REMITTANCES FROM INTERNATIONAL MIGRATION: A COMPARISON OF EL SALVADOR AND NICARAGUA

Edward Funkhouser*

Abstract—I use household data from El Salvador and Nicaragua to examine the determinants of remittances from international migration. Nearly twice as many households in San Salvador, the capital of El Salvador, receive remittances from relatives abroad than do households in Managua, the capital of Nicaragua, and of those who receive remittances, the average remittance received in San Salvador is over double that in Managua—$119/month to $45/month. I find that the role of observable characteristics in explaining differences in the level of remittances, accounting for the self-selection in the decision to remit, is not large. The difference is explained by differences in the behavioral coefficients and by differences in the self-selection bias of those who remit out of the pool of emigrants between the two countries.

FOR several small sender countries of the Central America and Caribbean region, including Jamaica, Dominican Republic, Haiti, El Salvador, and Nicaragua, remittances now have a significant role in the development process. Most existing studies of remittances have been primarily concerned with the volume of remittance flows (see, for example, Swamy (1981) or Stahl and Arnold (1986)) and the role of remittances as a source of foreign exchange.[1] Remittances are also an input into household decision-making, affecting labor supply, self-employment, and even fertility. Yet, despite their importance, very little is known about remittance patterns at the household level. Consequently, there is little evidence on the determinants of individual emigrant remittances or why remittance patterns vary by country.

In this paper, I compare remittance patterns for the two countries with the largest and most permanent out-migrations from Central America in the 1980s—El Salvador and Nicaragua. These countries provide a particularly interesting comparison. Approximately 10% of the population of each country emigrated between 1979 and 1989. The economic changes contributing to migration —the effects of the world economy and the decline in the domestic real wage—look similar in both countries. The political environments, however, were quite different following 1979. And equally important, as both countries enter a period of peace, is the change in the level of foreign exchange generated from remittances that are likely to accompany that transition.

Labor is now the largest export in El Salvador and the second largest in Nicaragua.[2] I have estimated remittances to El Salvador in 1987 to have been between $400 and $600 million. The lower amount was approximately 67% of exports, 99% of the trade deficit, and 8.6% of Gross Domestic Product in that year. Remittance flows to Nicaragua are lower— under $100 million for 1989 if the Managua rates are extrapolated to the whole country, but still large. In comparison, total exports from Nicaragua in 1988 were $235.7 million, of which coffee was $84.5 million.[3] In both Nicaragua and El Salvador, these increases in the volume of remittances are an important source of dollars to the parallel and black markets for

Received for publication May 14, 1992. Revision accepted for publication January 31, 1994.

* University of California, Santa Barbara.

I have benefited from the helpful comments of Anne Case, Steve Trejo, and an anonymous referee; the assistance of Patricia Ortega Bonilla, Manuel Pena, Carlos Becetra, and Mauricio Alens; and the example of Segundo Montes.

[1] Overview studies of the impact of remittance include Russell (1986), Keely (1989), Stahl and Arnold (1986) for the Middle East. Evidence on remittance patterns from Latin America and the Caribbean is scarcer. Massey et al. (1987) have examined remittance patterns to four particular Mexican villages, finding improvements in housing to be the primary goal of most households. Stepick and Portes (1986) estimate that 39% of Haitians in the U.S. send money to relatives in Haiti. Wood and McCoy (1985) find that nearly all (92%) of sugar cane cutters entering the U.S. under the H-2 program remit more money than that required by the program.

[2] Several studies have described the increase in migration from Central America in the 1980s (Aguayo (1985), Torres and Jimenez (1985) Peterson (1987), CIREFCA (1989), Hamilton and Chinchilla (1991)). Montes (1987) was the first to examine the determinants of remittance behavior, using data from an independent survey conducted in El Salvador. Seligson and Lopez (1990), using data from a second survey conducted by Montes, found remittances to play a significant role in the investment decisions of the self-employed and in small business formation in El Salvador. In earlier work (Funkhouser (1992a, 1992b)), I have estimated the size of remittance flow and the impact of remittances on household labor supply in El Salvador and Nicaragua.

[3] INEC (1989), p. 27.

dollars and have undermined attempts at two-tier foreign exchange markets.[4]

I find that twice as many households in San Salvador, the capital of El Salvador, receive remittances from relatives abroad than do households in Managua, the capital of Nicaragua. This reflects both a slightly higher proportion of households with a relative emigrant abroad and a higher proportion of emigrants sending remittances. And of those who receive remittances, the average remittance received in San Salvador is over double that in Managua.

A first possible explanation for these patterns is that, because of the different political changes in the 1980s—El Salvador moved towards the right and Nicaragua towards the left—that a different pool of emigrants left each country. A second possible explanation lies in the timing and permanence of emigration. Differences in remittances may reflect that the largest waves of Nicaraguan emigration have been more recent and, therefore, less assimilated in the U.S. labor market, than those from El Salvador. A third possible explanation is that there are inherent differences between the two countries—whether cultural or institutional—that lead to different behavioral parameters in remittance equations. A final explanation is that observed remittance patterns reflect differences in the self-selection process determining who remits out of the pool of all emigrants.

The organization of the paper is as follows. In section I I develop a model of remittance behavior. I describe the data from El Salvador and Nicaragua in section II. I estimate the model in section III. In section IV, I decompose the differences in remittance patterns between El Salvador and Nicaragua. Concluding remarks are provided in section V.

I. A Model of Remittance Behavior

Consider an emigrant that values both own utility and that of the household in the source country[5] according to a separable utility function of the form:

$$U(U_m, U_h) = U_m(C_m) + V\{U_h(C_h), Z\} \quad (1)$$

in which the own utility of the migrant, U_m, and the utility of the household in the source country, U_h, each depend on consumption, c_m and c_h, alone with $U_m' > 0, U_h' > 0, U_m'' < 0$, and $U_h'' < 0$. The importance of the remaining household utility in the migrant's own utility, U, depends on the relationship of the migrant to the household, included as the vector Z. For simplicity, it is assumed that all income in the sender country is consumed. At the time of migration, the emigrant maximizes a separable lifetime utility function in which the pattern of expected wages is known.

$$\underset{R_t}{\text{Max}}\, U_m = \sum_t U_m\{C_{mt}\}\left(1/(1+\delta_u)^t\right) + V\left\{U_h\left(Y_{ht} + R_t + N_{ht}\bar{R}_t\right), Z\right\}\left(1/(1+\delta_v)^t\right) \quad (2)$$

subject to

$$C_{mt} + R_t = W_{mt} + I_{mt} \quad \text{each } t \quad (2a)$$

$$W_{mt} = \alpha + \beta X_m + \tau_1 E_{mt} + \tau_2 E_{tm}^2 + \epsilon_{mt} \quad \text{if migrant works}$$

$$= 0 \quad \text{otherwise} \quad (2b)$$

in which C_{mt} is the consumption of the migrant at time t. The income of the remaining household in the sender country at time t is the sum of income earned in the sender country, Y_{ht}, the remittances received from this migrant, R_t, and remittances received from other emigrant household members—which depends on the number of other household emigrants, N_{ht}, and the average remittance per other emigrant, $\bar{R}_{ht}$.

The earnings of the emigrant, W_{mt}, varies over time only as the emigrant accumulates experience in the destination country. The two terms $(1/(1+\delta_u)^t)$ and $(1/(1+\delta_v)^t)$ are the discount rates applied to own utility and sender household utility, respectively. The rate at which the emigrant discounts own utility could differ from the discount rate for utility of the remaining household.

Since the migrant does not borrow or lend, constraint (2a) states that in each period, the migrant allocates wage income, w, and non-wage

[4] Since remittances are less likely to be exchanged through official channels than are other foreign exchange sources, attempts to control the distribution of foreign exchange through rationing are less likely to succeed as the share of remittances out of foreign exchange generated increases.

[5] Source country refers to the country of origin of the migrant.

income, I, to either consumption or remittances. Constraint (2b) defines the reward structure in the destination country for a migrant with the characteristic vector X_m.

The first-order condition for a positive level of remittances at time t is

$$-(U'_m)[1/(1+\delta_u)]^t\, dR + \partial V/\partial U_h(U'_h)[1/(1+\delta_v)]^t\, dR = 0. \quad (3)$$

At the margin, the increase in utility from an increase in household income in the sender country resulting from a remittance transfer exactly offsets the decrease in utility from lower own-consumption resulting from that transfer. Since a corner solution is possible, this leads to either a censored regression model or a self-selection model. In either case, the reduced form expression for the latent variable determining participation in remittance behavior is

$$R_t^* = R^*(\delta_u, \delta_v, X_m, E_{mt}, I_t, Y_{ht}, N_{ht}, \bar{R}_{ht}) \quad (4)$$

in which X are the human capital variables determining the wage in equation (2b). In the censored model, this equation also determines the level of remittances. In the self-selection model, the coefficients determining positive remittances are generally different than the coefficients determining the level of remittances.

There are five testable predictions from this model that concern both the likelihood of remitting and the amount of remittances among those who do remit. First, emigrants with higher earning potential, measured by work status or human capital variables, will tend to remit more. Second, lower household income in the sender country, all else equal, is associated with a higher marginal utility of additional income to the household. Since the utility of the non-migrating household enters the emigrant's utility function, lower household income in the sender country will be associated with higher remittances. Third, the relative importance of U_h in the migrant's utility depends on marital relationship of the emigrant to the household member and any intention of return migration.[6] Fourth, the amount that the emigrant sends is negatively related to the number of other emigrants from the same household, all other sources of income to the household equal.

Fifth, the time profile of remittance behavior depends on the relative sizes of the discount factors and the earnings profile of the emigrant. When wages increase with labor market experience in the new country of the emigrant, the positive marginal utility of additional income in the non-migrant household indicates that remittances increase over time. This could be counterbalanced, however, by discount rates that favor own consumption in the future relative to consumption in the sender country. When $\delta_u > \delta_v$, the emigrant postpones remittances and the time profile of remittance share of the migrant's wage is unambiguously upward sloping. When $\delta_u > \delta_v$, the emigrant values own future consumption more than the utility of the remaining household in the future and the time profile of remittance share is ambiguous. If the valuation of own future consumption is large enough, remittances could decline over time.

II. Data

The data used from El Salvador come from a survey undertaken by Segundo Montes at the Central American University in El Salvador in 1987 in which motivations for migration and remittances were asked of 1,287 households in El Salvador. This study has detailed information about 2,112 emigrants—including familial relationship, year of emigration, labor market status in the United States, living arrangement in the United States, legal status in the United States desire to return to El Salvador, remittances sent to the surveyed household— but contains minimal information on the sender household.

For Nicaragua, a supplemental questionnaire on migration and remittances was included in the December 1989 wave of the Encuesta de Coyuntura, a quarterly survey of households in the capital city of Managua administered by the Nicaraguan Institute of Statistics and Censuses (INEC), a government agency.[7] The Nicaraguan

[6] The latter could lead to an investment motive of remittance termed by Lucas and Stark (1985) "enlightened self-interest" for internal migration.

[7] To monitor reliability of responses, a smaller parallel survey was administered by non-government interviewers at approximately the same time as the INEC survey was undertaken. The overall magnitude of remittances reported is comparable in the two samples, though there are differences in the proportion receiving remittances and the mean remittance flow. See Funkhouser (1992b) for more information on the parallel survey.

TABLE 1.—CHARACTERISTICS OF EMIGRANTS AND NATIVE POPULATION

	El Salvador		Nicaragua	
	1985 EH	1987 Montes	1989 Encuesta de Coyuntura	
	Native (1)	Emig. (2)	Native (3)	Emig. (4)
Age:				
0–14	39.7	1.1	48.5	8.8
15–54	49.2	94.2	45.0	85.2
Over 54	11.2	2.6	6.5	6.0
Region:				
Urban	48.4	61.1		
Rural	51.6	38.9		
% of Pop. 15–54:				
Male	45.5	58.9		
Female	54.5	41.1		
Education, Pop. > 10:				
0–6 Yrs.	75.1	36.8	54.6	26.2
7–9 Yrs.	11.9	21.1		
10–12 Yrs.	10.1	36.9	36.9	47.6
> 13 Yrs.	3.0	5.1	8.5	24.0
Mean Years Since Migration		6.6		5.8
Proportion Remitting		58.4		31.2
Average Remittance		100.7		45.6

Sources: 1985 EH = Tabulations from 1985 Encuesta de Hogares conducted by Ministry of Planning in El Salvador
1987 Montes = Tabulations from 1987 University of Central America Survey conducted by Segundo Montes
1989 EC Tabulations from 1989 Encuesta de Coyuntura conducted by the Instituto Nicaraguense de Estadisticas y Censos (INEC). Data are for capital city of Managua.

Note: Age brackets for Nicaraguan data are 0–19 / 20–59 / 60 + . Occupation for El Salvador data is current (U.S.) occupation. Occupation for Nicaraguan data is that prior to migration.

data have detailed information on 1,525 households and only basic information on 768 emigrants. In both data sources, information about emigrants is asked of non-migrating household members.[8]

The mean characteristics of the emigrants in these samples and those of the corresponding non-emigrant population are shown in table 1. Columns (1) and (3) report data for non-migrants in El Salvador and Nicaragua and columns (2) and (4) report data for emigrants from the two countries. For El Salvador, the data for non-migrants come from a different source—the National Household Survey conducted in 1985—than the data on emigrants. For Nicaragua, the data for non-migrants and migrants both come from the Encuesta de Coyuntura.

The pattern of migration in both El Salvador and Nicaragua is similar to that in other Latin American countries. Emigrants tend to be of working age, more educated, and more likely to be urban than are non-migrants for both El Salvador and Nicaragua. Emigrants from El Salvador have a slightly higher mean number of years since emigration.

Despite the similarity in the pool of emigrants relative to the native population in the two countries, remittance behavior in these two data sets is not similar. Emigrants from El Salvador are twice as likely to remit to households in El Salvador compared to emigrants from Nicaragua. And the Salvadoran emigrants are likely to remit approximately double their Nicaraguan counterparts.

III. Results

In the empirical work that follows I use a linear functional form for equation (4):

$$R^* = \alpha + X\beta + E\delta + Z\pi + u \qquad (5)$$

in which X is a vector that includes all character-

[8] I address the potential problems of double counting relatives and discuss the surveys in more detail in separate papers (Funkhouser (1992a, 1992b)).

istics of the emigrant except experience in the United States; E includes experience in the United States and experience squared; Z includes characteristics of the household in the sender country; and u is a normally distributed error term. I account for self-selection by estimating both a Tobit version of equation (5) and the two-stage selection model proposed by Heckman (1979).[9]

El Salvador

The estimates of equation (5) for El Salvador are shown in table 2. In order to lessen the impact of double-counting of emigrants who are relatives but do not reside in the surveyed household, the sample is restricted to the first reported emigrant from households that report multiple relatives abroad. In addition, the sample includes only those emigrants between the ages of 18 and 64.[10]

The first column reports the results of a probit specification for positive remittances among the pool of emigrants. Columns (2) and (3) report the estimates of the determinants of the level of remittances using a Tobit specification and the two-stage self-selection model.

The results for El Salvador are generally supportive of the predictions of the model. Emigrants who are working are more likely both to remit and to remit more than emigrants who are not working. Neither sex nor age is significantly correlated to either the probability or level of remittances. Education is negatively correlated with the probability of remitting, but of those who remit, the educated are more likely to remit more.

Familial relationship to the the remaining household is important. Emigrants who are parents, siblings, or children of the remaining household head or who left a spouse in El Salvador are significantly more likely to send money and to send more than other emigrants who remit.[11]

The relationship between the level of remittances and the amount of time in the United States reflects how the emigrant values the relative importance of own utility versus that of remaining household members over time. Because these estimations are made with only one cross-section, any years-since-migration effect is combining the experience, cohort, and period effects.

I separate this effect into two types—the effect for emigrants who are members of the immediate family of the remaining household and the effect for emigrants who are not immediate family members. The results show that non-family members who have emigrated earlier tend to be less likely to remit and to remit less than recently arriving non-family members. In contrast, family members who had been in the United States longer tended to be more likely to remit and to remit more than recent arrivals. Though the cohort effects are likely to be large, they are not likely to differ systematically by whether the emigrant is a family member or not. Thus, the data show the remittance attachment of non-family members to decrease with time out of El Salvador, while the remittance attachment of family members increases.

The last section of the table includes characteristics of the household in El Salvador. When there are more adult emigrants from the same household, the first reported emigrant is less likely to remit and remits less, all else equal. The household from which more adults have emigrated, however, tends to receive more money in total from abroad. There is considerable variation in remittance behavior by region of origin of the migrant, both in likelihood and level of remittance. In addition, urban households outside the capital are more likely to receive remittances than are rural households.

The differences between columns (2) and (3) suggest that the remittance decision is made in two stages and that the underlying function determining whether or not to remit is not the same

[9] Observed remittances in the self-selection model can be written:

$$R = \alpha + X\beta + E\delta + Z\pi + \sigma\lambda + u$$

in which λ is the usual inverse mills ratio, or the expected value of the truncated error in the self-selection model.

[10] In households that report more than one emigrant relative, only the first one reported is utilized. The proportion sending remittances in the restricted sample is similar to that in the full sample. The main effect of this procedure is to reduce the number of female emigrants in the sample.

[11] Separation of this variable into separate dummy variables for each type of familial relationship in regressions not reported here shows that children do not remit more money than other migrants which does not support the idea that households in the source country invest in the emigration of children.

TABLE 2.—DETERMINANTS OF REMITTANCE BEHAVIOR IN EL SALVADOR
FIRST REPORTED EMIGRANT, AGED 18 TO 64

	Send Remittances To Surveyed Household	Amount Sent ($ / Month) To Surveyed Household	
	Probit (1)	Tobit (2)	OLS (3)
Constant	−0.670	−90.426	71.581
	(0.343)	(29.188)	(50.491)
Emigrant Characteristics:			
Working	0.664	57.049	9.304
	(0.110)	(9.751)	(15.256)
Female	−0.074	−8.137	−4.859
	(0.099)	(8.363)	(7.768)
Age	−0.003	0.050	0.384
	(0.006)	(0.530)	(0.505)
Years of Education	−0.013	1.652	3.675
	(0.016)	(1.259)	(1.120)
Immediate Family of HH Head in ES	0.385	32.663	2.739
	(0.111)	(10.078)	(12.307)
Left Spouse	0.352	46.930	30.079
	(0.122)	(9.625)	(10.089)
Years Since Emigration	−0.056	−5.457	−4.138
	(0.026)	(2.234)	(2.657)
Years Since Emigration Squared / 100	0.076	0.146	0.382
	(0.105)	(0.091)	(0.119)
Years Since Emigration * Immediate Family	0.114	6.188	−3.401
	(0.031)	(2.310)	(3.447)
YSE-IF Squared / 100	−0.062	0.270	0.303
	(0.200)	(0.141)	(0.188)
Household Characteristics:			
Head Working	0.015	0.275	−4.962
	(0.171)	(14.291)	(12.986)
Number of Adult Emigrants	−0.033	−3.055	−0.594
	(0.017)	(1.544)	(1.565)
West-Central Region	0.677	59.573	−2.050
	(0.148)	(13.286)	(18.160)
East-Central Region	1.682	118.424	15.547
	(0.230)	(15.020)	(27.485)
East Region	0.480	31.172	−19.347
	(0.155)	(13.765)	(16.207)
Metropolitan San Salvador	0.126	36.536	29.419
	(0.149)	(13.699)	(13.950)
Urban Location	0.193	6.582	−1.945
	(0.120)	(9.736)	(8.828)
Inverse Mills Ratio			−37.372
			(38.541)
Log Likelihood	−472.7	−3768.7	
R^2			0.150
N	932	932	578
Mean Dependent Variable	0.620	66.6	107.4

Note: Omitted Group is the West Region
West Region = Santa Ana, Ahuachapan, Sonsonate, Other San Salvador
West Central = La Libertad, Usulatan, Chalatenango, Cuscatlan
East Central = La Paz, San Vicente, Cabanas
East Region = San Miguel, La Union, Morazan.

as the function determining the level of remittances conditional on remitting. The inverse mills ratio is negative, but evaluated at the mean characteristics of the sample with positive remittances, the true level of remittances accounting for the bias from self-selection is only $22 dollars higher than the observed level of $107 in this sample.

Nicaragua

The determinants of remittance behavior in Nicaragua using the INEC survey for Managua are shown in table 3. Again, the sample is restricted to the first-reported emigrant and those above the age of 18. The decision to remit is shown in column (1) and the level of remittances using Tobit and two-stage specifications in columns (2) and (3).

Several of the findings are similar to those using the Salvadoran data. Emigrants who are working are significantly more likely to remit and, in the Tobit, to remit more than other emigrants. Education is negatively related to decision to remit, but positively related to the level of remittances to households in Managua.[12] Unlike the Salvadoran equations in which the age variable was insignificantly negative, though, for Nicaragua, age is negatively correlated with both the decision to remit and level of remittances, though insignificantly so in the two-stage procedure.

The coefficients on the variables for household characteristics are also consistent with the find-

[12] The Nicaraguan data also do not support the investment-in-the migration-of-childrn view—children are more likely to remit, but do not remit as much as other emigrants after controlling for age.

TABLE 3.—DETERMINANTS OF REMITTANCE BEHAVIOR IN NICARAGUA
FIRST REPORTED EMIGRANT, AGED 18 TO 64

	Send Remittances	Amount Sent ($ / Month)	
	Probit (1)	Tobit (2)	OLS (3)
Constant	1.236	78.572	58.057
	(0.501)	(37.142)	(34.976)
Emigrant Characteristics:			
Working	0.370	30.549	11.406
	(0.181)	(13.997)	(69.851)
Age	−0.022	−1.589	−0.089
	(0.007)	(0.554)	(4.041)
Years of Education	−0.011	0.670	2.857
	(0.021)	(1.613)	(2.843)
Immediate Family of HH Head in Niaragua.	−0.190	13.457	4.531
	(0.290)	(21.634)	(41.016)
Years Since Emigration	−0.113	−8.514	−0.135
	(0.044)	(3.359)	(21.605)
Years Since Emigration Squared	0.003	0.208	−0.008
	(0.001)	(0.097)	(0.555)
Years Since Emigration * Immediate Family	−0.059	−5.845	−2.889
	(0.064)	(4.823)	(11.493)
YSE-IF Squared / 100	0.002	0.255	0.116
	(0.002)	(0.179)	(0.177)
Household Characteristics:			
Head Working	−0.508	−45.892	−17.434
	(0.203)	(15.071)	(91.082)
Number of Adult Emigrants	−0.57	−5.567	−5.558
	(0.094)	(7.385)	(12.909)
Inverse Mills Ratio			−13.776
			(278.192)
Log Likelihood	−164.2	−668.8	
R^2			0.103
N	269	269	100
Mean Dep. Var.	0.371	20.6	55.6

ings for El Salvador. Households in Nicaragua in which the head is working tend to receive lower remittances than other recipient households. And emigrants from households with more adult emigrants are less likely to send and to send less, though these coefficients are not statistically significant.

The other coefficients—and in particular the coefficients on the years since migration variables—are less similar to the Salvadoran estimates. Increases in years since emigration are associated with lower remittances for both immediate family members and for other relative emigrants. As in the case of El Salvador, however, these findings suggest that, though remittances will decline if migration falls to pre-1980s levels, the drop will not be sudden.

As in the Salvadoran data, the differences between columns (2) and (3) suggest that the remittance decision is made in two stages. The effects of the bias from self-selection are stronger in the Nicaraguan case, though the magnitude of the bias is sensitive to the specification used. In column (3), the true remittance level accounting for this bias is $19 dollars higher than the observed level of $55 in this sample. In column (4), the true remittance level is $125.

IV. Explaining Differences in Remittance Behavior between El Salvador and Nicaragua

The final stage of this analysis is a comparison of the observed difference in remittance patterns between El Salvador and Nicaragua. In table 4, I provide comparable estimates for both the capital cities with re-estimates of the Salvadoran sample restricted to households in San Salvador. Included are only the variables common to both data sets—whether the emigrant is working, age, age squared, years of education, education squared, relationship to household head, years since emigration, years since emigration squared, household head in the sender country working, and number of adult emigrants from the household. The household variables are excluded from the level estimations to better identify the second stage regressions.

The patterns are the same as those found in tables 3 and 4 with the exception of the human capital and working variables in the Nicaraguan regression. Working becomes insignificant, while the human capital variables become positive, greater in magnitude, and more significant.[13] For both El Salvador and Nicaragua, the years since emigration variables are small in magnitude and statistically insignificant.

From these regression estimates and the corresponding probit estimates for the probability of remitting, I separate the probability of remitting and the level of remittances into the part that is due to differences in observed characteristics and the part that is due to differences in the coefficients β and δ.

The results of these calculations show that the higher probability of remitting among emigrants from El Salvador is due to differences in behavioral parameters of the Salvadoran decision to remit function. If Nicaraguans adopted the behavioral equation of El Salvador, the proportion remitting would increase from 37.1% to 43.5%. If Salvadorans adopted the Nicaraguan behavioral equation, the proportion remitting would fall from 50.4% to 35.6%. The one year advantage in mean years in the United States for Salvadorans does not contribute much to the overall difference in proportion remitting.

Differences in self-selection are an important explanation for the difference in the level of remittances. Actual levels of remittances are $119/month in San Salvador and $56/month in Managua. Accounting for the negative self-selection in these data, the true level of remittances would be $165/month in San Salvador and $183/month in Managua.

The main difference between the Salvadoran and Nicaraguan remittance patterns are in the behavioral coefficients and in the pattern of self-selection. Though those who remit from both countries are negatively selected out of the pool of emigrants, those from Nicaragua are much more so. This could reflect political hostility or family detachment among those best able to remit. Accounting for this self-selection, the remit-

[13] In separate regressions not reported in which working is omitted from the second stage, both age and years of education are positive, with both age and years of education statistically significant in the Salvadoran equation and years of education significant in the Nicuaraguan equation.

TABLE 4.—COMPARISON OF REMITTANCE BEHAVIOR IN SAN SALVADOR AND MANAGUA FIRST REPORTED EMIGRANT, AGED 18 TO 64

	San Salvador Sample		Managua Sample	
	Probit (1)	OLS (2)	Probit (3)	OLS (4)
Constant	0.014	−38.699	0.970	75.813
	(0.651)	(179.486)	(0.469)	(34.688)
Working	0.856	24.750	0.392	−6.985
	(0.246)	(107.848)	(0.179)	(16.840)
Age	−0.016	2.651	−0.021	0.658
	(0.011)	(2.146)	(0.007)	(0.576)
Years of Education	−0.034	8.149	−0.011	3.383
	(0.032)	(4.650)	(0.021)	(1.552)
Immediate Family of HH Head	0.564	22.340	0.061	−8.874
	(0.203)	(65.853)	(0.221)	(12.062)
Years Since Emigration	−0.019	−4.020	−0.069	1.877
	(0.071)	(8.213)	(0.029)	(2.700)
Years Since Emigration Squared / 100	−0.058	0.433	0.218	−0.071
	(0.350)	(0.427)	(0.110)	(0.080)
Head in Sender Country Working	−0.096		−0.493	
	(0.282)		(0.201)	
Number of Adult Emigrants from HH	0.032		−0.043	
	(0.036)		(0.093)	
Inverse Mills Ratio		−65.107		−74.225
		(190.874)		(40.287)
Log Likelihood	−131.7		−165.8	
R^2		0.168		0.092
N	190	96	269	100
Mean Dependent Variable	0.505	119.0	0.372	55.6

tance equations between El Salvador and Nicaragua look much more similar.[14]

V. Concluding Remarks

The main contribution of this paper is to provide estimates of a reduced form model of the determinants of remittances. I find that little of the difference in observed remittances between El Salvador and Nicaragua is due to differences in mean observed characteristics or to the timing of emigration. Most of the difference across countries is due to differences in behavioral parameters in the determination of remittances. I also find that there is a substantial difference in the self-selection to remit out of the pool of emigrants between the two countries that contribute to the difference in observed mean remittances. Though emigrants that remit in both countries are those whose unobserved ability to remit is lower than those who do not remit, for emigrants from El Salvador, the bias from self-selection is much smaller. The finding of negative self-selection out of the pool of emigrants is not surprising, given the political nature of emigration from the Central American region.

The main policy implication of these results for Nicaragua and El Salvador concerns the future pattern of remittance flows. Political changes that affect the composition of the emigrant pool and the process of self-selection within an emigrant pool are likely to have large effects on remittances. In addition, the small contribution of years since migration variables to overall remittance levels indicates that even if migration levels do not stay at their current high levels, remittances from the current pool of emigrants are likely to fall only gradually.

[14] The exact magnitudes of these numbers should be viewed with some caution since they vary with specification. The results of similar calculations with the Tobit specification of column (2) of tables 3 and 4 show different results. Predicted mean remittances in these cases are close to zero or negative, suggesting large positive selection bias in the remittance decision.

REFERENCES

Aguayo, Sergi, *El Exodo Centroamericano: Consequencias de un Conflicto*, Mexico (1985).

Aguayo, Sergio, and Patricia Weiss Fagan, *Central Americans in Mexico and the United States: Unilateral, Bilateral, and Regional Perspectives*, Center for Immigration Policy and Refugee Assistance, Georgetown University (1988).

Boucher, Steve, "The Impact of Migrant Remittances on Household Economies—A Case Study: Bluefields Nicaragua," paper presented at the Latin American Studies Association Congress, Washington, D.C. (Apr. 1991).

CIREFCA (Conferencia Internacional Sobre Refugiados Centroamericanos), "Documento de la Republica de El Salvador," Guatemala City, Feb. 1989a.

_____, "Documento de la Republica de Nicaragua," Guatemala City, Feb. 1989b.

Funkhouser, Edward, "Mass Emigration, Remittances, and Economic Adjustment: The Case of El Salvador in the 1980s," chapter 5 in George Borjas and Richard Freeman (eds.), *Immigration and the Work Force* (Chicago: University of Chicago Press, 1992).

_____, "Migration from Nicaragua: Some Recent Evidence," *World Development* (Aug. 1992b).

Hamilton, Nora, and Norma Stolz Chinchilla, "Central American Migration: A Framework for Analysis," *Latin American Research Review* (1991).

INEC (Instituto Nicaraguense de Estadistica y Censos), *Diez Anos en Cifras*, Managua, 1989.

Keely, Charles, and Bao Nga Tran, "Remittances from Labor Migration: Evaluations, Performance, and Implications," *International Migration Review* (Fall 1989).

Lucas, Robert E. B., and Oded Stark, "Motivations to Remit: Evidence from Botswana," *Journal of Political Economy* 93 (5) (Oct. 1985).

Massey, Douglas, Rafael Alarcon, Jorge Durand, and Humberto Gonzalez, *Return to Aztlan: The Social Process of International Migration from Western Mexico* (Berkeley and Los Angeles: University of California Press, 1987).

Montes, Segundo, *El Salvador 1987: Salvadorenos Refugiados en los Estados Unidos*, Instituto de Investigaciones, Universidad Centroamericana Jose Simeon Canas, San Salvador, 1987.

Peterson, Linda, "Central American Migration: Past and Present," Bureau of Census, Center for International Research (1987).

Russell, Sharan Stanton, "Remittances from International Migration: A Review in Perspective," *World Development* (June 1986).

Stahl, Charles, and Fred Arnold, "Overseas Workers' Remittances and Asian Development," *International Migration Review* 20 (4) (1986).

Stepick, Alex, and Alejandro Portes, "Flight into Despair: A Profile of Recent Haitian Refugees in South Florida," *International Migration Review* (Summer 1986).

Swamy, Gurushri, "International Migrant Workers' Remittances: Issues and Prospects," World Bank Staff Working Paper, Number 481 (Aug. 1981).

Torres-Rivas, Edelberto, and Dina Jimenez, "Informe Sobre el Estado de las Migraciones en Centroamerica" *Anuario de Estudios Centramericanos* 11 (2) (1985).

Wood, Charles, and Terry McCoy, "Migration, Remittances, and Development: A study of Caribbean Cane Cutters in Florida," *International Migration Review* 19 (2) (1985).