the macroeconomic conditions at home are favourable or investment friendly. For instance, with higher family incomes, the private sector can be encouraged to invest more as the domestic market has expanded;

ii. rigorously pursue the financial market liberalisation programmes underway which are expected to deregulate exchange rates, promote competition among banks and other like-service providers including post offices working with money transfer operators (MTOs). In SSA, the most notable MTOs are Western Union and MoneyGram for which many financial institutions especially commercial banks and post offices act as intermediating agents. When

financial liberalisation leads to competition in the financial system, financial institutions are expected to become more efficient resulting in reduced money transfer fees, introduction of innovative and diversified financial products and services, expansion and wider coverage with more outlets at home and abroad. This is critical because when SSA migrants find the patronage of informal money transfer channels cheaper, safer, more convenient and accessible, the sub-region can hardly improve upon the mobilisation of remittances through the formal transfer channels from its nationals living abroad;

iii. roll out strategic policies under the pursuit of financial liberalisation programme that will motivate commercial banks to reach out to migrants in their host countries. For instance, commercial banks can open outlets in major migrant host-nations, offer preferential interest rates on remittances saved, convert asset holdings local currencies at a premium rate, and invest saved remittances in high-yielding financial instruments. It should also be feasible for local banks to open a joint account for migrants and their main target remittance-recipients through banks can even pay 'assured remittances' on behalf of migrants under special terms and conditions;

iv. through the pursuit of financial liberalisation, should not only stabilise the local currency in the international markets, but also, to integrate foreign exchange markets so as to abolish the existence of dual exchange rates, which hitherto, creates incentive for migrants to use unofficial channels for transferring funds. Also, high exchange rate volatility can provide an incentive for currency hedging or hoarding which can ultimately reduce the patronage of using official channels to remit; and

v. design special incentive packages, including zero tax on remittances received, special remittance agreement with major migrant host countries, regulation of informal intermediaries in the money transfer market, issue of special foreign currency denominated bonds targeted at the Diaspora communities, establish 'remittance banks' at home with branches, and creating opportunity for social security contributions from abroad, to attract its emigrants to remit funds home using official channels.

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APPENDIX

Table A1: **Data Description, Measurement and Sources**

Variable	Notation	Description, Measurement and Sources
Dependent Variables		
Remittances	*REM*	The sum of *workers' remittances* and *compensation of employees*. **Source**: Mainly World Bank's *World Development Indicators* (*WDI*) based on IMF's *Balance of Payments Statistics* (*BoPS*) and author's compilations from country-specific desks under the African Department of the IMF.
Remittances as ratio of GDP	*REMGDP*	**Source**: Author's computation based on reported data in *WDI*, *BoPS* and IMF's *World Economic Outlook* (*WEO)*.
Remittances *per capita*	*REMPC*	**Source**: Author's computation based on reported data in *WDI*, *BoPS* and *WEO*.
Explanatory Variables		
Lagged dependent	$(\bullet)_{-1}^{+}$	The immediate past values of the dependent variable. **Source**: Author's computation.
Inflation rate	$INF^{+/-}$	Rate of growth in annual average consumer price index. **Source**: *WDI*, *IMF*'s *International Financial Statistics (IFS)*, and *WEO*
Real exchange rate	$RXR^{+/-}$	The annual average value of the national currency of a sampled SSA country in real terms of the national currency of the migrant-host country. **Source**: Author's computation based on data from *WDI*, *IFS* and *WEO*.
Migrant income	MGY^{+}	Annual growth of real *per capita* GDP of a typical non-SSA migrant host country. **Source**: *WDI* and *WEO*.
Family income	FMY^{-}	Annual growth of real *per capita* GDP of a typical SSA country. **Source**: *WDI* and *WEO*.
Real Deposit Interest Rate	RIR^{+}	Average annual deposit rate of a typical home SSA country less minus average annual CPI-based inflation rate. **Source**: Author based on *WDI*, *IFS*, *WEO* and Central Banks of selected countries.
Domestic credit to private sector as ratio of GDP	$PSC^{+/-}$	Total domestic credit to the private sector by the financial system as a ratio of GDP. **Source**: *WDI* and the Central Bank website of selected sampled countries.
Institutional quality index	$INS^{+/-}$	A polity2 index used to capture the qualities of democratic governance and institutions in a typical home SSA country. It ranges between -10 for low democratic governance (including dictatorship and autocratic regimes) and weak institutions, and +10 for high democratic governance and strong institutions. **Source**: Marshall and Jaggers (2011)
Post-September 11, 2001	$D1^{+}$	A dummy to capture post-September 11, 2001, when the US and other migrant-host countries improved regulations on international money transfers, which has discouraged migrants from using informal channels to remit. **Source**: *Author's construction*.

Note: *The a priori sign is indicated by +/- by the notation column of each variable. April 2011 Edition of BoPS, IFS, and WEO was used whereas in the case of WDI it was essentially October 2010.*
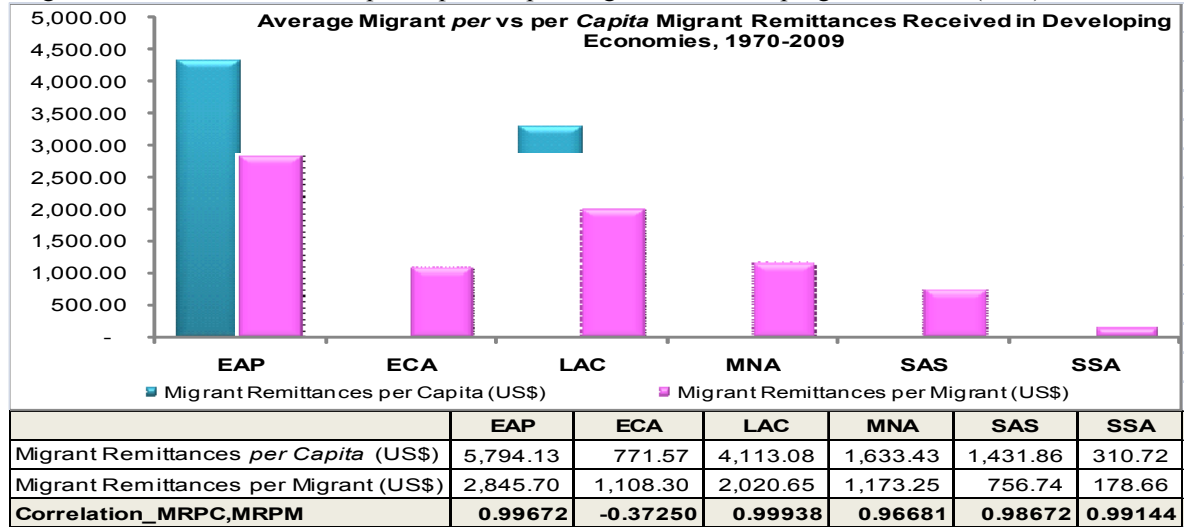
Table A2: Estimated Results of Migrant Remittances Flows to SSA (1980-2009)

Group variable: Ccode   Number of obs = 1003

Time variable: Year   Number of groups= 36

Obs per group = 26

Two-Step Estimation by Blundell-Bond System Dynamic Panel-Data Procedure

	REMPC	lnREM	REMGDP	REMPC_USA
Remittances per capita lag 1 (•_1)	0.96258	0.70618	1.03683	0.97803
	(546.45)***	(12.72)***	(128.77)***	(347.67)***
Remittances *per capita* lag 2 (•_2)	-0.09389	0.06619	-0.09396	-0.09237
	(-80.49)***	(2.17)**	(-24.81)***	(-86.78)***
Institutional quality (INS)	-0.46583	-0.00254	-0.02907	-0.36499
	(-13.18)***	(-0.89)	(-6.16)***	(-23.64)***
Family income (lnFMY)	1.80466	0.2252	-0.84495	2.58846
	(6.42)***	(0.56)	(-6.16)***	(11.52)***
Migrant income (lnMGY)	13.41313	0.86465	-1.63547	7.8934
	(12.21)***	(7.19)***	(-2.92)***	(8.73)***
Rate of inflation (INF)	-0.034530	-0.00168	0.01489	-0.05095
	(-2.28)**	(-2.52)***	(11.19)***	(-2.93)***
Bank credit to private sector (PSC)	0.01356	-0.00094	0.003798	-0.00316
	(2.37)**	(-0.32)	(3.47)***	(-0.56)
Real exchange rate (RXR)	-0.00194	0.00004	0.000016	-0.01850
	(-8.44)***	(1.11)	(0.31)	(-3.52)***
Real deposit interest rate (RIR)	-0.02467	-0.00214	0.015999	-0.04701
	(-1.48)	(-1.67)*	(12.20)***	(-2.78)***
Dummy for September 11, 2001 (D1)	5.28201	0.18921	0.5818861	6.13673
	(81.28)***	(6.96)***	(41.51)***	(40.97)***
Constant term (constant)	-139.8153	-5.96106	21.06182	-95.38696
	(-13.60)***	(-2.33)**	(4.39)***	(-10.77)***
Number of instruments	442	442	442	442
Wald $\chi^2(10)$	947703.11***	26236.63***	102000***	167000***
Arellano-Bond test for zero autocorrelation in first-difference errors (order 2):				
	-0.2703{0.79}	-0.6561{0.51}	-1.0263{0.30}	-0.29135{0.77}
Sargan-Hansen test of over-identifying restrictions:				
$\chi^2(431)$	31.0591{0.99}	33.1207{0.99}	33.3464{0.99}	31.4044{0.99}

Source: *Author's estimation*   */*/*** denote statistical significance at 10%, 5% and 1% respectively*

Figure A1:

Migrant Remittances Received *per capita* vs per Migrant in Developing Economies (US$), 1970-2009

	EAP	ECA	LAC	MNA	SAS	SSA
Migrant Remittances *per Capita* (US$)	5,794.13	771.57	4,113.08	1,633.43	1,431.86	310.72
Migrant Remittances per Migrant (US$)	2,845.70	1,108.30	2,020.65	1,173.25	756.74	178.66
Correlation_MRPC,MRPM	**0.99672**	**-0.37250**	**0.99938**	**0.96681**	**0.98672**	**0.99144**

Source: Authors based on WDI (October 2010). Notes: 5-year data ranging 1970, 1975,....2005. MRPC represents migrant remittances per capita whilst MRPM denotes (migrant) remittances per migrant