Immigrant Remitters in the U.S.: Sex and Ethnic Differences

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September 15, 2010

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ABSTRACT

As the quintessential link between home and host countries, remittances are an integral part of immigrant behavior. Based on the New Immigrant Survey we estimate Tobit models to determine the characteristics of remitters. We also employ semiparametric techniques to check for the robustness of our results without the assumption of normality. With the notable exception of Filipinas we find women remitting significantly less than men. Respondents' income is a positive and significant determinant of the amount of remittances. Remittances decreases with education, and are significantly influenced by additional years of residence in the host country. Immigrants remit more in the beginning albeit at a decreasing rate, but stop remitting after a threshold number of years in the host country. Married immigrants and those with many children remit less. Immigrants from Mexico and China remit significantly more than those from Northern America, UK and Oceania.

Introduction

Remittances have attracted a lot of attention among researchers as understanding migrants behavior is crucial for both immigration and emigration countries. In light of the recent global financial and economic crisis and the current discussion in the U.S. politics about new immigration laws, there is an even stronger urge to understand the economics of remittances and the underlying reasons of these flows.

While anecdotal evidence claims that remittances decreased with the economic crisis, remittance flows continue to increase and show an impressive resilience. The 2008 USAID report on international trends in remittances shows that in Mexico, remittances are the second largest source of foreign income, ahead of tourism and behind oil. Using data from the Central Banks of the home countries, the report documents that Filipinos abroad sent a record $14.3 billion, setting records for both annual and monthly amounts in 2007 (USAID 2008). In Moldova remittances were 37% of GDP in 2007, making it the highest percentage in the world. India received $27 billion, followed by China with $25.7 billion, and Mexico with $25 billion; next were the Philippines with $17 billion and France with $12.5 billion in 2007 (USAID 2008). Nigeria reported receiving from its diaspora $3.3 billion in 2007. Figure 1 shows total transfers made from migrants all around the world to their respective home countries aggregated at regional levels. Despite the fact that these statistics are based on information provided by the Central Banks and reflect only the official money flows,[1] they provide a good picture of the magnitude and continued importance of the phenomenon. Ratha (2008) estimates that transfers will decline in response to the financial crisis, but less in magnitude than private transfers and international aid highlighting the importance of remittances as a significant share of the developing countries' GDP. As presented in figure 1, it is mostly South America and the Caribbean as well as Europe and Central Asia that suffer from the decline whereas other regions seem to show very little response to the crisis in terms of remittances.

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[1] Immigrants often use informal channels to remit back to the home country, whether it is in money or in kind; they hand-deliver money when they go back to visit, or they may give money to trusted friends and neighbors who visit. In Moldova, only 30% of remittances goes through the formal channel of a bank or a money transfer agency (USAID 2008).
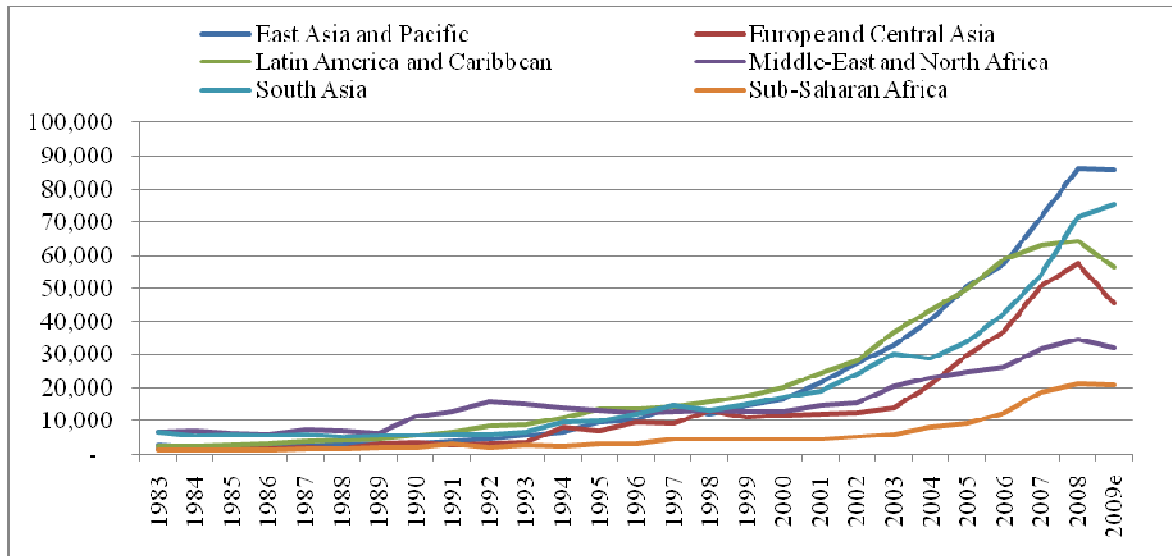
Figure 1. Total remittances (US$million)
Source: World Bank (2010)

Transfers are usually made to poor, often rural, households and constitute a significant share of the household income. Page and Plaza (2006) review evidence on how migrants contribute to the economic development of their home country. Despite the general opinion that remittances contribute to alleviating poverty, due to liquidity constraints, remittances might actually increase inequality in the recipients' country. The poorest households cannot afford to have one of their members migrate, not to mention the resources needed to educate potential candidates so that migration is profitable. Empirical work also delivers ambiguous results (Ratha 2003; Taylor 1999; Adelman and Taylor 1990).

Why should we treat remittances differently than any other transfers? At a macroeconomic level, remittances prove to be the largest and least volatile source of foreign exchange in many developing countries. In the Philippines, 17% of households receive remittances that constitute 8% of the country's national income (Rodriguez 1996); in Peru, 25% of Peruvian households receive transfers which accounts for 22% of their income (Coz, Eser and Jimenez 1997); in the Dominican Republic, 40% of households in have migrant members and 52% of them send remittances back home (De la Briere 2002). In El Salvador, 14% of rural and 15% of urban households received transfers from abroad in 1997 (Edwards and Ureta 2003). In 2004 remittances amounted for 39% of Tonga's

GDP (McKenzie 2007) while Latin America and the Caribbean received $40 billion from their diaspora in the U.S. only (Amuedo-Dorantes 2007).

At a microeconomic level, motivation for remitting seems to differ from other transfers. In many cases, remittances aim to offset at least some of the shortcomings present in everyday life in the recipients' countries, such as the non existence of financial markets or the existence of imperfect financial markets and the lack of insurance possibilities combined with high income volatility. Moreover, donors are not anonymous. Transfers arise within a network as an informal arrangement. Most common motives to remit, enumerated in the literature, include:[2] care for those left behind (altruistic motive plus self-rewarding emotions, Stark 1995), loan repayment (as migration costs are often sponsored by the whole household even extended families, Poiraine 1997), compensation for taking care of assets left in the home country (Cox 1987), bribing intend to keep co-patriots home and away from the host country where newcomers can lower wages (bribing low skilled potential emigrants in order to increase the expected wage in the destination country, Stark 1995, Stark and Wang 2002), investment (to purchase assets in the home country, Funkhouser 1995) or coinsurance to insure each other against economic shocks (Lucas and Stark 1985).

Despite the fact that all these theories deliver quite clear predictions, due to data scarcity, it is almost impossible to conduct tests to discriminate between these competing explanations and agree on one theoretical framework. It is also naive to assume that remittances are driven by a single motive. In reality, the decision to remit is very complex and involves many different motives that are not necessary mutually exclusive. Therefore, we do not aim to make any decisive conclusions regarding incentives to remit, but to look at immigrants' characteristics and gauge how they affect both the propensity to remit and the amounts remitted. Theoretical predictions are important as they allow us to formulate the empirical model and interpret the results.

This paper employs a rich and underused dataset, the New Immigrant Survey (NIS) to study immigrant remitters in the U.S., namely the characteristics that significantly determine remittances. Given the growing pressure that governments face to create more targeted immigration policies both in the sending and receiving countries, knowing the

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[2] For detailed discussion see Rapoport and Docquier (2005).

behavior of immigrants vis-à-vis remittances is of paramount importance and has tactical applications. On the one hand remittances affect the life of the remitter's network left behind in many ways. On the other hand they shape the present consumption and savings patterns of the remitters themselves, are very much related to return and repeat migration, and affect the socioeconomic and political climate in the host countries. Clearly, the more immigrants remit, the less they save and/or consume in the host country. Moreover, remitting indicates a strong attachment to the home country and hence constitutes an important part of the assimilation and integration process of immigrants in the host country, an aspect that is often neglected in the literature. In a study on Germany, for example, Constant and Massey (2002) show that non-remitters are highly selected on human capital characteristics, while remitting migrants are not. Repeat immigrants are also more likely to remit and one of the motives to go back to the host country is to be able to remit again (Constant and Zimmermann 2003).

Remittance implications for sending and receiving countries are often like two sides of the same coin: a gain to a remittance receiving country can be a loss to the remittance sending country. This paper attempts to tackle the microeconomics of monetary remittances[3] from the host country point of view by analyzing remittance flows of immigrants living in the US and focusing attention on the gender and ethnic differences in remitting patterns among immigrants with Lawful Permanent Residence (LPR).

The rest of the paper is organized as follows. Next section describes our conceptual framework and discusses characteristics of remitters that have been found significant in previous empirical work. Section 3 proceeds with characterization of our sample. Section 4 describes and motivates our empirical strategy while section 5 follows with results. Section 6 concludes.

2. Conceptual framework and characteristics of remitters

Since there is no unique theory explaining remittances behavior that we could test using our data, we proceed with estimation of a reduced model. Our dependent variable, remittances, is a subset of income, requiring the introduction of income as an independent

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[3] Remittances can also be in the form of in kind (clothes, jewelry, agricultural equipment, etc.) as well as money taken by immigrants to the home country when they go back to visit

variable. Moreover, since remittances are a portion of income, we follow the human capital theory model as developed by Mincer and applied to immigrants by Chiswick's (1978) seminal work on assimilation. We employ most key income variables widely used in the wage assimilation literature such as education, age, time elapsed since migration, language, marital status, country of origin, etc. Below we describe in detail the relationships between these variables and remittances documented in the literature and motivating the model we estimate. We estimate two specifications. First reduced form model is of the following form:

$$
\begin{aligned}
\text{Ln(remittances)} = {} & \beta_0 + \beta_1*\text{female} + \beta_2*\text{ married} + \beta_3*\text{children} + \beta_4*\text{childhh}^4 + \\
& \beta_5*\text{YSFM} + \beta_6*\text{YSFM}^2 + \beta_7*\text{age} + \beta_8*\text{age}^2 + \beta_9*\text{eduUS} + \beta_{10}*\text{eduhome} + \\
& \beta_{11}*\text{ownathome}^5 + \beta_{12}*\text{BornMexico} + \beta_{13}*\text{BornIndia} + \beta_{14}*\text{BornLatinAm} \\
& + \beta_{15}*\text{BornAfrica} + \beta_{16}*\text{BornMidEastNAf} + \beta_{17}*\text{BornPhilip} + \beta_{18}*\text{BornSEAsiaPac} + \\
& \beta_{19}*\text{BornChina} + \beta_{20}*\text{BornEurope} + \beta_{21}*\text{philipina} + \beta_{22}*\text{income} + \beta_{23}*\text{income}^2 + \varepsilon.
\end{aligned}
$$

The second model is exactly the same but we add an indicator variable of whether the person intends to stay in the US for the rest of her life. There are three reasons why we present results from these two models specifications. First is purely technical as this question was asked randomly to only 50 percent of respondents, and thus including it in the model automatically excludes approximately 50 percent of observations in our subsample. Second reason is based in our doubt about how reliable is an answer to this question due to its long time horizon. We observe remittances for a twelve months period and we do not know when respondents decided on whether to stay in US or return to their home country. One possibility of bias is that we observe people who twelve months ago wanted to stay and were not remitting much or were not remitting at all but at some point before the interview date they changed their mind and started remitting. On the other hand, some people might have done the opposite: started thinking that they will return home and thus they were remitting but just recently decided to stay. However, in both cases we are underestimating the impact of intention to stay on remittance behavior.

Third reason comes from the literature. Intention to return to the home country is used to capture the pure-self interest, such as bequest motive, in empirical work. For

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[4] Dummy variable indicating whether respondent has at least one child living outside of the household without her own household
[5] Dummy variable indicating whether respondent owns property in the home country

example Brown (1997) finds that among people who intend to go back main reason to send money home is an investment in their asset in their respective home country. De la Briere et al (1997) finds that migrants from Dominican Republic do not respond to shocks in their parents' income and tend to keep constant flaws of remittances.

Borrowing from Hagen-Zanker and Siegel (2007), Table 1 summarizes the empirical findings from previous studies using the same methodology as this study; that is, treating the decision to remit and how much to remit as one.

Table 1. Summary of empirical findings

Effect of … on probability and level of remittances	migrant income	migrant gender (base male)	migrant marital status	migrant age	migrant education level	migrant risk level	migration duration	whether spouse joined migrant	migrant cost	HH income	HH wealth	no. HH members/ dep. ratio	no. migrants/ other migrants	neg. HH shock	HHH age
Amuedo-Dorantes and Pozo (2006) Mexico		+		+	x	+	x								
de la Briere, Janvry, Lambert and Sadoulet (1997) Dominican Republic				x	+		+			-	+			x	x
Brown (1997) Tongan and Samoan migrants in Australia	+			x		x		+(1)							
Funkhouser (1995) El Salvador and Nicaragua	+(2)	+(3)		x	x		-(3)						-(4)/x(3)		
Germenji, Beka, Sarris (2001) Albania	+						x			-	-		x		+(5)
Gubert (2002) Mali (only males)			+	+	+		+	+	x				-	+	
Hagen-Zanker and Siegel (2007) Albania					+	+	+				-				
Moldova		x	x	x	-		x			x	x	x	x	x	+
Holst and Schrooten (2006) Migrants in Germany	+(2)	x	+	+	+					-(6)					
Konica (2006) Albania		+			-	x	-					-			
Merkle and Zimmerman (1992) Migrants in Germany	+		x	x	x		x			-					
Pleitez-Chavez (2004) El Salvador										-	+		+	+	
Schrieder and Knerr (2000) Cameroon											-(7)/ +(8)			x	x
Craciun (2006)	+	-	x				+					x(9)			-(10)

Notes: + positive effect; - negative effect; x not significant; (1) Samoa, (2) employment, (3) El Salvador, (4) Nicaragua, (5) HHH>50, (6) real estate owned, (7) property, (8) other wealth variables, (9) children, (10) general HH age

Source: Hsgen-Zanker and Siegel (2007)

There is a lot of research trying to establish the impact of gender on remittances. De la Brière et al. (1997) use the NELM model on migrants in the US from the Sierra

region of the Dominican Republic. They find that while insurance is a better explanation for the motivations for female remitters, investment is a more common motivation for male remitters. In a more recent study (de la Brière et al. 2002), they show that the insurance function is mainly fulfilled by female migrants to the US. Only when a male is the sole migrant in his household does he play the role of insurer. Investment, by contrast, is pursued by both males and females migrating to the US.

In general, however, men tend to remit more than women (see Merkle and Zimmermann 1992 among others). In an analysis of Peru, Costa Rica, Ghana, Kenya, Bangladesh, Thailand, Indonesia, and the Caribbean Chant (1992) finds that men seem to be more mobile and closer to the labor market than women. However, all these papers do not control for in-kind transfers and it might be the case that women tend to remit more this way.

The exception is the Filipinos. Filipino men are encouraged to stay home while women are more encouraged to go abroad for work. In this case, culture defies traditional models for household migration patterns. The lack of labor market opportunities for women in the Philippines reinforces the cultural norm of female labor flight (Semyonov and Gorodzeisky 2005). Combinations of cultural and labor market push factors explain the "Filipina exception" to the overall trend. One factor is that maybe women are more likely to remit in in-kind transfers and due to data scarcity we cannot keep track of it.

Orozco, Lowell, and Schneider (2007) investigate the difference in gender motives further, by looking at remittances recipients in the receiving country. They find that women are more likely than men to remit to persons other than their spouse, namely to extended family members like grandparents and siblings. The explanation is that women have stronger family networks outside the immediate family than men. Women are more likely than men to remit for altruistic purposes because their recipients are more likely to have no stake in their own economic well being.

In a similar model, Agarwal and Horowitz (2002) find that immigrants remit mostly for altruistic reasons but also for self-interest. Some of the time, remittances are used for immediate consumption by dependents. However, remittances are often invested in assets like land. It is fairly common for remittances to parents to be used to buy land, which is inheritable. With a stake in those kinds of assets, remittances to parents can have a return to

the remitting children, characterizing them more in terms of self-interest. Men are more likely than women to remit for these "self-interested" reasons (Orozco et al., 2007).

Two reasons motivate the inclusion of dummy variables for countries or regions of birth. In addition to cultural factors, some countries directly encourage migrants to send money home by having preferential policies. In 1999, the Mexican government instituted the "tres por uno" program (three for one) where for every dollar the Mexicans living abroad put into this program, the federal, state, and municipal governments add another dollar each for infrastructure purposes.

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Another notable example is the Philippines that have one of the strongest cultures of employment migration, reinforced by government institutions. The Philippine Overseas Employment Administration solicits and manages overseas contracts for its citizens and monitors private labor recruitment agencies. The government also manages the Overseas Workers Welfare Administration to provide welfare assistance to citizens working abroad (Asis 2006). By lowering transportation costs and mitigating welfare and safety issues inherent in employment relocation, the Philippine Government fosters a positive attitude about working abroad. Through these strong policies, the Philippines boasts one of the largest relative remittance flows of any country in the world, with remittances accounting for 10% of national GDP in 2006 (UNESCAP Staff 2007).

The amount of remittances is part of a person's income and therefore they have a strong positive relationship (Lucas and Stark 1985). DeSipio (2000) models the probability of remitting and finds that it increases with income, but only up to a certain point. For the highest income brackets, the probability of remitting declines as income increases. Therefore, we include both income and income squared to allow for a nonlinear relationship.

Looking at the remitting behavior of Mexican immigrants, Massey and Basem (1992) find that immigrants' remittances are determined by certain family and educational

characteristics, immigrants' legal status, and their income. Brown (1997) tests the hypothesis that migrants' willingness to remit decreases over time. Using survey data on Tongan and Western Samoan migrants in Sydney, he finds that the remittance-decay hypothesis is not supported by the data and migrants are motivated by factors other than altruistic family support, including asset accumulation and investment back home.

The most recent finding indicates that illegal immigrants should remit more than legal immigrants (Amuedo – Dornates, 2004). Illegal immigrants cannot go back home as often as legal immigrants and they also face more risk, thus, the insurance motive might be stronger for illegal immigrants. As our data set contains only immigrants that have recently become LPR, so are legal at the time of data collection, we cannot address this question. Moreover, since it is possible that our sample contains LPR that have entered the US illegally in the past, we would face selection problem as they would not be a random sample of illegal immigrants.

3. Data and descriptive statistics

The 2003 New Immigrant Survey (NIS) is the first and only available year of what will be a panel data set on immigrants to the US who just entered the federal Lawful Permanent Residence (green card) program. The selected immigrants were chosen at random by the United States Citizen and Immigration Services, a branch of the Department of Homeland Security (DHS). The project was managed at the Princeton Office of Population Research, but actual data collection was conducted by the Center for Human Resource Research at Ohio State University and by Abt Associates, a private research firm. Most importantly, the dataset also draws upon valuable information from the former INS.

The sample was collected between June 2003 and June 2004. 12,500 adults (18 years of age or older) and 1,250 children took part in the survey. The data include variables on demographics, income, income transfers, and health, to name a few. The sample does not represent immigrants who enter the US during this period without entry documents, nor does it represent any legal immigrants who enter on a non-permanent, temporary basis.

Jasso, Massey, Rosenzweig, and Smith (2000) compared sample interviewees with sample non-interviewees and found that, on almost all measurable demographic factors such as age, gender, marital status, country of origin, and visa status, the two groups did not

differ, suggesting that interview response rate of about 69% is unrelated to these measured variables. However, in a subsequent analysis, Jasso, Rozenzweig and Smith (1999) found that income did drive sample selection such that higher income respondents were less willing to participate. They believe it has to do with the reservation compensation level provided by the survey, which had flexible offers between $5 and $100; if respondents were resistant, they were offered more money. It seems that $100 was not enough to convince many higher income immigrants to participate and thus, high-income immigrants are underrepresented in the NIS. However, they appear to be the only group underrepresented in the NIS, so the possibility for sample selection bias should be limited.

Our sample is limited to working age adults (18-64 years old) and consists of 3669 LPRs, 43% of whom are women. Uncensored observation are 801 and 2868 observations are left-censored. Table 2 provides the descriptive statistics on the variables of interest.

Table 2. Descriptive statistics

Variable	Mean	Std. Dev.
Remittances (R>0)		
Ln(Remittances)	6.71	1.60
Years of schooling in the US (if resp. went to school in the US)	4.40	3.41
Number of children	1.39	1.58
Gender (female)	0.43	0.49
Years of schooling in the home country	12.69	4.63
Age	37.10	9.76
Marital status (married)	0.68	0.47
Intends to stay in the US until the rest of life *	0.89	0.32
Owns property in the home country	0.06	0.24
Years since migration	8.18	8.40
Ln(Income)	9.55	1.79

n=3669

*n=1617

Notes: The question about intention to stay in the US until the rest of one's life was randomly asked to 50% of the respondents which is why the number of observation is smaller.

An average sampled immigrant is well educated, with 12.69 years of schooling obtained in the home country and, conditioned on going to school in the US, 4.40 years completed in the US. 68% of respondents are married, have on average 1.4 children and have left their country of birth about 8 years ago.

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She earns approximately $53,553 a year (in current prices, PPP adjusted) which is relatively high for non-white Americans (excluding Asians). According to 2004 Census, the mean household income for households headed by persons identifying as White alone was $65,317, $40,685 for African Americans or Black, $45,871 for Hispanics or Latinos, and $76,747 for Asians. The median income for our sample is about $21,000 which is only about a half of the median income for the US ($43,318 in 2003). Our income variable captures all potential sources of income, ranging from salaries and income from self-employment to social security income and all benefits received from either US or foreign government.

801 respondents, which constitute 22 percent of the sample, report that they do remit to their home countries. Questionnaire delivers very detailed information about how much and who receives the money. However, as number of observation per cell would be very small if we wanted to analyze remittances by receivers, we construct an aggregated variable which captures all possible outgoing transfers.

Table 3 shows the sample breakdown by ethnicity (second column shows ethnicity of remitters only). The largest group comes from Latin America (23 percent) and they also constitute the largest group among remitters (30 percent). Immigrants from Europe and Central Asia constitute 21 percent of the whole sample and are positioned second among remitters (14.6 percent). Mexicans and African Sub-Saharans follow with 13 and 10 percent of the sample and 9 and 11.5 percent of remitters sub-sample, respectively.

Table 3. Sample division by ethnicity and subsample of remitters by ethnicity

	% of sample	% of remitters
Latin America	23.47%	30%
Europe and Central Asia	21.07%	14.60%
Mexico	12.97%	9.24%
African Sub-Saharan	9.92%	11.49%
East Asia, South Asia and The Pacific	9.29%	7.74%
India	8.20%	9.24%
Philippines	5.48%	8.61%
China	4.66%	5.24%
Middle East and North Africa	4.42%	3.12%

Table 4 presents the breakdown by ethnicity and amounts remitted. The vast majority of immigrants within all ethnic groups report low remittances. Within Indians,

Chinese and Filipinos the percentage declaring high transfers is significantly higher than for other ethnic groups. It is worth noticing here that as far as mean income for these ethnic groups is concerned, Indians, with a mean income of $70,439, are much better situated than Chinese and Filipinos, whose mean income is below the sample average, with 49,444 and 29,137, respectively .

Table 4. Amounts remitted by ethnicity

| | Remittance | | | |
	Low	Medium	High	Total
Latin America	84.90%	9.52%	5.57%	100%
Europe and Central Asia	87.84%	5.43%	6.73%	100%
Mexico	91.18%	5.88%	2.94%	100%
African Sub-Saharan	83.79%	9.07%	7.14%	100%
East Asia, South Asia and The Pacific	86.51%	5.87%	7.62%	100%
India	77.08%	7.31%	15.61%	100%
Philippines	74.13%	13.43%	12.44%	100%
China	77.19%	8.19%	14.62%	100%
Middle East and North Africa	90.74%	9.56%	3.70%	100%

4. Econometric analysis

As mentioned before, only 22 percent of the sample reports positive remittances. As we do have other information for non-remitters, we are facing censored data. Figure 2 shows that there are many people who reported some income, but reported zero remittances. In fact, large fraction of our sample chose not to remit (78%). Therefore, OLS will result in biased and inconsistent coefficients, both if it is estimated over the entire sample and over only uncensored observations.

We believe that there is no theoretical nor empirical reason why the decision to remit should differ to the decision about how much to remit. Treating the problem as a selection issue raises identification problems as it is difficult to distinguish which variables influence decision to remit and not the decision about how much to remit. Moreover, studies that made the distinction between the decision to remit and decision how much to remit generally find that each independent variable has the same effect on both decisions (Carling, 2008). Also, since we observe remittances of various amounts it seems plausible to assume that the cost of remitting is negligible and treat our data as censored at zero.
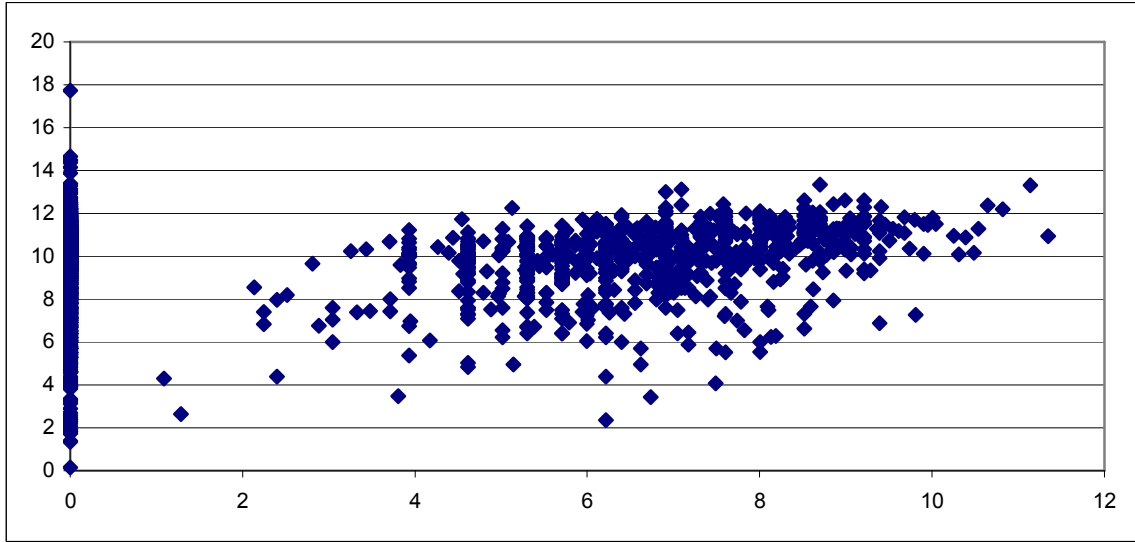
Figure 2. Scatter plot of Income and Remittances

Therefore, we first estimate our model using Tobit model. We introduce a latent variable, willingness to remit, (denoted as R*) and we assume linear conditional expectation of the latent variable and normally distributed disturbances. Therefore, the model is of the following form:

$$R^* = X\beta + u$$

$$R = \begin{cases} R^* ......if........R^* > 0 \\ 0............otherwise \end{cases}$$

We are interested in identifying the effect of different characteristics on amounts remitted. When interpreting coefficients in Tobit model one needs to be very careful. The estimated coefficients concern a randomly chosen individual from the entire sample (so the effect of the independent variable on the latent variable, R*, and not the observed variable R). Moreover, unlike in the linear regression model, coefficients differ to marginal effect and the latter need to be evaluated at a given data point (usually the average).

Despite the fact that Tobit is widely applied in studies concerning remittances, its estimates are fragile to misspecification of error distribution. Tobit estimates are inconsistent in the presence of heteroskedasticity and non-normality of residuals. Therefore, we proceed with semiparametric least square estimator (SLS), method which escapes the need of any distributional assumptions and is robust to heteroskedastic error term (Ichimura, 1993). As in Tobit model, necessary assumption is that the same index is

driving both the selection into remitting and amounts remitted. Estimation method works just like least squares so we are minimizing the sum of squares residuals. But now the distribution of the error term depends on the index:

$$\hat{\beta} = \arg\min_{\beta} \sum_{i=1}^{n}(y_i - E[y_i \mid \hat{X_i\beta}])^2 , \quad \text{where} \quad E[y_i \mid \hat{X_i\beta}] \quad \text{is a nonparametric}$$

conditional expectations estimated using a normal kernel. For identification purposes, constant needs to be normalized to zero and one coefficient needs to be normalized to one (typically on an independent variable that is known to be significant and has an unambiguous effect on the dependent variable). Therefore, interpretation of the coefficient is relative to the normalized variable. In addition, all variables are standardized to have mean zero and standard deviation equal to one.

5. Empirical results

Parametric results for both specifications (with and without a dummy variable indicating whether respondent intends to stay in the US) are summarized in table 5. In line with previous results, we find that women remit significantly less than men. Unfortunately, we cannot control for transfers in-kind or conduct the analysis controlling for who is receiving the transfers and therefore we cannot really form any decisive conclusions about the impact of gender on remittances. Interestingly, after controlling for the intention to remain in the US for life, the coefficient on female becomes hardly significant. This pattern is preserved when we have remittances as a share of income as dependent variable (results in the appendix) contradicting some of the previous results.

Table 5. Tobit estimation results (standard errors in parentheses)

	Basic Specification	USlife Specification
Female	-1.67** (.45)	-1.13 (.66)
Married	-.11 (.5)	-.72 (.73)
Children	-.2 (.17)	-.02 (.25)
Child not in the hhold	4.69** (.62)	4.96** (.9)
YSFM	.26** (.07)	.32** (.1)
YSFM^2	-.004** (.002)	-.07** (.003)
Age	-.002 (.002)	.27 (.25)
Age^2	-.002 (.002)	-.003 (.003)
Edu US	-.28** (.11)	-.43**(.16)
Edu home	-.05 (.06)	.0002 (.086)

Own property at home	2.24* (.80)	2.92**(1.24)
Income	.005** (.00012)	.004** (.00001)
Income^2	-.001** (.0001)	-0.001**(0.00001)
Mexico	1.29 (1.34)	.15 (1.96)
India	3.56** (1.3)	2.43 (1.94)
Latin America	4.18** (1.24)	3.48** (1.78)
Africa	4.75** (1.31)	3.07 (1.87)
Middle East	1.78 (1.55)	-.2 (2.38)
Philippines	.59 (1.54)	-.95 (2.31)
SE Asia	2.66* (1.32)	2.01 (1.95)
China	4.21** (1.44)	2.41 (2.11)
Europe & Central Asia	1.59 (1.23)	-.44 (1.81)
Filipino Women	3.74* (1.78)	2.76 (2.65)
US for life	-	2.27* (.92)

Notes: Tobit 1 corresponds to specification with the indicator variable whether respondent intend to stay in the US for the rest of the life or not

Since our results confirm previous findings concerning gender and in order to have correct signs, we set the negative of the coefficient on female to 1. Table 6 contains comparison between parametric and semiparametric estimation. Since SLS requires normalization of one coefficient to 1, Tobit estimates are accordingly adjusted. Due to computational burden, we only present results for the basic specification and with *lnincome* instead of *income* and *income squared*. The estimates from both methods are mostly alike in significance and signs but magnitudes differ.

Table 6. Tobit and SLS estimation results (standard errors in parentheses)

	Basic Specification	
Married	-.09 (.49)	-.001 (.1)
Children	-.17 (.28)	-.01 (.077)
Child not in hhold	2.84** (.63)	2.69** (.13)
YSFM	1.15** (.55)	1.12** (.18)
YSFM2	-.58 (.5)	-.80** (.19)
Age	1.09 (1.65)	1.57** (.52)
Age2	-.83 (1.6)	-1.51** (.5)
Edu US	-.41** (.26)	-.35** (.09)
Edu home	-.10 (.27)	-.001 (.025)
Own property at home	1.34** (.79)	1.34** (.24)
Income	.53** (.15)	.3** (.033)
Mexico	.46 (1.31)	.22 (.42)
Latin America	2.29** (1.21)	1.27** (.39)
Africa	2.74** (1.29)	1.42** (.4)

Middle East	.83 (1.53)	.5 (.43)
Philippines	.36 (1.54)	.07 (.5)
SE Asia	1.43 (1.3)	.88* (.4)
Europe & Asia	.75 (1.22)	.52 (.39)
India	2.07** (1.29)	1.98** (.44)
China	2.55** (1.44)	1.55** (.49)
Filipino women	2.14* (1.78)	2.38** (.52)

Notes: one coefficient needs to be set to 1 - here negative of the coefficient on female; Tobit results presented are accordingly adjusted.

Previous literature has found that education has a negative impact on remittances. We divide schooling into two categories: years of schooling received in the home country and years of schooling received in the US. We find that while education obtained in the home country has no effect on remittances; years of schooling completed in the US have a negative impact on amounts remitted. This finding contributes to the discussion on brain drain vs. remittances. If obtaining schooling in the US indicates the most skilled migrants than, indeed, migration of these people not only fosters brain drain but also decreases the transfers. However, after controlling for the fact whether the person went to school both in the US and the home country, both schooling variables become insignificant, whereas the coefficient on the dummy indicates that people who went to school only in the US remit significantly less (results in the appendix[6]). There are 54 people in our sample who went to school in the US only and they have completed 11 years of schooling on average, which is below the sample average. This proves against the previous argument and does not let us conclude that more educated people remit less. It seems like education in the US in absence of control for receiving schooling solely in the US captures some assimilation effects rather than education effect on remittances and education measured in years of schooling has no significant effect on remittances.

We also find, in line with previous literature, that having children that live outside of the household increases amounts remitted. Moreover, once we control for whether children live in the household or not, number of children does not influence remittances in a significant way[7]. Also, owning property in the country of birth increases remittances, which indicates either investment or exchange motive so the money is sent to service this

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[6] Due to computational burden only results from Tobit are presented.
[7] Surprisingly, dummy for whether the spouse is living outside of the household was not significant in any specification and therefore is left out.

property. Similarly, age does not seem to have an effect but years since first migration do affect remittances and do so in a nonlinear way, having a positive impact at first (confirming previous findings) but as migration becomes longer remittances become negatively affected. This relationship can result from the fact that at the beginning, when the ties with home country are still very strong and as migrants are doing better in the US they can afford to remit more. However, as time goes by, ties with the home country tend to weaken and thus amounts transferred decrease. It is also possible that, over time, situation in the home country changes, maybe due to the remittances sent over time and the need to transfer money back home decreases.

Similarly to years since first migration, income affects remittances in a nonlinear way. The effect is first positive but after some threshold it becomes negative (inverse U shaped, same effect as documented in Cox, Eser and Jimenez, 1997) indicating that remittances increase with income up to some level of income and decrease later.

The analysis of regions of birth dummies requires some care. The reference group is immigrants born in North America and Australia. Therefore, based on the fact that the coefficient on the dummy indicating being born in Mexico is insignificant tells us nothing about the effectiveness of the Mexican government policy described before. Except for immigrants born in the Middle East, Northern Africa, the Philippines, Europe and Central Asia, all other groups tend to remit more than their Northern American and Australians counterparts. Of course these results will change depending on the reference group we choose, therefore no conclusions can be really drawn based on these results. For example: setting migrants from Mexico as the reference group shows that immigrants from Latin Americans, Africa, India and China remit significantly less (results in the appendix).

Also, once we control for the intention to stay in the US for life, only coefficient on Latin America dummy remains significant. This might indicate that migrants from different regions migrate temporarily while from other permanently and it is the intention to stay that shapes the remittances. The explanation of why Latin Americans are different and still show to remit more might be found in culture. Latin Americans are known for very strong family ties that go far beyond the closest family and family members have moral responsibility to help other family members (Noble and LaCasa 1991).

Exception is the Filipino women. As documented in previous papers, this group tends to remit more than everybody else. However, once we control for the intention to stay in the United States, we do not find this relationship. Most of the empirical studies find that Filipino women remit significantly more than other immigrants. However, our sample consists of immigrants who became LPR, whereas the Philippines government creates incentives for Filipino women but for temporary migration mostly. It is of course possible that some of these women try to stay in the US, end up getting the LPR status and we do see them in our sample. However, we think that it is possible that the Filipino women that we observe in our sample are not representative for migration pattern from the Philippines. If most of the Filipino women want to stay in the US and intention to stay is positively correlated with amounts remitted, leaving intention to stay out of the model will result in omitted variable. In our sample, out of 122 Filipino women that were asked whether they want to stay in the US or not, 96 (79 percent) responded yes.

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Appendix

Specification including the dummy variable for whether a person went to school in the US only or received schooling also in the home country (Tobit)

Ln(remittances)	Base Case	Model w/uslife
Female	-1.69	-1.21
	(3.75)**	(-1.82)
Married	0	-0.68
	0	(-0.93)
Number of children	-0.2	-0.02
	-1.17	(-0.08)
At least one eligible child lives outside of the household	4.71	4.99
	(7.52)**	(5.54)**
Years since first migration	0.25	0.32
	(3.80)**	(3.27)**
YSFM2	0	-0.01
	(2.22)*	(2.44)*
age	0.22	0.22
	-1.29	(-0.86)
age2	0	0
	-1.02	-0.81
Years in school in the US	-0.15	-0.27
	-1.27	(-1.58)
Years in school in home country	-0.08	-0.03
	-1.28	(-0.3)
Own property at home	2.28	2.91
	(2.86)**	(2.35)*
Born in Mexico	1.27	-0.03
	-0.95	(-0.01)
Born in India	3.59	2.5
	(2.76)**	(-1.3)
Born in Latin America	4.15	3.5
	(3.36)**	(1.98)*
Born in Africa	4.69	3.07
	(3.59)**	(1.64)
Born in the Middle East or Northern Africa	1.72	-0.24
	-1.11	(-0.1)
Born in the Philippines	0.62	-0.9
	-0.4	(-0.39)
Born in South East Asia or in the Pacific	2.56	1.94
	-1.94	(1)
Born in China	4.08	2.31
	(2.83)**	(1.09)
Born in Europe or Canada	1.56	-0.4
	-1.26	(-0.22)
Filipino woman	3.77	2.82
	(2.13)*	(1.06)
Income	0	0
	(4.85)**	(3.57)**
Income2	0	0
	(3.29)**	(2.50)*
Education only in the US	-7.73	-49.86
	(2.52)*	(.)
Intend to live in the US for rest of life		-2.27
		(2.46)*
Constant	-16.27	-13.15
	(4.76)**	(2.60)**
Observations	3669	1669

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Specification with remittances as a share of income as dependent variable (Tobit)

Remittances/Income	Base Case	Model w/ USlife
Female	-3.39	-2.53
	(-3.29)**	(-1.68)
Married	-0.652	-3.172
	(-0.57)	-1.93
Number of children	-0.483	-0.059
	(-1.21))	-0.1
At least one eligible child lives outside of the household	11.09	10.601
	(7.84)**	(5.22)**
Years since first migration	0.484	0.483
	(3.27)**	(2.19)*
YSFM2	-0.008	-0.011
	(-1.79)	(-1.71)
age	0.38	0.489
	(-1)	(-0.87)
age2	-0.004	-0.005
	(-0.83)	(-0.79)
Years in school in the US	-0.606	-0.802
	(2.47)*	(2.17)*
Years in school in home country	-0.047	0.053
	(-0.35)	(-0.27)
Own property at home	3.76	5.577
	(2.05)*	(1.99)*
Born in Mexico	3.17	1.04
	(1.01)	(0.23)
Born in India	7.49	4.39
	(2.44)*	(0.97)
Born in Latin America	8.77	6.97
	(3.00)**	(1.67)
Born in Africa	11.39	7.45
	(3.72)**	(1.71)
Born in the Middle East or Northern Africa	4.33	-1.14
	(1.20)	(0.27)
Born in the Philippines	2.67	0.74
	(0.77)	(0.15)
Born in South East Asia or in the Pacific	5.7	3.58
	(1.83)	(0.79)
Born in China	11.1	7.88
	(3.29)**	(1.61)
Born in Europe	3.96	.56
	(1.35)	(-0.13)
Filipino woman	6.03	1.98
	(1.51)	(-0.34)
Income	0.001	0.00001
	(2.04)*	(-1.54)
Income2	0.002	0.00002
	(-1.54)	(-1.13)
Intend to live in us for rest of life		-4.006
		(-1.9)
Constant	-35.73	-22.713
	(-4.61)**	(-1.56)
Observations	3635	1605

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Specification with Mexico as a reference group for regions of birth

	Tobit	Tobit 1
female	-1.65	-1.1
	(3.65)**	(-1.65)
married	-0.11	-0.86
	(-0.22)	(-1.17)
children	-0.19	0.01

	(-1.11)	(0.03)
Child outside of the hhold	4.68	4.9
	(7.46)**	(5.42)**
YSFM	0.24	0.31
	(3.77)**	(3.20)**
YSFM^2	0	-0.01
	(2.14)*	(2.36)*
age	0.23	0.26
	(1.35)	(1.05)
age^2	0	0
	(-1.05)	(-0.98)
Edu US	-0.26	-0.42
	(-2.46)*	(-2.60)**
Edu home country	-0.05	0
	(-0.88)	(-0.01)
Own property at home	2.24	2.92
	(2.81)**	(2.35)*
Born in North America	-3.5	-1.85
	(-2.19)*	(-0.81)
Born in Africa	3.41	3.07
	(3.55)**	(2.16)*
Born in India	2.21	2.45
	(2.17)*	(-1.54)
Born in MiddleEast or North Africa	0.43	-0.22
	(0.34)	(-0.11)
Born in Philippines	0.55	-0.95
	(0.36)	(-0.41)
Born in SE Asia	1.32	2
	(1.35)	(1.33)
Born in China	2.86	2.42
	(2.45)*	(-1.35)
Born in Latin America	2.86	3.5
	(3.78)**	(3.08)**
Born in Europe	0.25	-0.44
	(0.28)	(-0.33)
Born in Oceania	2.8	5.01
	(1.02)	(1.27)
Filipino Women	3.73	2.74
	(2.11)*	(1.03)
Income	0	0
	(5.08)**	(3.72)**
Income^2	0	0
	(3.44)**	(2.58)**
uslife		-2.14
		(2.30)*
cons		-14.48
	(4.83)**	(-15.48)
n	3669	1617
non-censored	801	354