

**DO INTERNATIONAL REMITTANCES AFFECT POVERTY IN AFRICA?\***

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## ABSTRACT

International remittances flowing into developing countries are attracting increasing attention because of their rising volume and their impact on recipient countries. In 2007, estimates indicate that such remittances to developing countries totaled US\$240 billion out of the global amount of US\$318 billion. Though those flows are under-reported, a high proportion of the reported flows went to Africa, indicating that the continent has been part of the overall rising global trend. Between 2000 and 2007, remittances to the continent increased by more than 141 percent, from US\$11.2 billion to nearly US\$27 billion. Studies on the impact of international remittances had been confined mostly to Latin America and South Asia, where remittance volumes swamp those going to Africa. Indeed, few studies have examined the impact of international remittances on poverty in a broad panel of African (Sub-Saharan and North African) countries. This paper tries to fill this lacuna by constructing a panel data set on poverty and international remittances for African countries. It essentially examines the impact of international remittances on poverty reduction in African countries using panel data of 33 countries over the period 1990-2005.

We find that international remittances – defined as the share of remittances in country GDP – reduce the level, depth, and severity of poverty in Africa. But the size of the poverty reduction depends on how poverty is being measured. After instrumenting for the possible endogeneity of international remittances, we find that a 10 percent increase in official international remittances as a share of GDP leads to a 2.9 percent decline in the poverty headcount or the share of people living in poverty. Also, the more sensitive poverty measures – the poverty gap (poverty depth) and squared poverty gap (poverty severity) – suggest that international remittances will have a similar impact on poverty reduction. The point estimates for the poverty gap and squared poverty gap suggest that a 10 percent increase in the share of international remittances will lead to a 2.9 percent and 2.8 percent decline, respectively, in the depth and severity of poverty in African countries. Regardless of the measure of poverty used as the dependent variable, income inequality (Gini index) has a positive and significant coefficient, indicating that greater inequality is associated with higher poverty in African countries, much in conformity with the literature. Similar results were obtained for trade openness. In the same vein, per capita income has a negative and significant effect on each measure of poverty used in the study. Our results also show that inflation rates positively and significantly affect poverty incidence, depth and severity in Africa. In all three poverty measures, the dummy variable for Sub-Saharan Africa is strongly positive – and strongly negative for North Africa. The policy implications of these results are discussed.

## I. INTRODUCTION

International remittances flowing into developing countries are attracting increasing attention because of their rising volume and their impact on recipient countries. In 2007, estimates indicate that such remittances to developing countries totaled US\$240 billion out of the global amount of US\$318 billion. Though those flows are under-reported, a high proportion of the reported flows went to Africa, indicating that the continent has been part of the overall rising global trend. Between 2000 and 2007, remittances to the continent increased by more than 141 percent, from US\$11.2 billion to nearly US\$27 billion.

The purpose of this paper is to examine the impact of international remittances on poverty in African countries. In the past, a number of studies have examined the effect of international remittances on poverty in specific village or country settings, but we are not aware of any studies which explicitly examine the impact of this phenomenon on poverty in Africa as a whole (Sub-Saharan Africa (SSA) and North Africa combined). Few studies with marginal reference to SSA use SSA dummies and/or interaction of same with the remittances variable. Two factors seem to be responsible. The first is a lack of poverty data; it is quite difficult to estimate accurate and meaningful poverty headcounts in a number of African countries as in other developing countries. The second factor relates to the nature of data on international remittances. Available data on international remittances do not include the large (and unknown) sum of remittance monies which are transmitted through private, unofficial channels. As a result of these data problems, a host of key policy questions remain unanswered. Exactly what is the impact of international remittances on poverty in Africa? This question has become very crucial given that preliminary assessments of progress towards the Millennium Development Goals (MDGs) suggest that while a few African countries are on track to achieving the MDGs (Table 1), the majority are either off track or slipping back. For instance, estimates have shown that at current trends, with the exception of North Africa and South Africa, few countries are likely to meet the goal of reducing the number of people living in poverty by half by 2015.

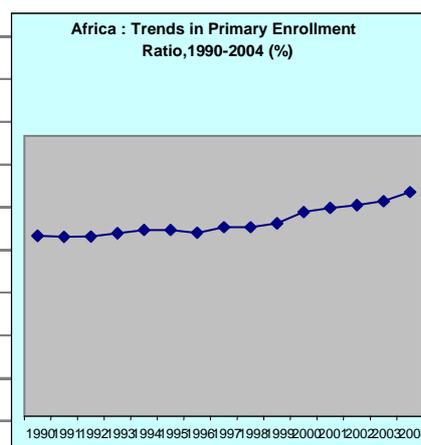
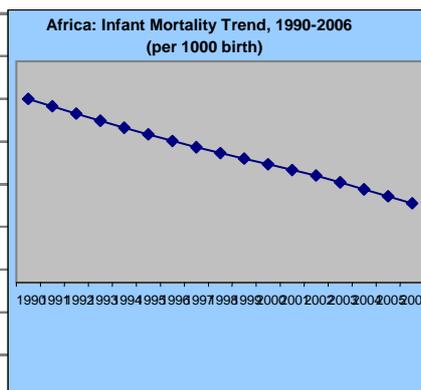
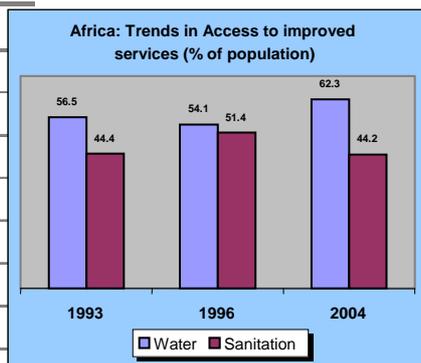
One of the targets for reducing extreme poverty in Africa involves halving the proportion of people living in absolute poverty from 48 percent in 1990 to 24 percent by 2015. So far, it is only the North African countries of Algeria, Egypt, Libya, Morocco and Tunisia as well as Mauritius that have already met this target. On the African continent as a whole, little progress has been made, as the proportion of people living below the poverty line of \$1 per day in Africa currently stands at 45 percent (Table 2) – the highest in the world. If current trend continues, the proportion of people living in extreme poverty in Africa would be 39 percent by 2015 – far greater than the targeted 24 percent.

This paper proposes to answer the question relating to the impact of international remittances on poverty in Africa by using a data set composed of 33 African countries. This data set includes African countries (Sub-Saharan and North Africa) for which reasonable information on poverty, inequality, international remittances could be assembled.

The remaining parts of this paper are organized as follows. Section II sets the stage by examining the inflow and characteristics of international remittances to African countries. Section III reviews the findings of recent empirical (village-, country-level, cross-national and panel) studies on the relationship between international remittances and poverty. Section IV then presents the method and data set. Section V describes the main econometric findings on the relationship between international remittances and poverty. The final section concludes with policy implications, including suggestions on how to enhance the effectiveness of remittances in Africa.

**Table 1: Africa - Selected Social Indicators for MDG Monitoring**

	1990	ref. year	2006	ref. year
<b>Total Population (Millions)</b>	634.9		924.3	
of which Sub-Saharan Africa (Millions)	516.6		767.4	
<b>Population living on less than \$1 (%)</b>				
Africa	38.7		34.3	2004
Sub-Saharan Africa	46.8		41.1	2004
<b>Poverty Gap at \$1 a Day (%)</b>				
Africa	15.4		14.0	2004
Sub-Saharan Africa	19.5		17.5	2004
Prevalence of under 5 Malnutrition (%)	...		24.7	2001
<b>Expand Primary Education</b>				
Net Primary Enrolment Ratios (%)	...		70.6	2004/05
Cohort Reaching Grade 5 (%)	71.5		74.9	2004/05
Youth Literacy Rates (% of ages 15-24)	67.3		79.8	
<b>Improve Gender Equality in Education</b>				
Primary: Girls to Boys Ratio (%)	81.6		87.2	2004/05
Secondary: Girls to Boys Ratio (%)	77.4		75.5	2004/05
15-24 Year Olds Female to Male Literacy Ratio	0.77		0.90	
<b>Lower Mortality Rates</b>				
Infant Mortality Rate per 1,000	99.0		82.5	
Under 5 Mortality Rate per 1,000	152.0		137.7	
Maternal Mortality Rate per 100,000	691.0	1990-96	608.5	2001-05
<b>Enhance Reproductive Health</b>				
Births Attended by Skilled Health Staff (%)	41.0		47.7	2000-04
Contraceptive Prevalence Rate (% of women ages 15-49)	...		26.6	2003-05
Prevalence of HIV in Female (% ages 15-49)	...		6.4	end-2005
<b>Access to Improved Services</b>				
Access to Portable Water (% of Population)	56.5	1993	62.3	2004
Access to Sanitation (% of Population)	44.4	1993	44.2	2004



Sources : ADB Statistics Department, Poverty Indicators are from the World Bank, PovcalNet Database

## II. REMITTANCES TO AFRICA

### 2.1. Recent Trends in Remittances to Africa

Recorded worldwide flows of remittances stood at US\$297 billion in 2006 (Table 3), up from US\$263 billion recorded in 2005. Of the 2006 amount, remittances sent home by migrants from developing countries stood at US\$221 billion, up from \$191 billion in 2005 and more than double the level reached in 2000.

Estimates indicate that worldwide flows of remittances reached US\$318 billion in 2007, out of which US\$240 billion went to the developing world. These amounts reflect only officially recorded transfers—the actual amount including unrecorded flows through formal and informal channels is believed to be significantly larger. Recorded remittances are more than twice as large as official

aid and nearly two-third of foreign direct investment flows to developing countries. In particular, remittance flows to Africa are grossly underestimated, with wide gaps in data reporting in many countries.

As Table 3 and Figure 1 show, Latin America and the Caribbean (LAC) region remains the largest recipient of recorded remittances, followed by East Asia and the Pacific region, South Asia, Europe and central Asia, Africa (courtesy of favorable North African inflows), and the Middle East, in that order. Indeed, remittance inflows to North Africa continued to dominate those to Sub-Saharan Africa on annual basis. For example, in 2006, flows to North Africa was US\$14.9 billion as against only US\$10.3 billion to the whole of Sub-Saharan Africa (Table 3). Figure 2 shows their percentage shares in 2007.

**Table 2: Africa - Poverty Trends 1990 - 2007**

	1990	1996	1999	2002	2004	2006 <sup>4</sup>	2007 <sup>4</sup>
<b>Total Population (millions) *</b>							
North Africa	118.2	132.6	139.5	146.7	151.8	156.9	159.5
Sub-Saharan Africa	516.6	606.9	653.8	701.4	733.9	767.4	784.6
Total Africa	634.9	739.5	793.3	848.1	885.6	924.3	944.2
<b>Population living on less than \$1 (% of total population)</b>							
North Africa <sup>1</sup>	3.4	2.7	2.5	1.9	1.7	1.5	1.4
Sub-Saharan Africa <sup>2</sup>	46.8	47.8	45.9	42.6	41.1	39.6	38.9
Total Africa <sup>3</sup>	38.7	39.7	38.3	35.6	34.3	33.1	32.6
<b>Estimated number of Poor - population living on less than 1\$ (million)</b>							
North Africa	4.1	3.6	3.5	2.8	2.6	2.4	2.3
Sub-Saharan Africa	241.6	290.2	300.3	299.0	301.5	303.9	305.1
Total Africa	245.7	293.8	303.8	301.8	304.1	306.3	307.4

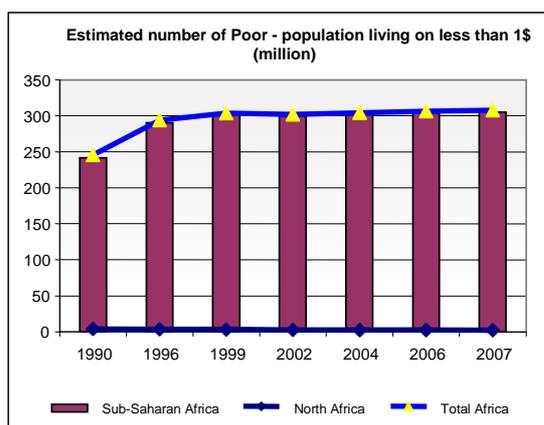
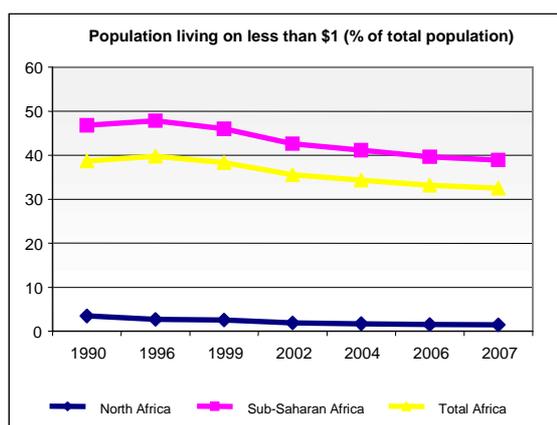
<sup>1</sup> : World Bank, POVCAL estimates based on data available for for 4 countries in North Africa

<sup>2</sup> : World Bank POVCAL estimates based on data available for for 30 countries in Sub Saharan Africa

<sup>3</sup> : ADB estimates based on the estimated number of poor for North Africa and for Sub-Saharan Africa

<sup>4</sup> : ADB estimates based on the assumption that the delining trend in poverty observed in 2002-2004 is maintained over the projection period of 2006-2007.

\* Source: UN Population Division, 2004 Revision



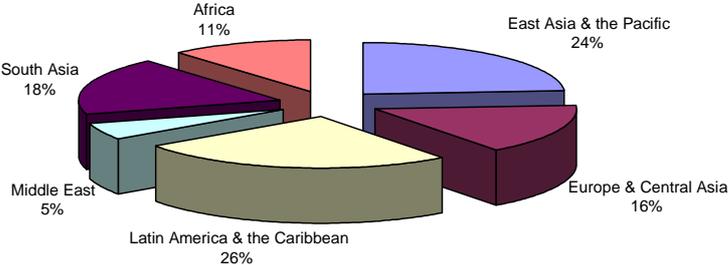
Sources : ADB Statistics Department; Poverty Indicators are from the World Bank, PovcalNet Database

**Table 3: Global Flows of International Migrant Remittances (US\$ billion)**

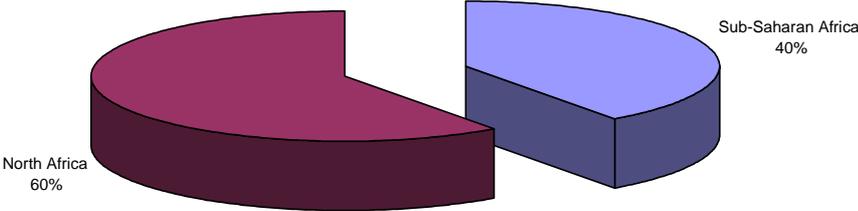
<b>INFLOWS</b>	2000	2001	2002	2003	2004	2005	2006	2007e	Change 2006-07 (%)	Change 2002-07 (%)
All developing countries	85	96	116	144	161	191	221	240	8	107
East Asia and the Pacific	17	20	29	35	39	47	53	58	10	97
Europe and Central Asia	13	13	14	17	21	29	35	39	10	175
Latin America and the Caribbean	20	24	28	35	41	49	57	60	6	115
Middle-East	6.6	7.8	7.9	9.6	11.5	13.0	14.9	16.2	9	105
South Asia	17	19	24	30	29	33	40	44	10	81
Sub-Saharan Africa	5	5	5	6	8	9	10	11	5	116
<b>Africa (SSA &amp; North Africa)</b>	<b>11.2</b>	<b>12.5</b>	<b>12.9</b>	<b>15.6</b>	<b>19.5</b>	<b>22.3</b>	<b>25.2</b>	<b>27</b>	<b>7</b>	<b>109</b>
Low-income countries	22	26	32	39	40	46	56	60	9	88
Middle-income countries (MICs)	63	70	84	105	121	145	166	179	8	114
Lower MICs	43	48	55	68	76	90	102	112	10	103
Upper MICs	20	22	29	37	45	55	63	67	6	136
High income OECD	46	50	53	60	67	68	72	74	3	40
High income non-OECD			1	2	3	4	4	4	1	298
World	132	147	170	206	231	263	297	318	7	87
<b>OUTFLOWS</b>	2000	2001	2002	2003	2004	2005	2006		Change 2005-06 (%)	Change 2002-06 (%)
All developing countries	12	14	20	24	31	36	44		23	226
High income OECD	76	83	88	100	113	124	136		10	64
High income non-OECD	22	22	23	23	22	24	27		15	20
World	110	118	131	147	166	183	207		13	74

Source: Authors' Calculations from Ratha et al (2007) and Guinigundo (2007).

**Figure 1: International Remittance Recipients By Region in 2006 (%)**



**Figure 2: Comparative Percentage of Recorded International Remittance Flows to SSA and North Africa in 2007**



In Africa, aid flows are considerably higher than remittance receipts (Figure 3). However, the percentage increase since 2000 had almost been the same. For example, between 2000 and 2006, aid flows to the continent increased by 94 percent while recorded remittances rose by 95.4 percent.

The top 10 recipients list is dominated by North African countries. As Figure 4 shows, the top 10 recipients of international remittances in 2006 (in dollar terms) include Morocco, Egypt, Nigeria, Algeria, Tunisia, Sudan, Kenya, Uganda, South Africa, and Senegal.

As a share of GDP, however, remittances to many of these countries were much smaller in 2006. In contrast, the top recipients in terms of the share of remittances in GDP included many smaller economies such as Lesotho, The Gambia, and Cape Verde, where remittances exceeded ten percent of the GDP. Other countries following these are Guinea-Bissau, Togo, Uganda, Senegal, Kenya, and Tunisia, in that order (Figure 5). In addition, while it is true that the African continent as a whole receives more aid than recorded remittances (Figure 3), for countries like Lesotho, Mauritius, Nigeria, Swaziland, and Togo, remittances are consistently greater than official development assistance (ODA).

**Figure 3: International Remittances and Selected Capital Flows to Africa**

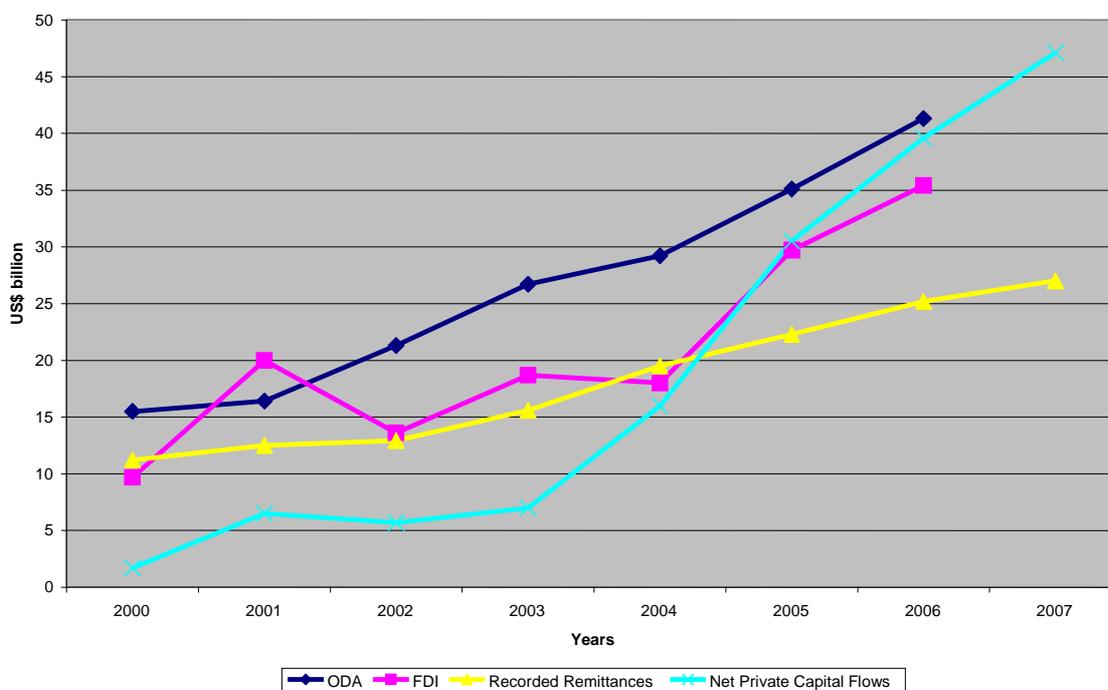


Figure 4: Top Ten African Remittance-Recipient Countries in 2006 (US\$ million)

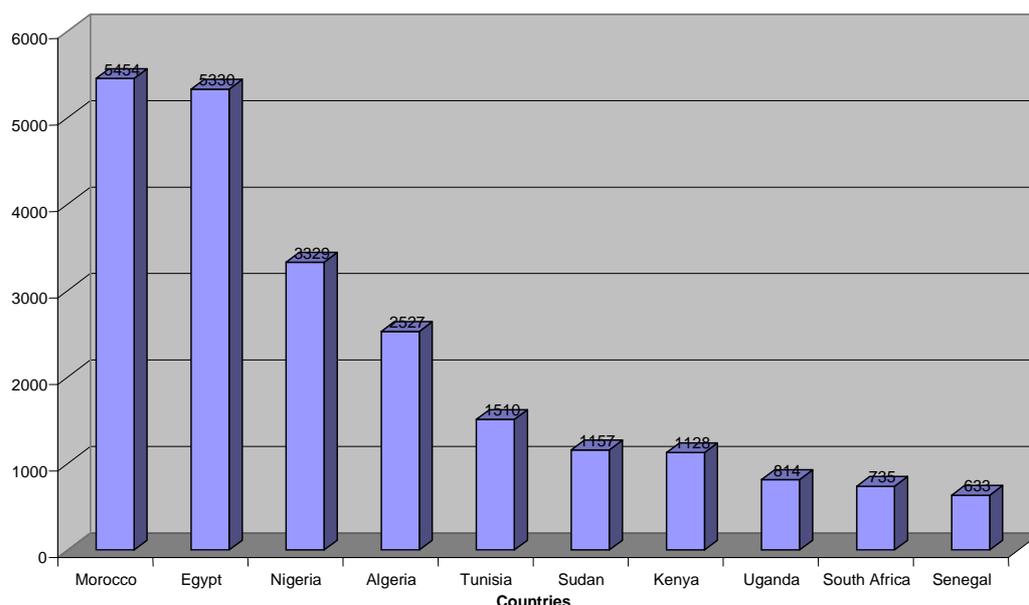
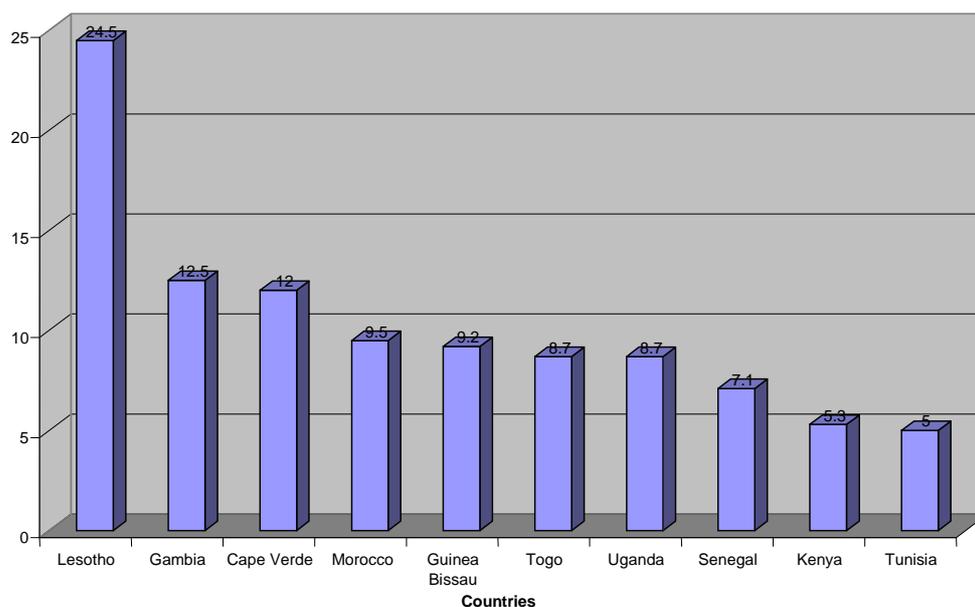


Figure 5: Top Ten African Remittance-Recipient Countries in 2006 (as % of GDP)



## 2.2. Characteristics of Remittances to Africa

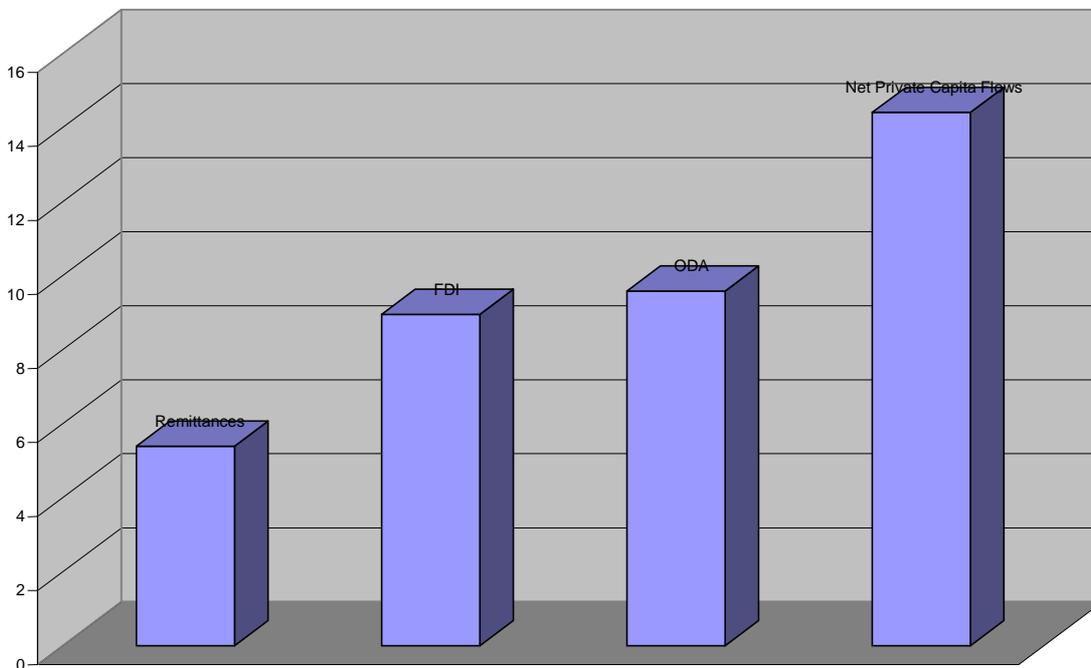
There are two key characteristics related to movements of international remittances in African countries. First, when we plot international remittances with per capita GDP a positive relationship emerges (Figure 6). This implies that international remittances tend to move pro-cyclically relative to the continent's income. Second, from our calculations on volatility, international remittances to Africa are relative stable source of external finance, compared with other external financial flows between 2000 and 2006 (Figure 7). Between 2000 and 2006, the standard deviation of the ratio of international remittances to GDP was 5.39 while that of foreign direct investment (FDI), official development assistance (ODA), and net private inflows stood at 8.95, 9.58, and 14.41, respectively. Indeed, one reason remittances have attracted attention is that they are seen as more

stable than other foreign currency flows to developing countries. This is especially relevant to Africa, where official aid flows have fluctuated considerably from year to year. Remittances to Africa are not just consistently less volatile than official aid, they are also less volatile than FDI, which is usually seen as the most stable private flow (Figure 7).

Figure 6: Africa - Log of Mean Remittances as % of GDP and Log of Mean Per Capita GDP



Figure 7: The Volatility of Financial Inflows to Africa, 2000-2006



### III. REVIEW OF RECENT LITERATURE

#### 4.1 LINKING REMITTANCES TO POVERTY REDUCTION: A FRAMEWORK

This section which is based on extensive literature survey primarily describes the implications of remittances on the economy and society both on a theoretical and empirical framework. In the literature, there are two contrasting views regarding the effects of international remittances on the economy of the labor-sending country: the optimistic view and the pessimistic view. The first one views remittances as mechanisms for economic development while the latter, on the other hand, perceives remittances as an “illness” that weakens the economy (Cattaneo, 2005). Following Capistrano and Sta Maria (2007), the beneficial and detrimental effects of migration and overseas remittances can be classified using three perspectives: at the macro or national level, at the community level and at the household level. At the macro/national level, one of the most significant benefits of the inflows of remittances to a country is that they increase the foreign exchange earnings of the labor exporting country (Ratha, 2003; Pernia, 2006). In addition, workers’ remittances exert a positive impact on the balance of payments of many developing countries as well as promote economic growth, through their direct effects on savings and investment (human and physical capital) and indirect effects through consumption (Cattaneo, 2005; World Bank, 2008) (see Figure 8). Studies such as those of Hanson and Woodruff (2003) and Cox-Edwards and Ureta (2003) have found evidence for “forward” linkages between remittances and human capital formation in Latin America. Also, Ratha (2003) had suggested that remittances that raise the consumption levels of rural households might have substantial multiplier effects because they are more likely to be spent on domestically produced goods. However, as for countries with low GDP remittance receipts can distort the functions of formal capital markets and also destabilize exchange rate regimes through the creation of parallel currency markets (Chimhowu, Piesse and Pinder, 2003).

International remittances can also indirectly promote community development through spillover mechanisms. First, increased consumption of migrant households can generate multiplier effects. If recipient families increase their household consumption on local goods and services, this will benefit other members of the community through the increase in demand which stimulates local production, thereby promoting job creation and local development. Second, remittances are also found to prop up formation of small-scale enterprises, thereby, promoting community development. International remittances ease credit constraints by providing working capital for the recipients to engage in entrepreneurial activities. This results in job creation and enhancement of the development of the remittance-receiving community (Woodruff and Zenteno, 2001). Third, remittances, especially through migrant associations, may also contribute to the creation of new social assets and services and community physical infrastructures such as schools, health centers, roads and other community projects (Ghosh, 2006; Sorensen and Pedersen, 2002). Lastly, and on the negative side, international remittances are found to increase income inequality, especially for the rural dwellers (see, for example Ravanilla and Robleza, 2003; Agunias, 2006; Capistrano and Sta Maria, 2007).

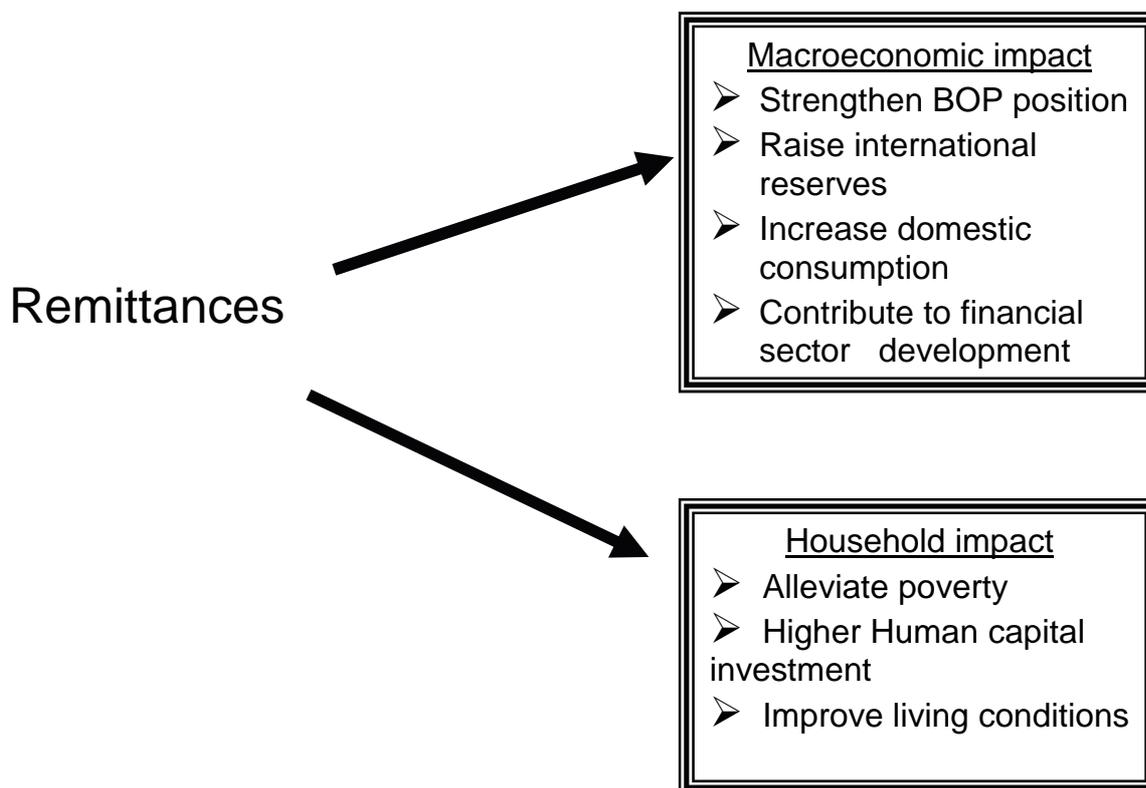
At the household level, international remittances increase family incomes, thus raising consumption of both durable and non-durable goods and/or savings. Indeed, in Africa, remittances are part of a private welfare system that transfers purchasing power from relatively richer to relatively poorer members of a family. They reduce poverty, smooth consumption, affect labor supply, provide working capital, and have multiplier effects through increased household spending. For the most part, remittances seem to be used to finance consumption or investment in human capital, such as education, health, and better nutrition (Lopez-Cordova, 2004; Hildebrant and McKenzie, 2005;

Adams, Cuecuecha and Page, 2008) (see lower part of Figure 8 and entire Figure 9 for the uses of remittances and their impact on households, respectively).

Remittances may also serve as capital for starting businesses. Thus, international remittances generally raise the immediate standard of living of their recipient families. However, this will only hold true for all households if families engage in wise expenditures. Therefore, the benefits that will be derived from these remittances will depend on how and where the families spend them. Indeed, although remittances provide households with considerable benefits, there are also substantial economic and social costs associated with it. On the economic side, international remittances, as pointed out by Bridi (2005), do promote idleness on the part of the recipients. Chami et al (2005) argued that migration and associated remittances may create a moral hazard problem, inducing disincentives to work among migrant household members (see also Azam and Gubert, 2006). On the social side, Rodriguez (2000) had argued that remittances have, quite apart from increased family tensions within households but also with migrants.

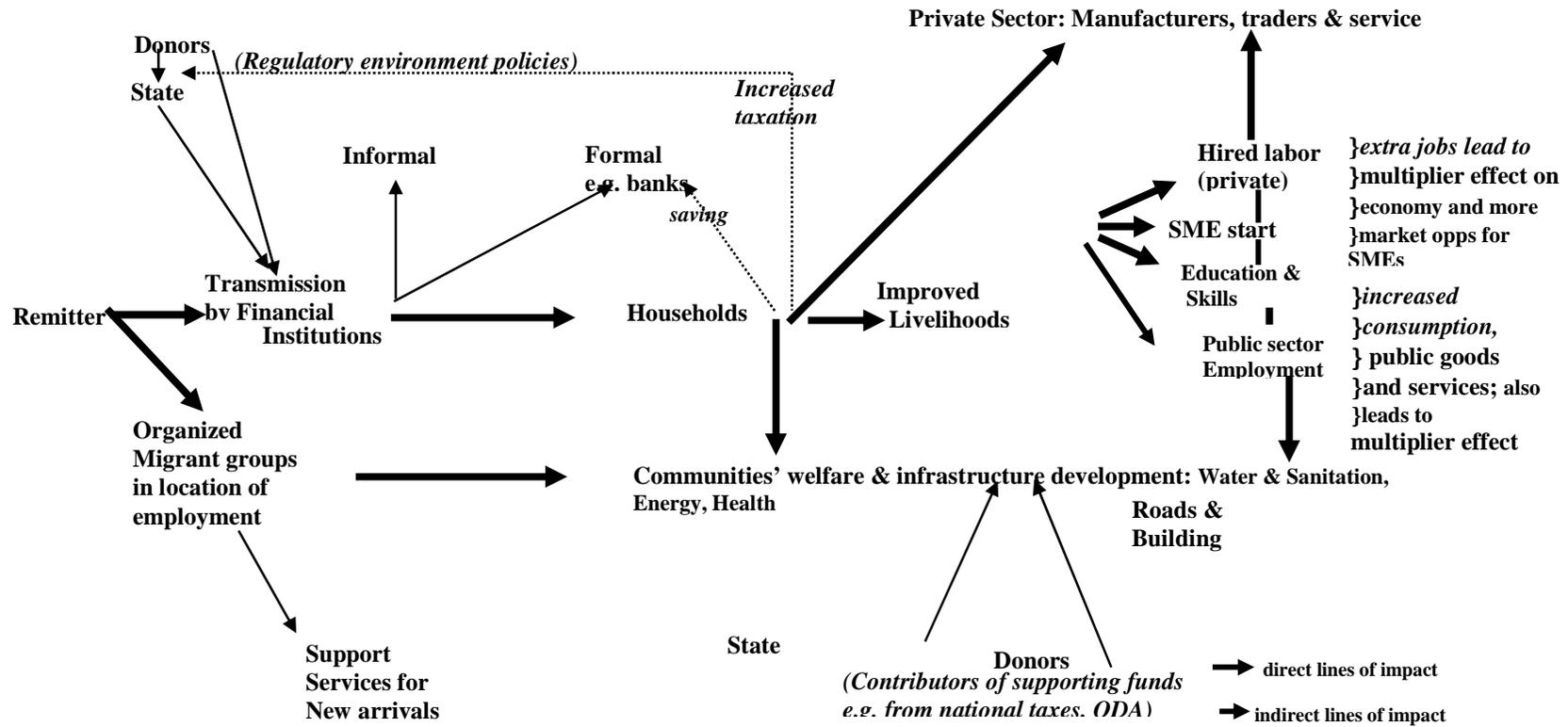
Figure 10 presents a summary of channels through which international remittances are put into productive uses for the benefit of the household, community and nation at large.

Figure 8: Macro- and Micro-Impacts of Remittances



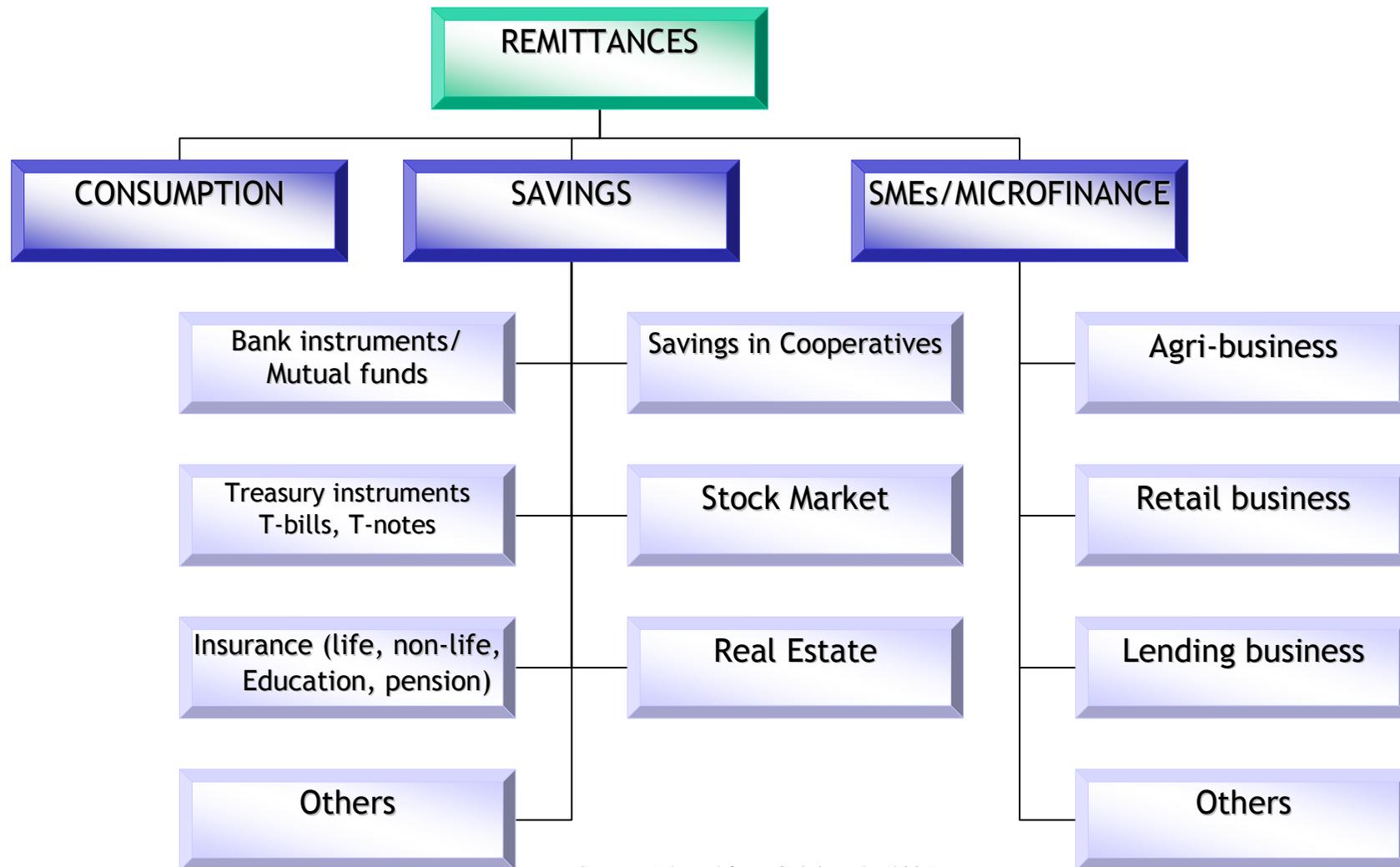
Source: Adapted from Guinigundo (2007)

Figure 9: A Framework for Assessing the Impact of Remittance Flows on Household Wellbeing



Source: Adapted from Chimhowu, A, J. Piesse and C. Pinder (2003, 2005)

**Figure 10: Channeling Remittances to Productive Uses**



Source: Adapted from Guinigundo (2007)

### **3.2. Empirical Literature on the Impact of International Remittances on Poverty**

The empirical evidence points toward a negative relationship between poverty and remittances (Lucas, 2004). International migration can have a positive impact on poverty reduction through the generation of migrant remittances (Skeldon, 1997, 2002; Kothari, 2002; Wets, 2004; De Haas, 2005; Adams and Page, 2005; and Adams, 2006a, b) (see Xenogiani, 2006; Bracking and Sachikonye, 2007 for a detailed review). Adams and Page (2003) however show that a 10 percent rise in the number of international migrants results in a 1.6 percent decline in the poverty headcount at national level. This result is also corroborated in a separate analysis for 101 countries over the period 1970 – 2003 reported in the IMF's 2005 World Economic Outlook.

Adams (1991) found that in rural Egypt, the number of poor households declines by 9.8 percent when household income includes international remittances, and that remittances account for 14.7 percent of total income of poor households. In a study of 74 low- and middle-income developing countries, Adams and Page (2003) concluded that international remittances -- defined as the share of remittances in country GDP -- has a strong, statistical impact on reducing poverty. On average, a 10 percent increase in the share of international remittances in a country's GDP will lead to a 1.6 percent decline in the share of people living in poverty. Study by Adams and Page (2005) strongly associated remittances with poverty reduction, using a 71-country multi-variate data set, arguing that a 10 percent increase in international remittances from each individual migrant will lead to a 3.5 percent decline in the proportion of people living in poverty, such that remittances are said to significantly reduce the level, depth and severity of poverty in developing countries.

IMF (2005) found positive and significant impacts of remittances on poverty reduction. Jongwanich (2007) examined the impact of workers' remittances on growth and poverty reduction in developing Asia-Pacific countries using panel data over the period 1993-2003. The result showed that, while remittances do have a significant impact on poverty reduction through increasing income, smoothing consumption and easing capital constraints of the poor, they have only a marginal impact on growth operating through domestic investment and human capital development. Bourchachen (2000) argues that remittances allow a large number of households to achieve a decent income. Other localized studies have concluded that remittances tend to improve the welfare of poorer rural households (Stark and Taylor, 1989). Sorensen (2004) found that remittances reduced the number Moroccans living in poverty by 1.2 million. Lachaud (1999) looked at remittances to Burkina Faso in 1994-1995 and found that they went mostly to rural households headed by farmers or inactive people. They reduced rural poverty by 7.2 percentage points and urban poverty by 3.2 percentage points. Leliveld (1997) and Gustafsson and Makonnen (1993) concluded that in Lesotho remittances play a very important role in giving households the means to achieve at least minimum food requirements.

Quarthey and Blankson (2004) have concluded that migrant remittances to Ghana are in fact countercyclical and are effective in helping smooth household consumption and welfare over time, especially for food crop farmers, who are typically the most disadvantaged socioeconomic group (see also, Bhasin and Obeng, 2005 who reached similar conclusions for Ghana). Similarly, using data from a large household survey Adams (2006a, b) found that international remittances significantly relieved poverty among the “poorest of poor households.” Studies covering a larger sample of countries have found evidence that remittances tend to lower poverty (Spatafora, 2005).

Using data from a large household survey, Adams (2006a, b) found that international remittances significantly relieved poverty among the “poorest of poor households”. Study by Gupta et al (2007) covering a larger sample of countries has found that remittances tend to lower poverty. Ratha (2003) had suggested that remittances that raise the consumption levels of rural households might have substantial multiplier effects because they are more likely to be spent on domestically produced goods. Also Maimbo and Ratha (2005) found that, in terms of poverty reduction, rural areas in developing countries tend to benefit the most because much of the world’s migrants are drawn from these areas.

In a recent World Bank (2006) report, using a poverty simulation model that relates the change in poverty to income growth and inequality change for 81 countries, a five percentage point average increase in the headcount ratio for lower-remittance countries and more than twice of that for higher remittance countries are found to result when the impact of remittances on poverty rate is eliminated. In more detail, that research by the World Bank (2006) International Migration and Development Research Program shows that: (a) International remittances reduce the level and depth of poverty. For example, a 10 percent increase in international remittances from each individual migrant will lead to a 3.5 percent decline in the share of people living in poverty; (b) While remittances reduce poverty, countries with higher levels of poverty are not necessarily receiving more remittances. Countries with the highest level of poverty such as those in Sub-Saharan Africa do not produce many international migrants and therefore receive fewer remittances; and (c) In general the largest effect of remittances on poverty is observed in countries located close to major labor-receiving areas. Developing countries close to the United States or Europe tend to receive more remittances which are usually spread evenly among the population.

Adelman and Taylor (1992) found that for every dollar Mexico received from migrants working abroad, it’s GNP increased by US\$2.69 to US\$3.17 depending on whether remittances were received by urban or rural households. According to them rural households tend to consume more domestically produced goods and hence generate larger multiplier effects than urban households. Based on a data set of 74 low and middle-income developing countries.

Pernia (2006) conducted a study to investigate the role of remittances in poverty alleviation and regional development utilizing panel data on the regions of the Philippines. The study empirically tested the impact of remittance on the welfare of the poor which is proxied by their mean per capita expenditure through quintile analysis. The results showed that remittances contribute to poverty alleviation which is reflected by the higher family spending of the poorest quintile, which is the bottom 20 percent of the households. The estimation showed that a P1,000 increase in remittance per capita leads to P2,543 additional annual family spending after controlling for the effects of other local factors. The positive effect rose to the fourth quintile and dropped for the fifth quintile which the author attributed to the fact that the richest quintile is less likely to have a member working as a migrant worker or to need remittance inflows.

Estudillo and Sawada (2006), using provincial panel data and cross-sectional household data from 1985 to 2000, showed that transfer income decreased poverty significantly at the household level of aggregation. Also, Yang and Martinez (2006) examined the impact of remittance inflows on poverty in the Philippines using household data for the years 1997-1998. Their results showed that the impact of the instrumented remittances is negative and statistically significant. A 10 percentage point increase in remittance receipts as a fraction of household income results to a 2.8 percentage point decline in the household's likelihood of being in poverty. However, insignificant effects were found for the poverty gap measure.

Acosta et al (2007) conducted a cross-country analysis to explore how remittances are contributing to poverty in the Latin America and the Caribbean. The study used a different econometric approach which allows them to estimate the separate effects of remittances on two determinants of poverty: the average income growth and the degree of income inequality. The results have suggested that remittances exert a positive and significant effect on income growth and cause a slight reduction in inequality. Combining these results, they concluded that overall, a one percentage point increase in remittance to GDP ratio reduces the poverty incidence in Latin America by about 0.4 percent.

Adams (2004), using a large, nationally representative household survey consisting of 7,276 household respondents and predicted income functions, compared the poverty headcount, poverty gap, and squared poverty gap of Guatemalan households that received international transfers with those of households that did not. The findings revealed that international remittances decrease poverty creating a quantitatively larger effect on the severity of poverty rather than on the proportion of people living in poverty. Remittances, when included in expenditure, reduced poverty by 19.8 percent. Nilsson (2005) had similar results for El Salvador while more recently, Zhu and Luo (2008) carried a study a sample of Chinese rural areas and arrived at similar results.

Lopez-Cordova (2004), in a cross-section analysis of 2,400 Mexican municipalities for the year 2000, showed that remittances are statistically significant in poverty reduction.

Taylor, Mora, Adams and Lopez-Feldman (2005), utilizing a sample of 1,782 households in 14 states in Rural Mexico and employing poverty decomposition technique modifying the Forster-Greer-Thorbecke poverty index, concluded that overall, international remittances reduce poverty. Wodon et al (2002) found that in Guerrero and Oaxaca (two southern Mexican states with significant international emigration and remittance inflows), the share of the population living in poverty is lower by two percentage points due to remittance income. They argue that this poverty effect is similar in magnitude to that of many government programs in poverty reduction, education, health, and nutrition. Poverty reduction impact of remittances had also been reported by Brown and Jimenez (2007) for Fiji and Tonga.

Esquivel and Huerta-Pineda (2006) investigated the effect of remittances on poverty condition among Mexican households and found that receiving remittances reduces a household's probability of being in food-based and in capabilities-based poverty by 7.7 and 6.3 percentage points, respectively. The authors concluded that these effects represent a reduction of around 36 and 23 percent in the corresponding poverty rates for a typical remittance-receiving household *vis-à-vis* a comparable non-remittance-receiving household. In general, however, receiving remittances did not seem to affect the probability of being in assets-based poverty. In the case of rural households the effects of receiving remittances on poverty were similar (a reduction of 31 percent and 26 percent, respectively). The main difference, however, was that for rural households receiving remittances reduced the probability of being in assets-based poverty by 10 percentage points (that is, a reduction of about 15 percent in the corresponding poverty rate).

The results suggested by the above studies depict the vital role of remittances in reducing poverty. However, there are few studies which present the contrasting view. These studies show that remittances do not benefit the plight of the poor people. In particular, Stahl (1982) argued that because international migration can be an expensive venture since it is the better-off households that will be more capable of producing migration and sending remittances. While poor households would not get the benefit from such remittance flows, they tend to generate inequality so that poverty tends to eventually increase. In the same vein, Cattaneo (2005), using a data set from 149 labor-sending countries, estimated the average income of the poor as a function of the country average income, income inequality, level of migration and remittances and other local factors. The study found that remittances do not have any impact on poverty. Viet (2008) in a recent study on Vietnam, concluded that receiving foreign remittances had increased household income and consumption remarkably, but decreased poverty only slightly for the remittance recipients. Also, using a panel of rural households in Mexico from October 1998 to November 2000, de la Fuente (2008) found a negative and statistically significant relationship between the foreign remittances and the threat to future poverty that rural households could experience.

In the rest of the paper, we investigate the direct poverty-reducing impact of international remittances using a sample of 33 African countries.

#### IV. THE MODEL AND DATA: IMPACT OF REMITTANCES ON POVERTY IN AFRICA

##### 4.1 THE EMPIRICAL MODEL

We use the cross-country data to analyze how international remittances affect poverty in Africa. Using the basic growth–poverty model suggested by Ravallion (1997) and Ravallion and Chen (1997) as well as the frameworks posited by Dollar and Kraay (2002), Ghura, Leite and Tsangarides (2002), Berg and Krueger (2003) and empirical works of Adams and Page (2005), Gupta, Pattillo, and Wagh (2007), Capistrano and Sta Maria (2007), and Jongwanich (2007), the relationship that we want to estimate can be written as:

$$\log P_{it} = \alpha_i + \beta_1 \log(g_{it}) + \beta_2 \log(y_{it}) + \beta_3 \log(\text{Remit}_{it}) + \beta_4 \log(X_{it}) + \varepsilon_{it}$$

$(i = 1, \dots, N; t = 1, \dots, T), \dots \dots \dots (1)$

where P is the measure of poverty in country i at time t;  $\alpha_i$  is a fixed effect reflecting time differences between countries;  $\beta_1$  is the elasticity of poverty with respect to income inequality given by the Gini coefficient, g;  $\beta_2$  is the “growth elasticity of poverty” with respect to real per capita GDP given by y;  $\beta_3$  is the elasticity of poverty with respect to international remittances (as % of GDP), Remit; X is the control variables, including level of literacy/illiteracy, inflation and openness; and  $\varepsilon$  is an error term that includes errors in the poverty measure.

The dependent variable in Equation (1), which is poverty, is measured using the Foster-Greer-Thorbecke (FGT) poverty indices- the poverty incidence, the depth of poverty and the severity of poverty (Foster, Greer and Thorbecke, 1984). The measures used for the dependent variables are the headcount ratio, poverty gap ratio and the squared poverty gap ratio, respectively. The poverty incidence is a measure of poverty which refers to the proportion of families with per capita income less than the per capita poverty threshold to the total number of families (see also, Anyanwu, 2005). The headcount measure is considerably the most commonly calculated poverty measure. The poverty depth indicates how far below the poverty line the average poor household’s income falls, and is measured by the poverty gap ratio which is defined as the total income shortfall, expressed in proportion to the poverty line, of families with income below the poverty threshold, divided by the total number of families. The severity of poverty is the poverty measurement that is more sensitive to the income distribution among the poor. The measure used for the severity of poverty is the squared poverty gap ratio which is the total of the squared income shortfall, expressed in proportion to the poverty line, of families with income below the poverty threshold, divided by the

total number of families. The severity of poverty defines how many families are located far below the poverty line. These people are labeled as the “poorest of the poor.”

The measure of income inequality is the Gini coefficient. The Gini coefficient is the ratio of the area between the Lorenz curve and the diagonal (the line of perfect equality) to the area below the diagonal. As a measure of income inequality, the Gini coefficient ranges from 0 to 1. The larger the coefficient is, the greater the degree of inequality. Thus, the Gini coefficient limits 0 for perfect equality and 1 for perfect inequality. For the per capita income variable, the equation uses the per capita GDP as a measure.

The coefficient on our variable of interest,  $\beta_3$  could be both positive and negative and we are interested in testing whether the impact of remittances on poverty reduction is statistically significant. That is, controlling for income and its distribution, we test the hypothesis that countries receiving more international remittances will have less poverty. The model also assumes that the level of income inequality affects poverty reduction. Since past work has shown that a given rate of economic growth reduces poverty more in low-inequality countries, as opposed to high-inequality countries, the income inequality variable is expected to be positive and significant. Therefore, the worse the income distribution and an increase in inflation tend to have a negative impact on poverty reduction so that their coefficients are expected to be positive.

The model assumes that economic growth—as measured by increases in mean per capita income— will reduce poverty. The relationship between poverty and the income variable is therefore expected to be negative and significant. Thus, the negative coefficient of  $\beta_2$  is expected while income of the poor tends to grow proportionally with per capita growth. The literature shows that education increases the stock of human capital, which in turn increases labor productivity and wages (Anyanwu, 1998, 2005). Thus, while an increase in illiteracy decreases opportunity of the poor to generate income, the coefficient associated with illiteracy is expected to be negative.

The coefficient associated with trade openness to poverty reduction is ambiguous (Berg and Krueger, 2003). On the one hand, trade liberalization could benefit the poor at least as much as the average person (Jongwanch, 2007). Trade liberalization could increase the relative wage of low-skilled workers and reduce monopoly rents and the value of connections to bureaucratic and political power. On the other hand, trade liberalization might also worsen the income distribution, particularly by encouraging the adoption of skill-biased technical change in response to increased foreign competition. Thus, if trade liberalization worsens the income distribution enough, particularly by making the poor poorer, then it is possible that it is not after all good for poverty reduction, despite its positive overall growth effects. A number of empirical studies using panel and cross-section data (e.g. Edwards, 1997; Ghura *et al.*, 2002; Dollar and Kraay, 2004) found no link between openness and the well-being of the poor beyond those associated with higher average per capita income growth.

## 4.2 THE DATA

Making use of poverty surveys beginning in 1990, the dataset consists of 33 African countries and 75 observations. Appendix Table 2 lists the countries and survey years of the dataset. The poverty and inequality measures used here are from the World Bank's PovcalNet database, which incorporates three measures of income poverty. The first is the poverty incidence (headcount poverty), which measures the percentage of the population living on less than one PPP dollar a day. The second is the poverty depth (poverty gap), which is the mean distance below the poverty line as a proportion of the poverty line, tells us how poor the poor are—how far below the poverty line the average poor person's income is. The third is the poverty severity (squared poverty gap), which is the mean of the squared distance below the poverty line as a proportion of the poverty line, is more sensitive to the distribution of the poor below the poverty line. The income distribution measure, the Gini coefficient, is available from the same survey data. Remittances are expressed as a ratio of the GDP of recipient countries. The income variable is per capita GDP in constant 1995 U.S. dollars while inflation rate is the percent change in the consumer price index. Other variables used are adult illiteracy rate and openness, measured by the ratio of imports plus exports to GDP. Tables 4 and 5 provide detailed descriptions of the raw dataset.

Before proceeding to the regression analyses, it is instructive to present bivariate relationships between key variables using simple scatter plots. Figures 11 show clear and unambiguously negative relationship between international remittances and poverty headcount in Africa. The same is true of the relationship between international remittances and both depth and severity of poverty in the continent.

**Table 4: Descriptive Statistics of Regression Variables**

Variable	Observations	Mean	Median	Standard Deviation	Range
Poverty Headcount	75	38.95	36.4	24.85	90.12
Poverty Gap/Depth	75	16.54	13.31	13.98	52.05
Poverty Severity	75	9.31	6.27	9.23	34.14
Gini Index	75	45.43	44.49	8.52	44.33
Per Capita GDP	75	711.24	412.2	772.77	3761.28
Remittances to GDP	64	3.79	1.42	1.42	49.33
Illiteracy Rate	68	40.73	34.85	21.32	79.01
Inflation Rate	73	16.18	9.37	25.35	187.79
Trade Openness	70	6758.75	6037.346	3194.75	14857.23

Note: These are raw data before the log transformation.

Source: Authors' Calculations.

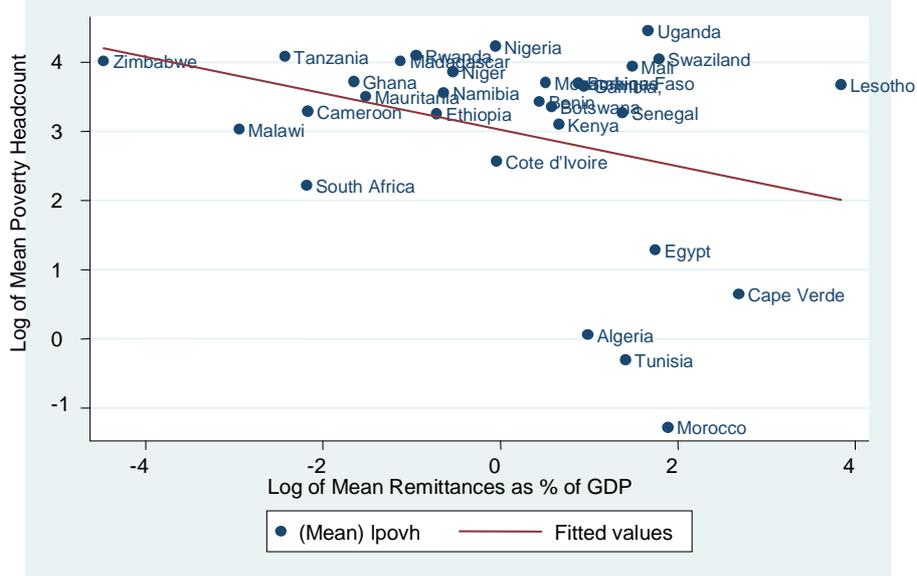
**Table 5: Bivariate Correlations of Regression Variables**

Variable	Poverty Headcount	Poverty Gap/Depth	Poverty Severity	Gini Index	Per Capita GDP	Remittances to GDP	Illiteracy Rate	Inflation Rate	Trade Openness
Poverty Headcount	1.00								
Poverty Gap/Depth	0.99***	1.00							
Poverty Severity	0.96***	0.99***	1.00						
Gini Index	0.28**	0.31***	0.32***	1.00					
Per Capita GDP	-0.60***	-0.61***	-0.61***	0.31***	1.00				
Remittances to GDP	-0.27**	-0.22*	-0.17	0.02	0.09	1.00			
Illiteracy Rate	-0.13	-0.13	-0.13	-0.12	-0.22*	0.18	1.00		
Inflation Rate	0.32***	0.37***	0.40***	0.29**	-0.15	0.04	0.002	1.00	
Trade Openness	-0.13	-0.08	-0.06	0.34***	0.36***	0.39***	-0.07	0.03	1.00

Note: \*\*\* Significant at 1% level; \*\* Significant at 5% level; \* Significant at 10% level.

Source: Authors' Calculations.

Figure 11: Africa - Log of Mean Poverty Headcount and Log of Mean Remittances as % of GDP



## V. EMPIRICAL RESULTS

### 5.1 OLS RESULTS

Table 6 shows the results when Equation (1) is estimated using Ordinary Least Squares (OLS). The log transformation of all the variables allows us to interpret the coefficients as elasticities. Sub-regional dummies (North Africa and Sub-Saharan Africa) were introduced to control for fixed effects. The OLS estimates from our sample conform to the predictions of the model (Table 6). The remittance variable in has a negative and statistically significant impact on each of the three poverty measures: headcount, poverty gap/depth, and poverty severity. Estimates for the poverty headcount measure suggest that, on average, a 10 percent increase in official international remittances as a percentage of GDP will lead to a 2.7 percent decline in the share of people living in poverty.

Table 6 shows that international remittances will have a slightly larger impact on poverty reduction when poverty is measured by the more sensitive poverty measures: poverty gap/depth and severity of poverty. It shows that on average, a 10 percent increase in official international remittances as a percentage of GDP will lead to a 2.9 percent decline in poverty depth and severity of poverty, respectively. Since the depth of poverty measures the distance of the poor people from the poverty line, it can be interpreted that as the amount of remittances increase, the distance of the poor people from the poverty line decreases. The results prove to be in accordance with expectations. For the severity of poverty (squared poverty gap), estimates imply that on average, a 10 percent increase in the volume of remittances brings about a 2.9 percent decline in the welfare of the people located far below the poverty line. These results are consistent and of the magnitude found recently by Jongwanich (2007) for developing Asia and the Pacific countries.

Regardless of the measure of poverty used as the dependent variable, per capita income has a negative and significant coefficient. A positive and significant coefficient for the Gini index for all the poverty measures indicates that greater inequality is associated with higher poverty. Other important dimensions of our results relate to the consistent, positive and significant effects of both trade openness and inflation rate on the three measures of poverty in Africa.

The coefficient on the dummy variable for Sub-Saharan Africa (SSA) represents the impact on poverty of unobservable SSA-specific factors with respect to the reference group (North Africa). In the poverty headcount estimation, the dummy variable for the SSA is strongly positive – and strongly negative for North Africa. In other words, if all the explanatory variables of the model had exactly the same levels in all the countries, poverty headcount would be some 98 percent higher in SSA countries. There would be equal corresponding fall in North African countries.

Variable	Poverty Headcount	Poverty Depth/Gap	Poverty Severity
Inflow of International Remittances (ratio of GDP)	-.27*** (-3.46)	-.29*** (-3.13)	-.29** (-2.65)
Gini Index	1.92** (2.10)	2.99** (2.77)	3.65*** (2.92)
Per Capita GDP (constant 2000 US\$)	-1.02*** (-5.70)	-1.44*** (-6.80)	-1.78*** (-7.26)
Sub-Saharan Africa	.98** (2.22)	.80 (1.53)	.62 (1.02)
Illiteracy Rate	-.35 (-1.16)	-.54 (-1.51)	-.70* (-1.68)
Trade Openness	.81** (2.53)	1.19*** (3.13)	1.50*** (3.40)
Inflation Rate	.29* (1.96)	.40** (2.28)	.49** (2.39)
Constant	-5.20 (-1.66)	-10.59*** (-2.87)	-14.04*** (-3.29)
R-Squared	0.78	0.79	0.79
Adjusted R-Squared	0.74	0.76	0.75
F-Statistic	21.20***	23.73***	23.39***
Prob > F	0.0000	0.000	0.000
N	51	51	51

## 5.2 IV-GMM RESULTS

However, one possible problem with Equation (1) is that it assumes that all of the right-hand side variables in the model—including international remittances—are exogenous to poverty. However, it is possible that international remittances may be endogenous to poverty. Reverse causality may be taking place: international remittances may be reducing poverty, but poverty may also be affecting the level of international remittances being received. Without accounting for this reverse causality, all of the estimated coefficients in Table 6 may be biased. One way of accounting for possible endogenous regressors is to pursue an instrumental variables approach. Therefore, to deal with this problem, we follow Catrinescu et al (2006) and Aggarwal et al (2006) in estimating the equations instrumentalizing the remittances variable with its first and second lagged levels, using a the two-step (IV) efficient generalized method of moments (GMM) estimation method.

Table 7 shows the first-stage results from the IV-GMM estimations. We conduct and report two tests to show the validity of our instruments. First, we present the F-statistic for weak instruments. This is a test of the significance of our instruments in predicting remittances. The F-statistics is above the critical value, at 1 percent significance, indicating that our estimates do not suffer from a weak instruments problem. Second,

we report the Hansen J test of overidentifying restrictions. The joint null hypothesis in this case is that the instruments are uncorrelated with the error term and that excluded instruments are correctly excluded from the estimated equation. Again, these tests confirm the validity of our instruments.

<b>Table 7: First-Stage IV-GMM Estimates for International Remittances to Africa</b>		
Variable	Coefficient	t-Statistics
<i>Instruments</i>		
First Lag of Inflow of International Remittances (ratio of GDP)	.66***	3.59
Second Lag of Inflow of International Remittances (ratio of GDP)	.34**	2.13
<i>Included exogenous variables</i>		
Gini Index	-1.17**	-2.20
Per Capita GDP (constant 2000 US\$)	.10	.94
Sub-Saharan Africa	.54**	2.05
Illiteracy Rate	-.08	-.43
Trade Openness	.06	.28
Inflation Rate	-.03	-.30
Constant	3.22	1.60
N	49	
Shea Partial R-Squared	0.91	
F-Statistics of excluded instruments	202.21***	
P-value	0.0000	

Tables 8 present the second-stage IV-GMM results. As for the impact of remittances on of poverty, we continue to find that they have a negative and significant impact on all three measures of poverty in Africa. These results confirm that the positive impact of remittances on poverty measures in Africa is not due to endogeneity biases (see also Aggarwal et al, 2006).

Table 8: IV-GMM Estimates of the Effect of International Remittances on Poverty Measures in Africa			
Variable	Poverty Headcount	Poverty Depth/Gap	Poverty Severity
<i>Instrumented Endogenous Variable</i>			
Inflow of International Remittances (ratio of GDP)	-.29*** (-3.39)	-.29*** (-3.23)	-.28*** (-2.95)
<i>Exogenous Regressors</i>			
Gini Index	2.16*** (4.02)	3.13*** (4.81)	3.72*** (4.78)
Per Capita GDP (constant 2000 US\$)	-.99*** (-6.87)	-1.37*** (-6.61)	-1.69*** (-6.43)
Sub-Saharan Africa	1.15*** (2.77)	1.01** (2.02)	.82 (1.40)
Illiteracy Rate	-.18 (-.72)	-.31 (-.89)	-.44 (-1.05)
Trade Openness	.91*** (2.66)	1.28*** (3.38)	1.59*** (3.81)
Inflation Rate	.22* (1.78)	.31** (2.12)	.39** (2.36)
Constant	-7.81** (-2.34)	-13.18*** (-3.54)	-16.59*** (-3.93)
Centered R-Squared	0.80	0.81	0.81
Hansen J Statistic	0.915	1.411	1.349
p-Value	.339	.235	.245
Pagan-Hall Statistic	40.026	38.976	41.500
p-Value	0.601	0.646	.536
N	49	49	49

Comparing the OLS and IV-GMM estimates for official international remittances (Tables 6 and 8) yields similar results. For example, while the IV-GMM estimates for the poverty headcount measure suggest that, on average, a 10 percent increase in official remittances will lead to a 2.9 percent decline in the share of people living in poverty (Table 8), the OLS estimates suggest that a similar increase in official remittances will lead to a 2.7 percent decline in the share of poor people (Table 6). Indeed, comparing the OLS and IV-GMM estimates for international remittances (Tables 6 and 8), we find that the coefficients for the instrumented international remittances variable in Table 8 are slightly more negative for poverty incidence, same level for poverty gap/depth and slightly lower for severity of poverty – but all at equal level of significance. Considered as a whole, the IV-GMM results suggest that after instrumenting for the possible endogeneity of international remittances, this variable still has a negative and statistically significant impact upon all three measures of poverty. Evaluated at the sample mean, an increase in \$1 in instrumented official international remittances (from \$3.79 to \$4.79) will lead to a 0.08 percent  $[(4.79/3.79 - 1)*(-0.29)]$  reduction in the poverty headcount.

As in the OLS results, income inequality, per capita GDP, trade openness and inflation rates continue to be significant determinants of all three measures of poverty in Africa. Income inequality continues to exact the largest positive impact on all three measures of poverty, increasingly progressively from the poverty headcount (coefficient of 2.16) to poverty gap (coefficient of 3.13) and to the severity of poverty (coefficient of 3.72). Again, regardless of the measure of poverty used as the dependent variable, per capita income has a negative and significant coefficient. Again, there was consistent, positive and significant effects of both trade openness and inflation rate on the three measures of poverty in Africa. These indicate the adverse poverty effects of the recent trade liberalization efforts in Africa and that of uncertainty represented by inflation.

Also, the dummy variable for the SSA is far more strongly positive than in the OLS results – and strongly negative for North Africa – on poverty incidence and poverty depth. For example, if all the explanatory variables of the model had exactly the same levels in all the countries, poverty headcount would be some 115 percent higher in SSA countries while there would be equal corresponding fall in North African countries.

## **VI. CONCLUSIONS AND POLICY IMPLICATIONS**

This paper has used a new data set on international remittances, inequality, and poverty from 33 African countries to examine the impact of international remittances on poverty in Africa. Some key findings and policy implications emerge. First, international remittances have a strong, statistically significant impact on reducing poverty in Africa. After instrumenting for the possible endogeneity of international remittances, a 10 percent increase in official international remittances as a percentage of GDP will lead, on average, to a 2.9 percent decline in the share of people living in poverty. Indeed, the results provide strong, robust evidence of the poverty-reducing impact of international remittances to Africa. Two, per capita GDP strongly reduces all measures of poverty in Africa. Third, income inequality appears to be the strongest factor fueling all three measures of poverty in the continent. Fourth, both trade openness and inflation then to reinforce poverty in Africa.

Our findings point to some key policy recommendations. In particular, remittances-receiving countries of Africa need to develop a strategy to maximize the benefits of remittances while minimizing their negative repercussions. As a first step, governments (receiving and hosts of migrants) need to reduce the cost of sending remittances. Lowering the transactions costs of remittances will help to increase the poverty-reducing impact of international remittances and will also encourage a larger share of remittances to flow through formal financial channels. A recent survey by de Luna Martínez (2005) and others had shown that senders usually pay up to 13 to 16 percent in fees for remittance transactions below \$300 dollars, which is the average amount migrants send every month to their home countries. There is no doubt that reducing the costs of sending remittances would increase the disposable income of migrants' families and encourage them to use the official banking channels. However, banking regulations

in some sending countries, in particular those related to anti-money-laundering, while necessary for security purposes, remain unfavorable for remittances and are demanding on the migrants, for whom sending money home may be the only contact with the banking system. Therefore, encouraging partnership between the international banking and postal services and money transfer operators would help reduce remittance costs while preserving high security standards. In addition, since fees are set by financial institutions in both source and destination countries, authorities in African countries cannot foster the decline of fees alone. Cooperation between financial authorities in sending and recipient countries is required to address the high cost paid by consumers in their remittances transactions.

Second, apart from establishing a competitive environment that leads to the reduction in remittance fees, there is a need to improve data on remittances (by both national governments and international institutions like the AfDB, IMF and the World Bank etc) and the regulation of money transfer companies, broaden access of population to financial services by developing new products for households receiving remittances on a regular basis, etc. To address all these challenges, African countries should establish national and regional policies and strategies on remittances, instead of dealing with them on a piecemeal and *ad hoc* basis. A national policy on remittances, for example, could provide the framework under which the efforts of financial sector authorities, migration authorities, poverty alleviation agencies, and ministries of foreign affairs, among others, could be coordinated towards the achievement of common goals. Moreover, a national policy on remittances could help place the issue of international remittances on the national and regional development agenda, especially in countries where remittances already represent a large percentage of their GDP.

Indeed, given the weaknesses of the infrastructure supporting remittances, technological improvements in the banking sector could also significantly reduce transaction costs. New banking technologies that can expedite check clearance, reduce exchange losses, and improve disclosure, especially in rural areas in developing countries, can be particularly helpful. New technology would offer potential for greater efficiency, lower costs, and extended outreach. On a positive note, some countries have, in recent years introduced a wide range of technological solutions such as satellite telecommunications and enhanced management and wire transfer systems. Innovative financial products such as debit cards and mobile telephony add-on services and pre-paid cards are new additions with huge potential.

Finally, from a developmental perspective, one of the major challenges for policy makers in Africa is to motivate senders and recipients of remittances to conduct their money transfer operations through formal financial institutions. In that way, remittances could become formal savings and deposits in financial institutions and, thus have a multiplier effect in their countries. This could be addressed by increasing the supply of financial services to both senders and recipients of remittances. Products that could be offered to poor families receiving remittances include deposit and savings accounts,

consumer loans, mortgages, life and non-life insurance products, pensions, etc. This would not only deepen the financial system, but more importantly help recipients of remittances improve their living conditions.

Given the finding that inequality fuels poverty in African countries, policy makers need to tackle this challenge head-on. The literature has identified a number of possible policy instruments to deal with inequality, including, conditional cash transfers, guaranteed employment schemes, labour market training, greater access to health, nutrition and education through increased social investments, affirmative action, and land and property rights reforms, especially to benefit rural dwellers (particularly women). Evidence has shown that transfers and expenditures (for education, for example) are effective levers of redistribution. Improving access to education, for example, can reduce inequality (and hence poverty) both by increasing individual productivity and by facilitating the movement of poor people from low-paying jobs in agriculture to higher-paying jobs in industry and services. More importantly, public spending on education (as well as on health and other human capacity), when targeted toward the poor, can produce a double dividend, reducing inequality and poverty in the short run and increasing the chances for poor children to access formal jobs and thus break free from the intergenerational poverty trap. Increasing educational levels (and its quality) should be accompanied by a strong investment climate to ensure that productive jobs are created for the newly educated.

Another concern from our findings relates to the poverty-reinforcing impact of trade openness, especially with the global trend towards trade liberalization, in spite of the problem of making significant headway in the Doha development round. We propose that African governments design complementary policies to mitigate the adverse poverty consequences of trade reforms rather than abandoning such reforms all together. Such mitigation policies may range from setting up or improving safety nets, to better labor-market policies and institutions, and to investing in access roads to improve access by the poor to markets. In addition, well-designed additional policy interventions, especially those that improve education and infrastructure and address other “behind the border” investment climate reforms, can militate against the adverse poverty changes that may result from trade liberalization.

## APPENDIX

Variable	Source
Remittances (sum of receipts of worker remittances, employee compensation, migrant transfers) (as % of GDP)	World Development Indicators
Poverty indicators	PovcalNet database (available at <a href="http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp">http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp</a> .)
Gini index	PovcalNet database (available at <a href="http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp">http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp</a> .)
Per capita GDP (constant 1995 US dollar)	World Development Indicators
Adult Illiteracy Rate	World Development Indicators
Trade openness ((imports + exports)/GDP)	World Development Indicators
Inflation (annual percentage change in CPI)	World Development Indicators

**Appendix Table 2: Countries in the Sample & Poverty Dataset Details  
Between 1990 and 2005**

Country	Survey Year	Country	Survey Year
Algeria	1995	Namibia	1993
Benin	2003	Niger	1992
Botswana	1993	Niger	1994
Burkina Faso	1994	Nigeria	1992
Burkina Faso	1998	Nigeria	1996
Burkina Faso	2003	Nigeria	2003
Burundi	1992	Rwanda	2000
Burundi	1998	Senegal	1991
Cameroon	1996	Senegal	1994
Cameroon	2001	Senegal	2001
Cape Verde	2001	South Africa	1993
Central African Rep.	1993	South Africa	1995
Cote d'Ivoire	1993	South Africa	2000
Cote d'Ivoire	1995	Swaziland	1994
Cote d'Ivoire	1998	Swaziland	2000
Cote d'Ivoire	2002	Tanzania	1991
Egypt	1990	Tanzania	2000
Egypt	1995	Tunisia	1990
Egypt	1999	Tunisia	1995
Ethiopia	1995	Tunisia	2000
Ethiopia	2000	Uganda	2002
Gambia,	1992	Uganda	1992
Gambia,	1998	Uganda	1996
Ghana	1991	Uganda	1999
Ghana	1998	Zambia	1991
Kenya	1992	Zambia	1993
Kenya	1994	Zambia	1996
Kenya	1997	Zambia	1998
Lesotho	1993	Zambia	2004
Lesotho	1995	Zimbabwe	1990
Madagascar	1993	Zimbabwe	1995
Madagascar	1997		
Madagascar	1999		
Madagascar	2001		
Malawi	2004		
Mali	1994		
Mali	2001		
Mauritania	1993		
Mauritania	1995		
Mauritania	2000		
Morocco	1990		
Morocco	1998		
Mozambique	1996		
Mozambique	2002		

Source: World Bank, PovcalNet Database

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