8-2007

Estimating Remittances from the United States to Ethiopia

Gezahegne Bekele
US General Accountability Office, Washington, DC

Estimating Remittances from the United States to Ethiopia

By

Gezahegne (Gezu) Bekele, Ph.D,
Senior International Economist,
US General Accountability Office, Washington, DC

Paper prepared for
4th ICEDS-A Multidisciplinary International Conference on the Challenges of Peace and Development in Ethiopia and Northeast Africa, August 2-4, 2007
June 2007

A lesser-known aspect of globalisation is the phenomenon of international migration, which now presents some of the most complex policy concerns as it increasingly affects individuals, communities, and countries. Estimates put the number of people currently residing outside of their country of birth at 191 million persons (2005) --roughly 3% of the world population, or 1 in every 35 persons. An impetus to the movement of people across boundaries comes from a looming imbalance in global labour markets that exerts both push and pulls factors for migration. Most industrialized countries have declining population at a time when the population of developing countries is rapidly expanding. [1] **As a result, the dependency ratio--the ratio of non-working age population to working age population-- is rising in most industrialized countries while it is falling in developing countries. Consequently, Remittances, which are a reverse flow of migration, are expected to be with us for a long time. Governments in developing and developed countries have seized on the growing importance of migration to find ways of harnessing the development potential of migration and the associated flow of remittances to support the developmental needs of poor Countries.**

Remittances are the portion of international migrant workers' earnings sent back from the country of employment to the country of origin. Most remittances are relatively small sums sent home often, to support family members, build savings, invest in a business, or repay a debt. While each remittance is small, remittances are a notable component of the international flow of funds because of the large number of remitters and the frequency with which they send monies. Measured amounts of remittances are reported in the international transaction of countries. Member countries of the International Monetary Fund are required to report their Balance of payments. Although the concept of remittances varies by the intended use of the information, remittances involve certain transactions that are initiated by individuals living or working outside their country of

[1] Even for the United States, which has sustained a growing population base thru immigration, the population transition is expected to occur by 2010.

birth or origin and related to their migration. The components of balance of payments statistics that have been specifically mentioned in this context are:

- **Compensation of employees –i.e., wages, salaries, and other benefits earned by Individuals, in economies other than those in which they are residents. Since residency is broadly recognized as staying in location (legally or illegally) for at least one year, this applies only to persons expected to return to their countries of birth after being away from it for less than a year and;**
- **Personal remittances-- current transfers, often between related persons, by migrants[2] who are in new economies and considered residents there;**
- **Migrants' transfers –changes in the capital account caused by the change of residence of a household.**

The notion of remittances can, thus, vary depending on which of these three components are used.[3] The World Bank and the International Monetary Fund, for example, use differing definitions of remittances.[4]

Remittances to developing countries are booming. International remittances received by developing countries reached $167 billion in 2005. They have doubled in volume the past five years due to increased scrutiny of flows since 9/11, changes in the industry that supports the flow of remittances (lower costs), improvements in data recording, the relative depreciation of the dollar, and growth in the number of migrants and their incomes.

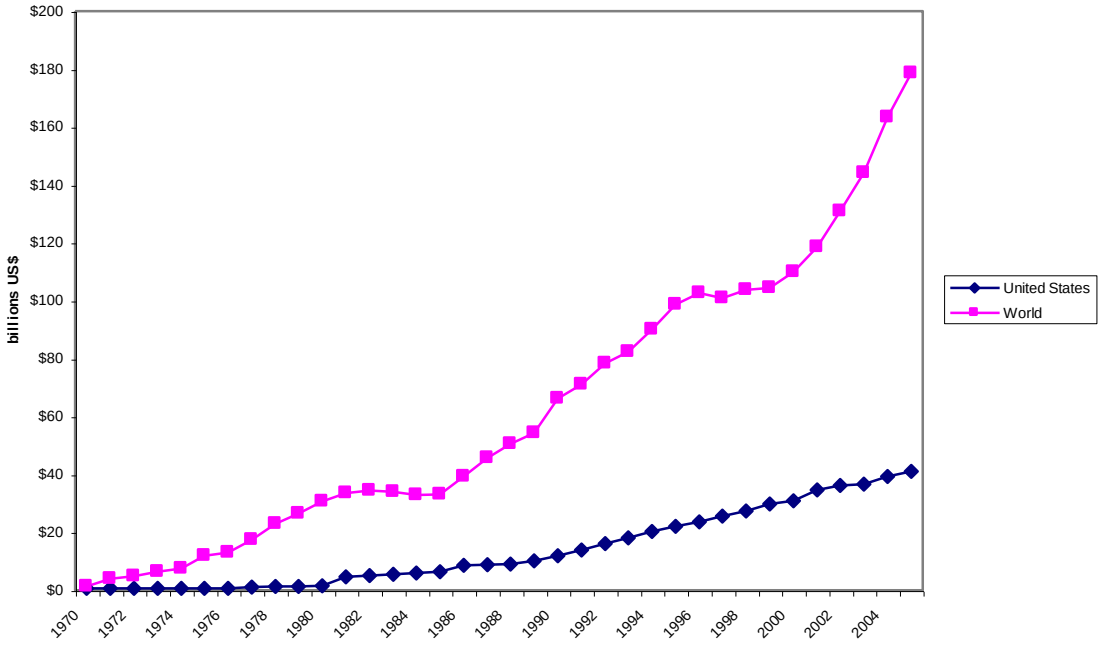
---

[2] A migrant is a person who comes to an economy and stays there, or is expected to stay, for a year or more.

[3] In the balance of payments framework of international transactions although both Compensation of employees and Workers' remittances are part of the current account, compensation of employees is a component of income while workers' remittance is a component of current transfers. However, migrant transfers are component of the capital account.

[4] The World Bank uses all three components while the IMF and most researchers of the subject exclude Migrants' transfers from their definition.

Figure 1: Global Remittance Outflows



Source: World Bank, Remittances here are defined as the sum of Workers' remittances, compensation of employees, and migrant transfers

In developing countries, the growth in remittance exceeds growth in any other financial inflow including official development Assistance (ODA). Remittances are now more than twice ODA flows to developing countries. According to the World Bank, recorded remittances are larger than 10% of GDP in 20 largest recipients, Capital flows in 36 developing countries, Merchandise exports in 9 countries, largest single commodity exports in 28 countries.Their impacts on specific economies can be seen from the fact that remittances brought in more than Mexico's oil industry in 2005, coffee exports in Brazil, tea exports in Sri Lanka, or tourism in Morocco. In Jordan, Lesotho, Nicaragua, Tonga and Tajikistan, they provide more than a quarter of the gross national product. A recent report by the US General Accountability Office highlighting the importance of remittances to persons that do receive remittances from the US shows that the average monthly transfer was equivalent to 3 times the prevailing monthly minimum wage in all developing countries that have minimum wage regulations, 5 times the

monthly minimum wage in Low income developing countries; at least 7 times the monthly minimum wage in China, Ghana, Haiti, Laos, Russia & Sri Lanka; and 4 to 6 times the monthly minimum wage in Bangladesh, Bolivia, Dominican Rep., Ecuador, El Salvador, India, Indonesia, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, and Syria.[5]

Certain characteristics of remittance flows such as their volume, stable growth over time, and anti-cyclical nature i.e. they increase in times of economic slowdowns and hardships in the countries of birth while increasing during economic upturns in the host countries, indicate that they hold great promise as a source of development finance.[6]
Remittances positively impact the current account by providing both foreign exchange and additional savings for economic development. With remittances, an economy can spend more than it produces, import more than it exports or invest more than it saves.[7] As a source of development finance, remittances also have some distinct advantages because unlike development loans, they do not come with a liability to pay; they are sent directly to the people for whom they are intended. Since remittances are sent from after tax income of dislocated and typically poor migrants, they add a personal dimension to the aid given by more developed countries and have been referred by some as "Private aid from the poor in more developed settings to the poorer in less developed settings".

The down side of remittances in the development process, on the other hand, is that remittances may undermine prospects for development by perpetuating an economic dependency. For example, like many unearned wealth, they may encourage idleness among those who receive them; intensify a continuing

---

[5] Report to the US Senate Committee on Banking, Housing, and Urban Affairs, "International Remittance: Different Estimation Methodologies Produce Different Results", GAO-06-210, march 2006 (*the Author of this paper was senior economist on the GAO assignment*)_

[6] Rremittance flows appear to be less vulnerable to economic cycles than other sources of external funding to developing countries such as foreign direct investment or even official development assistance. .

[7] This might even be more relevant for small economies (Connell and Conway 2000).

trend of migration of working age population. The remittance literature has shown their tendency to push up the value a nation's currency leading to the so-called "Dutch disease" causing deterioration of an economy's balance of payments position and specifically worsening the welfare of families not receiving remittances.[8]

The following table summarizes the key pro and cons of remittances.

Tables 1: A short Summary of PRO and CONS of remittances

• Remittances offer a rare chance to accumulate savings • Reduced labor market pressures • Increase contacts with international markets and access to technology • Reduce poverty – Remittances have reduced the number of people who live below the poverty line in Uganda, Bangladesh and Ghana (World Bank) • Countercyclical than other sources of income • Stable source of foreign exchange	• Migrants can be subject to exploitation and abuse • Loss of skilled personnel through migration • Increase inequality – Cost of migration is high & the poorest can't afford it • Cause appreciation of real exchange rates – Reduce export competitiveness • Increase wasteful consumption • Inflate real estate prices

[8] See McCormick, B., and J. Wahba (2000). Overseas Employment and Remittances to a Dual Economy. The Economic Journal 110 (April): 509–534.

In spite of the remarkable upward trend in the volume of remittances, the very nature of remittances as person-to-person transnational exchange makes the measured and reported amounts of suspicious quality. The volume of remittances varies depending on the accuracy and reliability of the underlying information regarding financial exchanges between persons as well as the standard and definitions used by geographical entities. Consequently, difficulties in identifying person-to-person transactions and difficulties in identifying cross border transactions are critical in determining the accuracy of remittance flows. Information on remittances can be constrained by the need for reliable information such as the purpose, legality and motivation of the sender. Furthermore not all funds transferred by migrants can be recorded as remittances. For example, In order to avoid confusion with export or import of services, the receiving individual may not perform a personal service in exchange for the amount received. Money remitted for the purpose of making a deposit in an account with a bank located abroad represents a financial investment and is therefore not a remittance and instead should be recorded as an investment asset of the sending economy because deposits in a bank involve a quid pro quo since the sending party acquires a claim against the deposit-taking bank abroad.

Similarly, money remitted to purchase real estate or acquire control of a business ought to be treated as a form of investment, even in cases where family members in the country of origin live in the house or work in the business. Money transfers to nonresidents in the receiving country (students, medical patients, tourists, etc.) do not qualify as remittances because by definition no change of ownership between residents and nonresidents occurs. In contrast, when, bank accounts of migrant residents are accessible by family members in the country of birth of the migrant (e.g., through ATM cards), withdrawals constitute a remittance. It is however very unlikely such transactions are accurately recorded. A more glaring omission in remittance accounting is the physical movements of goods across borders. Travelers visiting their home countries routinely take personal effects (or cash) with them; these are not

classified as exports in their country of residence or as imports in their home country. However, often these goods are subsequently given as gifts to relatives and are no different than money transfers from outside the home countries. It is however unlikely such transactions are sufficiently covered by customs data. Remittances in goods could be substantial omission in accounting for of remittances especially where large migrant flows occur, and where migrants can travel overland between their countries of origin and residence, such as Mexicans traveling from the United States.

An additional layer of the problem of the reliability of reported remittances flows comes from differences in national reporting systems, lack of source data, and lack of resources in receiving countries which collectively add uncertainty to officially reported data. Data on remittances is inconsistent, resulting in official estimates that vary in quality and coverage. Although the IMF has the responsibility of collecting individual country statistics on the balance of payments, it does not evaluate the accuracy of figures its member countries report. Despite developing a non-prescriptive data compilation guide for the preparation of the Balance of Payments including estimation of remittances, the IMF accepts any countries reported data at its face value.[9] This is in part because the IMF believes no method of estimating remittances is perfect, estimates using household surveys; estimates using intermediaries such as money transmissions businesses as well as model-based estimates each have their drawbacks. The choice of which method to employ is basically related to availability of resources. Variations in data compilation procedures occur partially due to different interpretations of definitions and classifications.[10] In most cases, however, data weaknesses and omissions are due to the difficulties in obtaining all necessary data. Furthermore, explanation of data on

[9] The IMF published its fifth edition of its Balance of Payments Manual in 1993. to guide countries in compiling balance of payment statistics

[10] For example, some countries consider nationals working abroad for a year and longer as residents—and their earnings therefore as compensation of employees—because they maintain strong linkages with their home country. Most countries follow the one-year rule.

remittances submitted by member countries does not reveal methodologies used for obtaining the remittance figures. Most countries simply report whatever comes out of central bank reports. Most countries report their remittances as residuals of existing data, others simply do not report on remittances. For countries that use estimates to report to the IMF, the accuracy of their reported data cannot be measured in a goodness of fit test. Further more, remittance estimates are not always reported by countries, or not reported according to definitions.[11] In resource rich countries, which are also key source countries for remittances, remittances are but a tiny component of over all international economic transactions that may not merit specialized focus. For instance, the United States, reputedly the largest remittance source country, has no US government agency to track remittances. Instead, the Bureau of Economic Analysis (BEA) makes estimates for Balance of payment purposes.[12]

Yet another problem in reported remittances arises from the channels through which remittance are transferred internationally. Remittances flow in both formal & informal channels. While it is easier to collect information on formal channels (such as banks and other licensed money transfer establishments), they tend to be hampered by financial illiteracy & institutional underdevelopment in developing countries. They may also suffer from difficulties in separating remittance

[11] For example, the World Bank reported fewer than two billion dollars in remittances to the Philippines in 2002, but the Philippines' central bank reported over six billion (BSP 2002). Second, remittances are often not reported at all. In Guyana, for example, whose Diaspora is almost as large as its country's population (there are 700,000 Guyanese in Guyana and over half a million abroad), remittances represent at least 10% of the country's GDP. However, this data is not available anywhere. [OROZCO Worker Remittances: An International Comparison]

[12] BEA reports in table 1, line 38 of the standard presentation of the U.S. international transactions accounts estimates of personal transfers by the foreign-born population resident in the United States to households abroad. The figure reported is called "Private remittances and other transfers". Line 38 is consequently more than the international definition of Workers' remittances; it includes payments or receipts of non-governmental U.S. entities and foreign entities. Also, BEA publishes its estimates of Private remittances and other transfers as the difference between transfers to and transfers from the United States.

flows from other payment flows. In contrast, informal channels are obstacles to accuracy of measurement but address senders' needs efficiently and reliably. As a result, 91 percent of global money transfers occur outside the banking systems. According to the World Bank, current reported amounts may have to be adjusted upwards by as much as 50-percent for a more accurate volume of global remittances.

An international effort to improve remittance data is however under way. Furthermore, the growing interest in remittance flows is pressuring some countries to pay special attention to their information on remittances. Recent international efforts have highlighted the need for more reliable data on remittance. The Sea Island Summit of G8 countries called for countries to work with international agencies and others to improve data. This message was reiterated by the G7 Finance Ministers who called for the creation of an international working group, lead by the World Bank, which would be responsible for (i) clarifying the concepts and definition of remittances; and (ii) providing better guidance on data collection with the objective of improving bilateral estimates. The task force identified three priorities beginning with improving aggregate estimates, improving estimates of flows between countries because reported information on remittances does not provide partner detail, and improving data that may be obtained from household surveys.

One consequence of the problem of measuring remittances thru formal and informal channels has led to attempts to capture both by relying on generalized assumptions on remittance behaviors of sending and receiving individuals instead of tracking flows though undeveloped formal and hard to observe informal channels. The methodology relies on regular demographic data, and occasional surveys of senders /receivers to obtain key parameters such as the likelihood to send/receive remittances (percent of population), propensity to send/receive remittances (percent of income), and or average per capita remittance sent/received. In this methodology, remittances are estimates from average behavior of migrant/ recipient individuals.

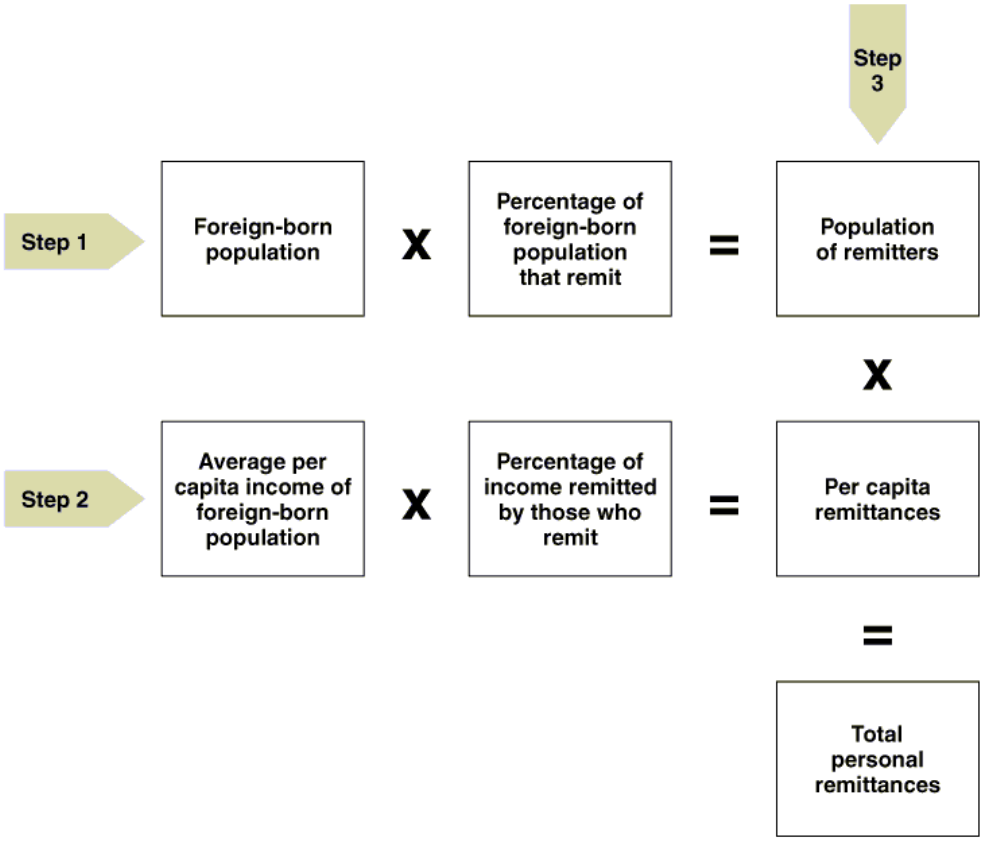
Consequently, The accuracy of the estimated amounts depends on the care taken in estimating the above parameters, the accuracy of the demographic data, and the reliability of sample surveys of senders/receivers. Many countries, including the United States use this methodology.

The Official Remittance Estimate of the US

The BEA officially estimated remittances from the US at $ 55 billion for 2005 and includes components that are not normally included in standard remittance reporting. The equivalent standardized figure, as reported to the IMF, is $XX billion. The estimate is derived from country-by-country tabulations of 140 countries. The value is obtained from a simple calculation that relies estimates of the propensity to remit (percentage of income) of the foreign born in the United States, their likelihood to remit (percent of the foreign born that remit). The basic tenet of the methodology is that remittances are proportional to income; some foreign born remit some don't depending on their household and family obligations in their countries of birth and in the United States. The latter is further approximated by various variables such as their duration of stay in the US, presence/absence of children in their US household; and Presence/absence of spouses in the US. The BEA also assumes the propensities to remit the proportions of the foreign born that remit vary by the development level of countries of birth, grouping countries of origin into four tiers [13]The BEA obtains annual data on the number of foreign born in the US and their personal income from annual surveys of the foreign born in the United States. Figure 1., below, explains the methodology employed by the BEA to obtain official remittances from the United States.

Figure 2: The methodology of estimating Official Remittances from the United States

[13] See Survey of Current Business, July 1005



BEA does not breakdown its annual remittance estimates by Countries of birth because, it lacks confidence in its country-level estimates[14]. Because Mexico is considered a major trading partner, comparisons can be made with official Mexican data. BEA estimated remittances to Mexico at $8.9 billion, in 2003. Mexico--which gets nearly all of its remittances from the US--published its remittance inflow at $13.4 billion for 2003. As a point of comparison, The Inter American Development Bank (IDB) also makes estimates for its members. For 2003, the IDB estimated remittances to Mexico at $12.9 billion Furthermore, IDB's estimates for 21 Latin American member countries was $30.6 billion, compared to BEA's estimates of $17.9 billion. This apparent discrepancy between estimates of the BEA , the Mexican and IDB estimates not only reflects differences in concepts of remittance flows but also in the choice of

[14] Only Publishes Balance of payments data for major trading partners (e.g. the European Union, Canada, etc.), which are quite different than major remittance destinations.

parameters in the estimation methodology. Unfortunately, the discrepancy cannot be resolved as the true amount remitted is essentially unobservable.

Modeling the Remitting Behavior of the Foreign born In the United States

Our model of remittance begins with the assumption that the individual is altruistic in such a way that his/her utility is maximized not only from variables that increase his/her consumption but also from those of his/her closest relatives. A direct outcome of this assumption leads to a supply function for remittances that includes income, the probability of being a remittance sender, and the amount of income to be remitted. This altruistic preference maximization can be shown to depend on two separate decisions: the likelihood that an individual will be a remitter and the proportion of his/her income to be remitted. The remittance literature typically shows that income, the income and distance difference between the place of birth and the adopted place of residence, the influence of integration into the host economy, and the residual influence of the place of birth determine the two decisions.

The remittance literature has shown:

- **Remittance increases relative to personal income. The rate at which remittances increase relative to income, however, may be variable.**
- **The longer individuals are away from their places of birth the less likely they are to send remittances. Remittances therefore are expected to decay as immigrants are gradually integrated into the host economy.**
- **Remittances are generally made only by the foreign-born. Furthermore, remittance behavior is not likely to be inherited, thus implying that children of remitters are not likely to be remitters.**

- **More responsibilities in the host country (children, marriage, property ownership, etc.) reduce both the likelihood of being a remitter and the amount remitted.**
- **More responsibilities in the place of birth (non-migrating relatives and spouses, etc.) increase both the likelihood of being a remitter and the amount remitted.**
- **The amount to remit as well as the likelihood of being a remitter is proportional to the difference in the average income and physical distance between the host cost countries and the place of birth. In the United States, for instance, immigrants from Central American and Caribbean nations have been shown to be more likely to remit than individuals from other nations of equal economic stature. Consequently, places of birth can be grouped by their relative distance and average income gaps from the host countries.**

In our model, we use the number of years away from ones place of birth, the presence or absence of children in the household in the host country, and the presence or absence of spouses, as indicators of integration into the host economy or affinity to the home country. Personal income in the host country is used as a factor in explaining both the likelihood of being remitter and the amount to be remitted. We also use four country groupings to distinguish remittance behaviors by places of birth. Data on the foreign-born in the United States forms the universe of our empirical analysis.

Data on the remitting characteristics of the foreign born is difficult to obtain because the target population is not only hard to survey but also because they have reasons to not be forthcoming with truthful answers, they have linguistic difficulties, they fear hostile actions by host governments. Data on the remitting characteristics of the foreign born in the United states is rare as there is only one survey that attempted to get information on all foreign born in the United States.[15] There are

[15] The legalized Population Survey (LPS1), 1989 and the follow-up survey (LPSII), 1991

however, less universal surveys that collected information on a regional basis, such as surveys of Mexicans in the US, surveys of Hispanics in the US. Although a more recent survey would have been appropriate for estimating the parameters of our model, we believe the LPS I and II still provide acceptable parameter estimates so long as the current immigrant profile is not profoundly different from those at the time of the survey. This said, we appeal to all to urge a survey of Ethiopians in the United States for a more accurate estimate of remittances from the United States.

We used data from LPS1 to obtain an empirical application of our model. We derived an estimate of the percent of the foreign born that remit using a logistic regression . The results of the regression are presented in Table 2.

Table 2: Logistic Regression of Percent of Foreign Born that Remit

	Coefficients	Std. Error	Log odds ratio
Intercept	-0.685	0.245 **	0.504
Males	0.072	0.067	1.075
Children not present in US Household	0.260	0.061 **	1.297
Married and spouse not in US	1.008	0.155 **	2.741
Years in US	-0.088	0.008 **	0.916
Income[1]		**	
No income reported	-1.122	0.194 **	0.326
$2,999 or less	-0.600	0.201 **	0.549
$3,000 - $5,999	-0.169	0.196	0.845
$6,000 - $8,999	0.015	0.186	1.015
$9,000 - $11,999	-0.076	0.184	0.927
$12,000 - $14,999	0.128	0.186	1.137
$15,000 - $19,999	0.115	0.188	1.122
$20,000 - $24,999	0.177	0.208	1.193
$25,000 - $29,999	0.116	0.249	1.123
Tiers		**	
Countries near the US	2.064	0.176 **	7.879

Other poor developing countries	1.350	0.195 **	3.859
Middle Income Countries	0.561	0.206 **	1.752

** 99% significance
* 95% significance
-2 Log likelihood = 7,177
N = 5,895
[1] / income levels shown are for 1989-90 which can be adjusted by the cost of living for more current levels assuming that basic remitting behaviors do not change in time. Also, the category of "no income reported" is included because the data contains information on some individuals that did not state their income but reported their remittances.

.

As can be seen from table, 1, our estimates show that:

- Males are approximately 7.5 percent more likely to remit than females,
- Individuals that have children in the US are 1.3 times less likely to be remitters than individuals that do not have children in the US
- Individuals that have left their spouse behind in the host country are 2.7 times more likely to remit than individuals who have their spouses in the U.S. or are unmarried
- Compared to individuals from well-developed nations, individuals from close by nations (e.g. Mexico, etc) are 8 times more likely to remit and individuals from poor developing countries (e.g. Ethiopia) are only 4 times as likely to be remitters.
- Each year in the United States decreases the likelihood of being a remitter by approximately 9-percent.
- Although personal income is significant in explaining the likelihood of being a remitter, differences in income are generally not significant.

We also made a second estimate that took into account the results in table 2. The regression results of our second experiment are shown in Table 2.a., below.

Table 2.a: Regression of the percent of the foreign born that remit

PUT TABLE OF NEW REGRESSION HERE and explain

	Coefficients	Std. Error		Log odds ratio
Males	0.15	0.02	**	1.2
Children not present in US Household	0.09	0.02	**	1.1
Years in the US			**	
<= 5.00	-0.02	0.04		1.0
6.00 - 10.00	-0.10	0.02	**	0.9
11.00 - 15.00	-0.35	0.03	**	0.7
16.00 - 20.00	-0.62	0.04	**	0.5
Married and spouse not in US	0.89	0.04	**	2.4

Our revised estimates of the percent of foreign born that remit shoed that males are 20-percent more likely to be remitters than Females, that foreign born that do not have children with them are 10-percent more likely to remit than those who do not, those who do not have their spouses are about 2-1/2/ times more likely to be remitters than those that either have their spouses with them or are unmarried. As expected, staying in the US longer reduces the probability of being a remitter.

In table 3, a summary of the results in the regression is shown for individuals from poor developing countries.

Table 3: Estimated Percent of Foreign Born that Remit by Years in the United States for Low income Developing Countries

	Males				Females			
	Child Not present in US household		Child present in US household		Child Not present in US household		Child present in US household	
Years in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US
<= 5.00	78%	55%	72%	53%	73%	52%	74%	49%

6.00 - 10.00	73%	53%	69%	51%	71%	50%	69%	47%
11.00 - 15.00	68%	47%	66%	45%	65%	43%	62%	41%
16.00 - 20.00	57%	40%	52%	38%	53%	37%	52%	35%
21.00+	47%	35%	40%	33%	42%	31%	44%	30%

Our regression of the amount of remittance by the foreign-born in the United States resulted in estimates that conform to the expected (theoretical) results and considering the sample size we are working with, all coefficients were highly statistically significant. Our results show that males tend to send $228 more than females per year, individuals whose do not have children in their US households send about $800 more than those who do. Individuals whose are married but have their spouse in their countries of birth send $1437 more than unmarried or married individuals who are in the US with their spouses. Also, each year in the U.S. tends to reduce the amount remitted by about $60 dollars. Irrespective of their income level, individuals coming from countries in close proximity to the US on average send about $246 more compared to those from more developed countries of birth.

Table4: Fixed effects Model Regression of Remittance Amounts

	Coefficients	Std. Error
Intercept	2,753	39 **
Males	228	6 **
Children not present in US Household	807	5 **
Married and spouse not in US	1,437	9 **
Years in US	-58	1 **
Income[1]		
No income reported	-1,767	20 **
$2,999 or less	-2,090	21 **
$3,000 - $5,999	-1,609	20 **
$6,000 - $8,999	-1,392	19 **
$9,000 - $11,999	-1,196	19 **
$12,000 - $14,999	-873	19 **
$15,000 - $19,999	-1,012	19 **

$20,000 - $24,999	-831	21 **
$25,000 - $29,999	-287	24 **
Tiers		
Countries near the US	246	35 **
Other poor developing countries	-221	39 **
Middle Income Countries	243	43 **

** 99% significance

Residual is weighted

[1] / income levels shown are for 1989-90 which can be adjusted by the cost of living for more current levels assuming that basic remitting behaviors do not change in time. Also, the category of "no income reported" is included because the data contains information on some individuals that did not state their income but reported their remittances.

As in Table 3.a, we also obtain estimates when years are grouped in ranges for individuals from poor developing countries. However, the dependent variable in this case is the percent of income remitted.

Table4.a: Fixed effects Model Regression of percent of personal Income remitted

	Coefficients	Std. Error
Intercept	2.74	1.26**
Married and spouse not in US	5.20	0.25**
Children not present in US Household]	1.70	0.13**
Males	-0.58	0.13**
Years in the US		
<= 5.00	0.54	1.30
6.00 - 10.00	4.72	1.26**
11.00 - 15.00	1.90	1.27
16.00 - 20.00	0.47	1.30

** 99% significance

Our revised estimate show that on average males remit about 7-percent of their income, while women remit 8-percent, individual that do not have children in their US households remit also about 8-percent of their income, individuals whose spouses are not in the United states remit 10-percent of their income compared to 5-percent for individuals that are either unmarried or have their spouses with them in the US. Our results also show that there is

virtually no difference between the percentages of income remitted for individuals who have stayed in the US for less than five years and those who have been in the US for more than 16 years-they both remit on average about 6-percent of their income. Remittances tend to be a significant portion of income (11-percent) for individuals who have been in the US for 6-10 years.

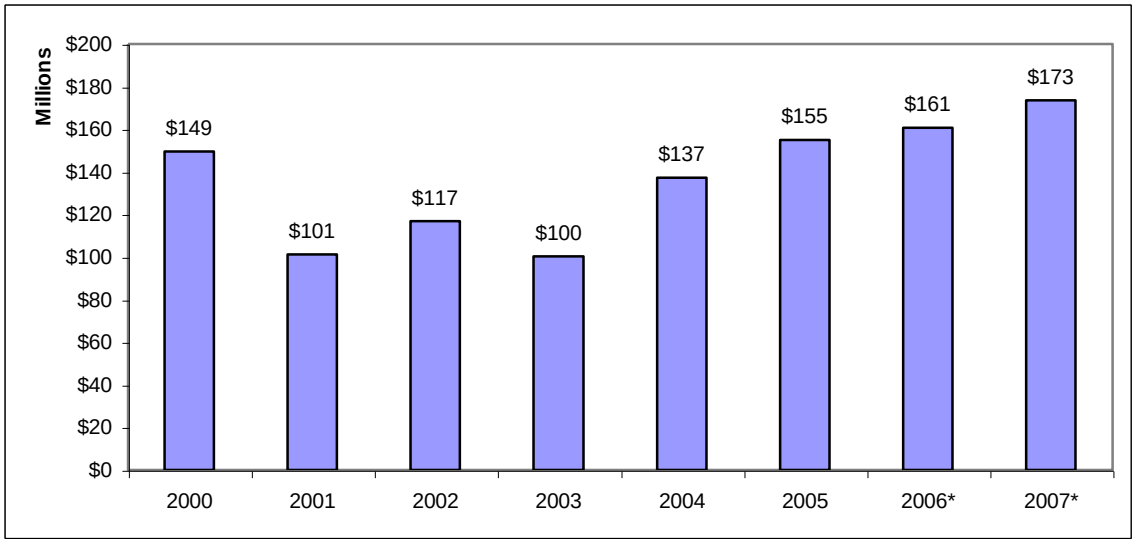
In Table 5, we present the predicted value of the proportion of personal income remitted for individuals from poor developing countries arrayed by years in the United States and the relevant variables in the above regression.

Table 6: Estimated Percent of Income Remitted by Years in the United States for Low Income Developing Countries

	Males				Females			
	Child Not present in US household		Child present in US household		Child Not present in US household		Child present in US household	
Years in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US	Spouse outside the US	Unmarried or spouse in the US
<= 5.00	10%	4%	8%	3%	10%	5%	8%	3%
6.00 - 10.00	14%	9%	12%	7%	14%	9%	13%	7%
11.00 - 15.00	11%	6%	9%	4%	12%	6%	10%	5%
16.00 - 20.00	10%	4%	8%	3%	10%	5%	8%	3%
21.00+	9%	4%	7%	2%	10%	4%	8%	3%

Applying Table 5 and Table 6 to the figures derived from the US census and the American Communities Survey on the number of the adult Former and current Ethiopians residing in the United States in 2000-2005, and their average personal income, we arrive at estimates of remittances to Ethiopia much more robust than what has been reported officially from the Government of Ethiopia.

Figure 3 : Estimated remittances to Ethiopia from the United States



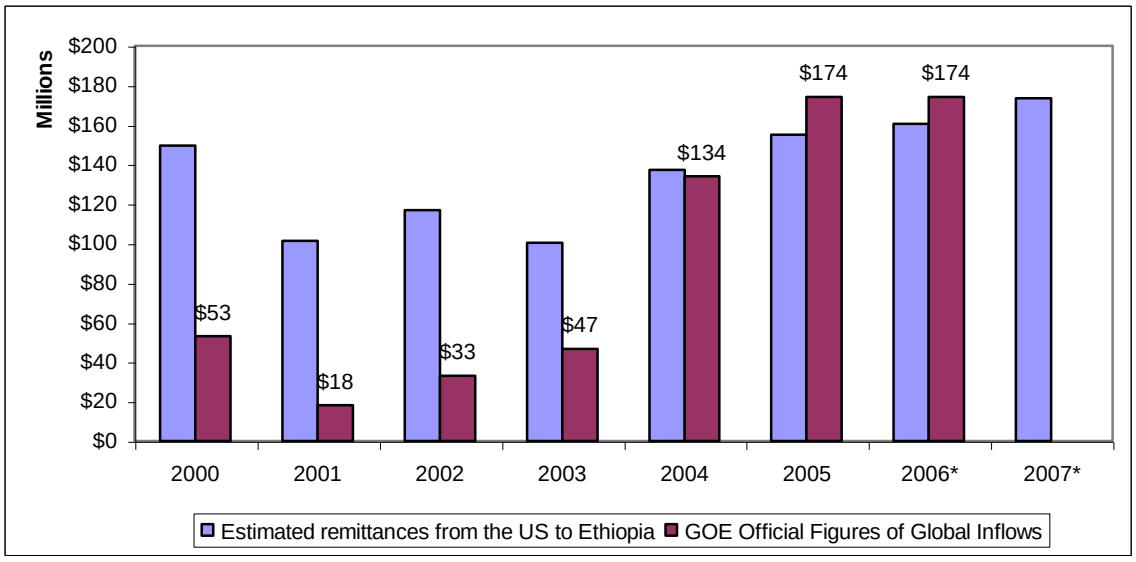
2006 & 2007 are predicted values

We estimate that in 2005 remittances from the US alone were $155 million. While our estimate is only $19 million less than the GOE figure of $174 million in 2005 from all sources, it is unlikely that Ethiopians outside the US could only have remitted such a low amount of just $19 million. Substantial numbers of Ethiopians now reside in Europe, the Middle East, Canada, and Australia all of which are prime remittance sending countries. It is therefore not unreasonable to expect remittance inflows from these regions to be much higher than the $19 million. The discrepancy between the GOE estimate and ours is therefore is fundamentally due to under estimation (overestimation) of the inherently unobservable remittance flow to Ethiopia.

The latest official estimate of remittance inflows to Ethiopia from all sources, for example, was $174 million in 2005. As can be seen in figure 4, official GOE figures of remittance inflows to Ethiopia are erratic showing large growth in more recent years. The first explanation of the discrepancy between our estimate and that of the GOE is that the official estimates are badly understated. We pose the following arguments to support the notion that the GOE figures have historically tended to an under estimate the global remittance inflow to Ethiopia. The GOE figures, as reported to the International Monetary Fund, indicate that remittances were a mere $18 million in 2001 barely 10-

percent of the GOE's own estimate for 2005. The dramatic increase in the official estimate between 2001 and 2005 suggests a profound change in the remittance behaviors of Ethiopians, yet, we are not aware of any fundamental factors that could cause it in the Ethiopian Diaspora. In addition, the 2003 and 2004 estimates are even more perplexing. The official estimates show dramatic increases since 2003 suggesting that upward revisions may have been made. The official estimate for 2003 was $47 million and in 2004 the official estimate shows a growth of $ 99 million (a growth rate of 190–percent in a single year) to $134 million. Furthermore, an unofficial estimate of remittances from the US by the Bureau of Economic Analysis, estimated remittances from the US at $83 million in 2003. It is therefore more plausible to expect that the official figure to be understated.

Figure 4: GOE Official Global Inflows of remittances Compared to our Estimated remittances from the United States



Data on GOE estimates is from the World Bank and IMF
2006 & 2007 are predicted values

Alternatively, although we cannot claim that our estimates can not overstate remittances to Ethiopia, we argue that, given our methodology, overestimation can only happen if we are willing to accept that Ethiopians on average have a much lower propensity

to remit or that Ethiopians in the US are less likely to remit than their counter parts from others from equally underdeveloped nations or that GOE believes far fewer Ethiopians reside in the US than indicated by the yearly national US government sample surveys as well as the decennial census of 2000. Over statement of the number of Ethiopians and their income in the US is, nevertheless, contradicted by the apparently large understatement of population counts and personal incomes among all US immigrant communities. It is therefore reasonable to assume immigrants, including those from Ethiopia, are generally under represented in the US Census and annual surveys.

Remittances do have the potential to assist in the development nations like Ethiopia. There are also likely to continue as a source of external funds to support others sources of income to help in alleviating the massive poverty that has gripped Ethiopia. However, the importance of remittances in the development process of countries like Ethiopia needs proper attention from central governments who seem to have made little to accommodate and channel it. In fact, some have erected barriers to its effective use by attempting to tax remittance inflows and thereby drive the flow more underground. Alternatively, there are now countries that allow the granting of mortgages based on expected remittances. There are also countries that have a public policy of matching certain community-oriented remittances such as the building of schools and hospitals. Finally, astute governments in poor developing countries have begun to implement policies that reduce the financial cost and physical hardship of sending remittances. More accurate information on remittances is a badly needed and is fundamental in evaluating the true impact of remittances and migration on the development process.