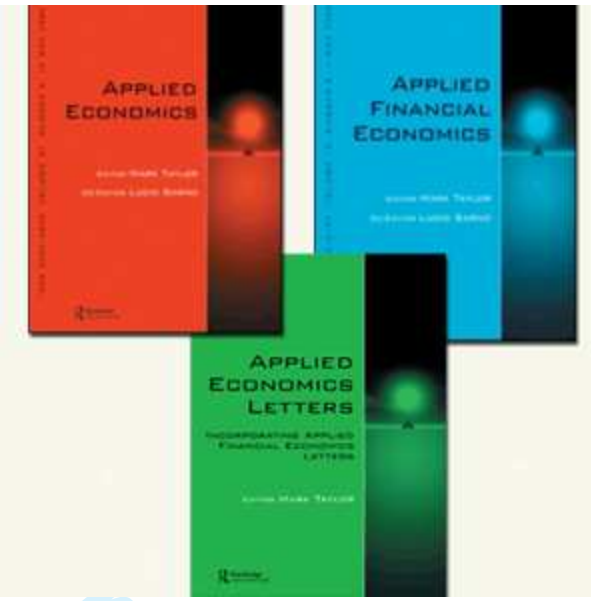

Measuring the Effect of Bi-Directional Migration Remittances on Poverty and Inequality in Nicaragua

Journal:	*Applied Economics*
Manuscript ID:	Draft
Journal Selection:	Applied Economics
Date Submitted by the Author:	
Complete List of Authors:	Hobbs, Andrew; Univ. of British Columbia, Economics Jameson, Kenneth; Univ. of Utah, Economics
JEL Code:	F22 - International Migration < F2 - International Factor Movements and International Business < F - International Economics, I32 - Measurement and Analysis of Poverty < I3 - Welfare and Poverty < I - Health, Education, and Welfare, J61 - Geographic Labor Mobility|Immigrant Workers < J6 - Mobility, Unemployment, and Vacancies < J - Labor and Demographic Economics, O15 - Human Resources|Income Distribution|Migration < O1 - Economic Development < O - Economic Development, Technological Change, and Growth, O54 - Latin America|Caribbean < O5 - Economywide Country Studies < O - Economic Development, Technological Change, and Growth

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Andrew W. Hobbs
University of British Columbia
3823 W 14th Avenue
Vancouver, BC V6R 2X1
awhobbs@interchange.ubc.ca

Corresponding Author
Kenneth P. Jameson
University of Utah
260 Central Campus Dr., Rm. 343
Salt Lake City, Utah 84112-9300
jameson@economics.utah.edu

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Abstract

This paper examines the impact of migrants' remittances on poverty and income distribution in Nicaragua. Nicaraguan emigrants are fairly evenly distributed between the United States and Costa Rica. Poorer migrants overwhelmingly migrate to Costa Rica; richer migrants favor the United States. This bi-directional flow provides an opportunity to examine the distributional impacts of remittances in a situation that offers distinct opportunities to different groups of prospective migrants. To this end, we use Heckman's (1976) sample selection method to predict counterfactual "no-migration" consumption figures for Nicaraguan households whose members have emigrated. Using these estimates, we are able to compare the current situation to one in which migration had not occurred. We find that migration to Costa Rica results in increased per capita household consumption for poor households, while migration to the United States leads to increases for middle class households. The rate, depth, and severity of poverty as measured by the Foster, Greer, Thorbecke Indices (1984) decrease, though only slightly. However, inequality appears to increase, likely because the middle class benefits from U.S. migration, while the poor tend to make it no farther than Costa Rica.

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Introduction

Since the 1960s, Latin America has experienced a period of mass emigration, despite the constraint of restrictive policies in destination countries, particularly the U.S. and Canada (Clark et al., 2003). The region's previous three migration waves saw significant in-migration that profoundly affected the course of those countries' development, and the more recent out-migration has repercussions that will be felt for decades. Most of the concern of migration analysts has been with the effect of international immigrants on receiving countries (Massey et al. 2008). However, migration also has ramifications for the migrants' home countries.

One of the primary linkages of international migrants to their countries of origin is their remittances: cash payments or in-kind gifts sent home by relatives living and working abroad. The effect of remittances on the emigrants' country of origin, in general, and on poverty and inequality, in particular, is controversial. Some authors cast migrant remittances as a "powerful catalyst of economic development" (Jennings and Clark, 2005) and argue that they help correct income inequality and alleviate poverty by directing funds to the poor (Orozco, 2004). While empirical studies largely support claims that remittances reduce poverty (Adams et al. 2008, Adams 1991; 2004), the impact of remittances on inequality is more controversial (Adams 1989, Barham and Boucher 1998). The lack of unanimity reflects the complexity of the migration and remittance processes.

Assessing the impact of migrants' remittances on poverty and inequality is further complicated since households receiving remittances have generally sent one of their more productive members abroad. Since this member would likely have

made a substantial impact on per capita consumption had he/she remained at home, the remittances received should be corrected for loss of the migrants' potential earnings, had they stayed in their home country.

This paper isolates a number of the most important factors that could mediate remittances' effects on poverty and inequality, focusing on the complex migration experience of Nicaragua. In so doing, it aims to provide a much more nuanced treatment of these issues than is usually possible. First, we briefly survey available studies on remittances' effects on poverty and inequality. Then we examine elements of Nicaragua's migration pattern and provide summary statistics on central elements of that pattern. Next, we provide the background and a description of the methodology used in this study. In order to assess the net impact of migration on individual households, we use a sample-selection robust estimator based on the work of Heckman (1979) to predict counterfactual "no-migration" consumption figures for Nicaraguan households. These figures are compared to the observed data in order to assess the impact of migration on household consumption, net of the loss occasioned by emigration. The results are presented by consumption quintile.

We find that remittances have a positive net impact on household consumption of the poorest 60% of the population, and a negative net impact on the richest 40%.[1] Middle class consumption increases come mainly from remittances from the U.S., while the consumption increases of the poor come almost exclusively from remittances that originate in Costa Rica. An important result is that this unusual migration dichotomy provides Nicaraguan migrants of differing income

[1] Quintiles are calculated based on per capita consumption.

levels and skill sets greater opportunities to contribute to family consumption through remittances than in the usual case of uni-directional emigration.

Dual migration options represent important opportunities for Nicaraguan households. The lower cost Costa Rican option means that poor families who lack the funds to migrate to the U.S. are still able to access jobs and opportunities outside of their home country. Since migrants to Costa Rica are more often poor (Table 1), this migration channel's potential for poverty reduction is significantly greater. The United States provides an important opportunity for middle class households, who are able to increase their per capita consumption by sending a member north and subsequently receiving remittances.

Nicaragua provides valuable insight into the processes involved in migration and remittances. Our findings that migrants to the U.S. are most often middle or upper class in Nicaragua are consistent with Chiquiar and Hansen's (2002) study on Mexico, where similar results led them to conclude that Mexican migration raises inequality. Clark et al. (2003) note that this result is not surprising given historical migration trends; migration has always been expensive, and the poor have rarely been able to participate. They also note a significant potential for increased intra-regional migration in Latin America, a trend exemplified by the Nicaragua-Costa Rica pattern. The fact that this lower-cost migration option decreases poverty is encouraging; perhaps increased migration within Latin America will lead to more significant reductions in poverty and inequality.

Remittances, Poverty, and Inequality

As noted above, most studies suggest that remittances benefit the poor, at

least in the short run. The impact of remittances on inequality is less clear, but is usually found to be slight. As we examine these questions in Nicaragua, we use household consumption in our measures of poverty and inequality for several reasons. Most importantly, consumption is more representative of quality of life than income. Furthermore, the poverty line and quintiles designated by Nicaraguan government and contained in the Living Standards Measurement Survey are based on consumption.

Andersen et al. (2005) conducted a study using the same dataset as this paper to examine the impacts of remittances on social mobility. They found that remittances increased the probability that an individual will move out of poverty or extreme poverty, unless the remittances become a primary income source. In this case, remittances were found to hinder social mobility because they cause individuals to decrease their labor supply. Furthermore, they found that remittances are spent primarily on consumption. This suggests that the poverty-reducing impact of remittances may be only short-term.

Stark et al. (1986) conducted a widely cited study on remittances and inequality based on data from two rural villages in Mexico. They used a Gini decomposition framework as described by Lerman & Yitzhaki (1985), essentially taking remittances as an income source and isolating their impact on the Gini coefficient. They found that international migration decreased income inequality in a relatively high migration area under study and increased it in a lower migration area. Thus, they hypothesized that migration networks were an important determinant of the impacts of remittances; more established networks mean lower

costs and hence opportunities for poorer individuals to migrate. Taylor et al. (2005) used a similar decomposition approach and reached the same conclusion. However, this methodology takes remittances essentially as a transfer payment rather than a substitute for home earnings, an important consideration taken into account in other studies.

Adams' (1991; 2004) work on Egypt and Guatemala, respectively, developed a technique to predict counterfactual "no migration" results for households that have migrants living abroad. He found that migration is associated with a slight decrease in poverty rates and a more substantial increase in the poverty gap, a measure of poverty's severity. This implies that while poor families benefit from remittances, many do not benefit sufficiently to move out of poverty.

Barham & Boucher (1998) developed a framework for analyzing the relationship between remittances and inequality using a dataset from Bluefields, a region on Nicaragua's Caribbean coast. Rather than impute incomes by household, as in Adams (1989), they imputed incomes for migrants individually. Using this method, they find that remittances increase inequality. However, when they evaluated the data using Stark's (1986) approach, they found remittances decrease inequality. These contrasting results underscore the potential importance of methodology in the analysis of remittances.

Adams et al. (2008) used a household survey from Ghana conducted in 2005 and 2006 in another study of remittances' effect on poverty and inequality. As in Adams (2004), their strategy was to predict household expenditure figures for a counterfactual no-migration scenario. They found that remittances decrease the

extent, depth, and severity of poverty using the indices developed by Foster, Greer, & Thorbecke (1984).

Adams and Page (2005) provided an international overview of the relationship between remittances and poverty. They used data on migration and remittances for 71 countries to estimate the impact of remittances on poverty. They regressed the logarithms of each of the Foster, Greer, Thorbecke (1984) poverty measures on the logarithms of GDP, the Gini coefficient, and per capita international remittances. They also repeated their estimation using an instrumental variables approach, with distance from remittance sending area, percent of the population with a secondary education, and government stability as instruments. On average, they found that a 10% increase in the percentage of international migrants in a country's population resulted in a 2.1% to 3.5% decrease in the poverty headcount (using the OLS and instrumental variables estimates, respectively). They also concluded that international migration and remittances were endogenous to poverty, meaning it may be difficult to identify with certainty the impact of remittances on poverty measures. Fortunately, that remittances are endogenous to poverty is effectively addressed by our estimation method, which does not use remittances as a regressand.

The Nicaraguan Emigration Context

Few countries are more affected by remittances than Nicaragua. In 2007, only four Latin American countries received a larger fraction of GDP in the form of remittances[2] (World Bank, 2008a). In 2007, between $715 million and $990 million dollars flowed into the country in the form of remittances from Nicaraguans living

[2] These countries were Haiti, Jamaica, El Salvador, and Honduras

abroad (World Bank, 2008a; IADB, 2008). Remittance figures represented between 13.5% and 18.8% of the country's 2007 GNI, and in recent years provided an inflow over three times the scale of Official Development Assistance (World Bank, 2008a, 2008b).

Nicaraguan emigrants move in substantial numbers to two major destinations: 55% of households with migrants report having relatives in Costa Rica, while 36% have relatives who have gone to the United States (Table 1). The other nine percent go to a variety of destinations, mainly Canada, Guatemala, El Salvador, and Honduras. As noted by Clark et al. (2003), migration within Latin America is generally quite limited; the majority of Latin America emigrants migrate to the U.S. and Canada. Nicaragua is notable since migration to its southern neighbor, Costa Rica, outweighs the usual pattern of migration north to the United States. This allows us to gain a richer understanding of the effects of migrant remittances on poverty and inequality, adding another dimension to the usual treatment of these issues. We expect bi-directional migration to have a distinct impact on poverty and inequality, as it provides more migration opportunities for families of diverse income levels and migration preferences.

Based on the World Bank's 2001 Living Standards Measurement Survey[3] we find that there are significant differences in the migration to the two destinations, as shown in Table 1. First, Nicaraguan migrants' choice of destination is clearly related to levels of household consumption. Poorer migrants flow south to Costa Rica and richer migrants move north to the United States. Costa Rica is an appealing and

[3] See Appendix for more information on the LSMS dataset.

accessible destination for Nicaraguan migrants; its 2007 per capita GNI of $10,510 (PPP) (World Bank 2008c) was more than four times that of Nicaragua's $2,510 (PPP) (World Bank, 2008b). The relatively low cost of migrating directly across Nicaragua's southern border opens the migration option to those who cannot afford the expense and risk associated with migration to the U.S. However, for those with the resources, the United States offers a greater improvement in wages than Costa Rica. As a result, wealthier migrants predominantly flow north.

Additionally, richer groups are more likely to have access to established migration networks; their relatives are more likely to have migrated previously to the United States. The average migrant from the lowest quintile has been abroad for only 4.69 years, nearly two years fewer than the average migrant from the fifth quintile. Migrants from wealthier groups are, on average, older and more educated than migrants from poorer groups. Notably, the most significant jump in education occurs between the second and third quintiles, which corresponds approximately to the poverty line of at 386.59 US Dollars, as set by the Nicaraguan government. Migrants from the first two quintiles are both less educated and less likely to migrate to the United States than migrants from higher quintiles. Migrants are more often male than the general population of Nicaragua in all consumption quintiles, as expected.

*****Table 1 About Here*****

The tendency of migrants from the middle and top of the existing income distribution to move to the U.S. is not unique to Nicaragua. Chiquiar and Hanson (2002) find the same is true in Mexico, where the cost of migration to the U.S. is

presumably significantly less than in Nicaragua. This trend is important in assessing migration's effect on poverty: if migrants aren't poor, migration is unlikely to alleviate poverty.

Bi-Directional Migration and Remittances: Methodology

Remittances to Nicaragua from the U.S. are larger on average than remittances from Costa Rica, as shown in Table 2, where we again use household consumption quintiles to differentiate the pattern. Households in the poorest two quintiles receive almost no remittances from the U.S., and those in the third receive much less on average than those in the fourth and fifth. Most importantly, remittances from the United States rarely benefit Nicaragua's poor population.

Remittances originating in Costa Rica are much more evenly distributed. Though the poorest households receive significantly less money in the form of remittances than other groups, they still represent a substantial contribution to household consumption. Referring back to Table 1, we can see that of the poorest Nicaraguan households that receive remittances, Costa Rica is the source for 75% and the U.S. for 4%. From Table 2 we can see that these households receive on average $59.05 annually. This represents nearly a third of the average per capita consumption for households in this quintile, a significant source of income for this group.

Table 2 About Here

The discrepancy between the mean and median remittances for each quintile is also important to note. It suggests that the distribution of remittances is skewed by a relatively small number of individuals who send large remittances. This may

help explain why remittances are in some cases found to increase consumption inequality, particularly if higher consumption families are receiving higher remittances.

As noted above, we cannot assess the impact of remittances by simply calculating the share of remittances in household income; to do so would ignore the fact that migrants would certainly contribute to the household had they remained in country. Instead, we must generate counterfactual "no-migration" consumption figures. However, since households with migrants are selected non-randomly, it is inappropriate to use an ordinary least squares estimator to generate these counterfactual figures. We are able to use the survey data from families without migrants to impute non-migration consumption figures for families with migrants. It is likely that the groups differ non-randomly, so we address the sample selection problem by a sample selection robust estimator first proposed by Heckman (1979).

We use Heckman's estimator rather than an ordinary least squares regression because we are drawing conclusions from a non-random sub-sample of the dataset. That is, we are only able to use figures for households without migrants to estimate no-migration incomes for households with migrants living abroad. To use an OLS estimator in this situation would be to assume that households with migrants are selected randomly from the population. This is clearly not the case. The migration decision is dependent on income, level of education, geographical region, and a number of other variables that we will specify below. In order to capture the systematic differences between households with and without migrants abroad, we use Heckman's two-step method. This involves the use of two regressions, a

selection regression to compensate for the non-random differences, and a prediction equation to predict no-migration incomes.

We choose the variables from those available in the survey based on their statistical significance in determining household consumption in the non-migrant households. Adams (2004) and Barham and Boucher (1998) used many of the same variables. The issue of multicollinearity is ignored for the purpose of these regressions, despite the fact that it may result in inflated standard errors for coefficients. Multicollinearity will not affect the theoretical correctness of imputed consumption values. Furthermore, individual coefficients are not important to this analysis, so their variances are not of great concern. The following variables will be used in both steps of the Heckman two-stage model:

- Region: a set of dummy variables describing the region in which the household is located. This includes Managua, Pacific Urban, Pacific Rural, Central Urban, Central Rural, Atlantic Urban, and Atlantic Rural Managua is omitted for the purpose of estimation.
- Adult Females: the number of females over age 15 in the household.
- Primary, Secondary, Basic Technical, Medium Technical, Teacher, University, Master, Doctorate: the number of persons in this household over age 15 who have completed the respective level of education.
- Mestizo Pacifico, Mestizo Costeño, White, Creole, Black, Miskito, Mayagna, Rama: a group of eight explanatory variables for ethnic group. Observations represent the percentage of a household comprised of each ethnic group. In most cases, a single household has only one ethnic group, in which case this

is essentially a group of dummy variables.

- Mean Age: mean age of all members of the household.
- Household Size: the number of individuals living in the household. This variable includes migrants who are not living in the household at the time of the survey to ensure accurate counterfactual imputation.

The counterfactual estimates generated using the Heckman prediction equation will be presented in the following section. The coefficients are listed in the appendix for completeness, although estimating the effects of the various factors is not the focus of this paper.

Empirical Results: Remittances, Poverty, and Inequality in Nicaragua

Table 3 contains estimates for the mean net impact of remittances on per capita consumption for Nicaraguan households in each quintile. To derive these figures, we subtract the counterfactual "no-migration" consumption from the observed consumption for each household. The figures reported represent the average difference for each quintile. For example, families in the second quintile with migrants in Costa Rica benefit from an increase of $96.80 in per capita household consumption. These values are calculated, as explained above, without using actual remittance figures. Instead, we simply compare per capita household consumption absent migration to per capita consumption with migration.

As shown in Table 3, having a migrant abroad was associated with an increase in per capita consumption for all households in the poorest three quintiles. Increased consumption of households in the first and second quintiles' comes entirely from migration to Costa Rica. Since 44% of the Nicaraguan population in

2001 was considered below the poverty line, the poorest two quintiles represent the majority of the country's "poor."[4] Households in the poorest quintile benefit less than households in the second quintile, perhaps because the poorest migrants are less educated on average (see Table 1). Migration to the U.S. has its greatest positive impact on the Nicaraguan middle class (third and fourth quintiles), a group that is more able to bear the cost and risk associated with longer distance migration. A key result that should mediate the effect of remittances on inequality is that on average, migration causes a decrease in the consumption of the richest quintile. Naufal (2008) studied Nicaraguan families' motivations to remit, and found that the primary reason for remitting was concern about the receiving families' welfare. In light of this finding, it is not surprising that wealthier migrants are inclined to remit in smaller quantities than poor migrants. Because higher income migrants have non-monetary goals and/or their family's situation is stable enough that they do not feel motivated to remit, there is a reduction in family consumption as a result of the migration.

*****Table 3 About Here*****

We can summarize the effect of remittances by examining the percentages of the various poverty groups whose net household consumption is increased by remittances. (See Table 4) The annual per capita consumption poverty line and extreme poverty line used in this table were established by the Nicaraguan government, and are set at $386.59 and $201.70 US Dollars[5], respectively. As we expect given our earlier observations, the remittances from migrants to Costa Rica

[4] Own calculations using 2001 LSMS Dataset

[5] Converted from Nicaragua Cordoba Oro using the rate of 13.33983, the average for 2001. The original figures are C$5157.124 and C$2650.71 Cordoba Oro, respectively

affect a far higher proportion of the poor and extremely poor. A smaller share of the non-poor households exhibit increased consumption from remittances from Costa Rica, though when the remittances from the U.S. are taken into account, a higher percentage of the non-poor, 4.51 percent, experience an increase in their consumption as a result of remittances. This compares with a total of 4.1 percent of the extremely poor and 3.69 of the poor.

*****Table 4 About Here*****

Table 5 provides more detail on the effect of remittances on poverty by indicating their monetary effect on the receiving families' per capita consumption. It also provides an initial indication of the surprising effect of remittances on inequality. Table 5 demonstrates that migrants' remittances benefit the poor as a group and do not increase household consumption of the non-poor. Thus we find from these data a positive effect of remittances on poverty, though we cannot say from these figures if they remove families from poverty. Additionally, consumption increases from the poor come almost exclusively from Costa Rica rather than the United States. The loss in household consumption in the non-poor households suggests that remittances should result in decreased inequality for the country. However, as we will document below, inequality appears to increase slightly from migration. This is due to the fact that although the poor benefit from remittances, the middle class benefit more substantially.

*****Table 5 About Here*****

Any conclusion about the effect of remittances on poverty should be based on a summary measure of poverty, in addition to the quintile-based results we have

presented. That will allow a comparison between poverty without migration and poverty with migration and the resultant remittances. Table 6 summarizes our empirical results using the Foster, Greer, Thorbecke index (1984). It is a measure of poverty that can be expressed as follows:

$$FGT_{\alpha} = \frac{1}{N}\sum_{i=1}^{H}\left(\frac{z - y_i}{z}\right)^{\alpha}$$

Where z is the poverty line, N the number of people in the economy, H the number of poor, y_i are individual consumption figures, and α designates the meaning of the indicator. When $\alpha = 0$, the equation simplifies to represent the proportion of people who are poor, usually referred to as the headcount ratio or simply the poverty rate. When $\alpha = 1$, it represents the poverty gap, the percentage difference between the mean consumption of society as a whole and the mean consumption among the poor. When $\alpha = 2$, it represents the squared poverty gap, which includes information on inequality among the poor by placing greater weight on households further from the poverty line.

*****Table 6 About Here*****

Table 6 shows that remittances decreased the poverty rate, as well as its severity. Note that "observed" refers to the actual poverty figures in the data, while "counterfactual" refers to the estimated no-migration scenario. According to our estimates, poverty decreased from a no-migration estimate of 37.1% to 36.5% with migration. This difference may seem small, but considering that it is the result of only 3.35% of the poor who benefit from remittances (see Table 4) the poverty reducing potential of remittances is great.

We find that remittances also reduce the poverty gap from .12938 to .12772. Again this is a small aggregate effect, but considering that international migration is limited among the poor, it remains noteworthy.

Finally, the squared poverty gap is slightly reduced as well, indicating that remittances have a small effect on reducing the inequality among those in poverty in the country. In summary, remittances from Nicaragua's bi-directional migration process have a uniformly positive effect in addressing poverty. The element that is most important is the ability to migrate to a nearby country with a moderate income, such as Costa Rica. This is a possibility that is present for few countries, which may account for some of the negative results on the poverty effect obtained in other studies of the issue.

*****Table 7 About Here*****

Finally, we examine remittances' effect on inequality in Nicaragua (Table 7). Remittances appear to increase inequality in Nicaragua, contradicting the common conception of migration as an equalizer. This is best explained by the cost of migration. Migration to the U.S. offers higher returns, but also has a higher cost, so its availability is dependent on existing wealth. Thus, the middle class benefits from remittances more than the poor does, and the difference between the classes widens, despite the fact that poverty is decreasing. The largest remittances do not accrue to the poorest members of society. However, it is important to note that Nicaragua's most well off do not benefit on average from remittances, so inequality between the middle and upper classes is likely decreasing. The regression estimates indicate that remittances increased the Gini coefficient from .433 to .447. Individuals throughout

the distribution appear to benefit in terms of consumption, but in absolute terms, the greater benefit accrues to the non-poor.

Conclusion

Nicaragua's migration situation is distinct in that there are two major destinations for emigrants: Costa Rica and the United States. Lower costs, less risk, but also less pay characterize migration to Costa Rica. United States migration is costly and therefore rarely an option for poor emigrants. Many Nicaraguan households receiving remittances benefit monetarily, i.e. remittances contribute more to per capita household consumption than the migrant would have at home. The poor are more likely to benefit from remittances than the rich, because migration to Costa Rica improves their incomes and employment prospects.

Migration to Costa Rica is an important source of income for poor Nicaraguan families. United States migration offers a similar opportunity for Nicaragua's middle class, whose households are able to cover the costs associated with a longer migration. The availability of two migration channels is an exceptional opportunity for Nicaragua as a country, as it allows groups with different resources and skill sets opportunities to earn funds and send them home. The Nicaraguan government's role should be to facilitate the fair, secure, and cheap transmission of funds, and carefully investigate possible strategies for encouraging families to spend their remittances in ways that promote long-term development goals.

The long-term potential of remittances to contribute to poverty reduction or to assist in the rise of the middle class is uncertain. While it is clear that these

inflows increase the consumption of many families, particularly among the poor, this fact also raises the question of long-term impact. Remittances in Nicaragua are used primarily for consumption rather than saving (Naufal, 2008), which suggests that their micro-level impact may be primarily short term. However, this consumption includes increased expenditure on education, which might be considered human capital investment and could result in more long term increases in household consumption (Andersen et al., 2005). As such, it is unclear to what extent remittances will affect poverty and inequality in Nicaragua in the long term. Uncertainty also remains regarding the long-term behavior of the migrants themselves. Whether they will continue to remit and/or return home remains uncertain, particularly in the current economic crisis in the United States and to a lesser degree in Costa Rica. Analyzing the long-term potential impacts of remittances on poverty and inequality in Nicaragua and identifying policies to maximize this potential are important areas for future research.

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Appendix: Dataset and Regression Results

The analysis in this paper is based on a dataset from a Nicaraguan government survey conducted in 2001 as part of the World Bank's Living Standards Measurement Survey (LSMS) project. The dataset contains information on 4,191 households containing 22,810 individuals. Information regarding age, level of education, and occupation was also collected for 897 people who were relatives of the households but were living abroad. Available variables include demographic information, information about health and healthcare, and detailed income breakdowns (Instituto Nacional de Estadisticas de Nicaragua/ LSMS Division of the World Bank, 2001).

The dataset includes explicit information on remittances. Households were asked to report the quantity of money and gifts received in the form of remittances and the total value of what they had received during the previous year. However, the data in the survey appear to underestimate actual remittance values; both World Bank and Inter-American Development Bank estimates far exceed the aggregate quantities the survey suggests. Data from the survey places Nicaragua's total remittances at about 7% of Gross National Income, while balance of payments data place the percentage around 13.5% and the Inter-American Development Bank estimates the percentage at 18.8%. Acosta et al. (2006) find that household surveys in Latin America frequently underestimate remittances relative to balance of payments data. This may be due to remittance recipients' poor ability to recall. For this reason, the analysis in the latter part of this paper focuses on income and consumption differentials between households receiving and not receiving

remittances rather than the precisely reported amounts of remittances received.

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Appendix: Regression Results

	Heckman Sample Selection Model Regression Results					
Variable	Coefficient	Standard Error	t Statistic	Coefficient	Standard Error	t-Statistic
Mean Age				-0.0743062	0.012781	-5.81
Mestizo	0.0050018	0.0009249	5.41	0.0007134	0.000159	4.49
Pacifico Mestizo	0.1941786	0.09494	2.05	0.3333727	0.2869274	1.16
Costeño Blanco	0.111489	0.1123372	0.99	0.1756983	0.3398148	0.52
Criollo	0.2835664	0.1013065	2.8	0.1635003	0.3229735	0.51
Negro	0.1236376	0.1061245	1.17	0.173705	0.3289296	0.53
Miskito	0.4172258	0.1626943	2.56	-0.7230615	0.5502249	-1.31
Mayagna	0.2388082	0.104715	2.28	0.7836361	0.3925816	2
Rama	0.0797939	0.1644227	0.49	28.05688	2.289511	12.25
Pacific Urban	0.4114203	0.1189173	3.46	15.13154	0.8513359	17.77
Pacific Rural	-0.1988543	0.0326712	-6.09	-0.3306508	0.1017244	-3.25
Central Urban	-0.2813138	0.0366913	-7.67	-0.2966264	0.114161	-2.6
Central Rural	-0.1871692	0.0363197	-5.15	-0.0315869	0.1149519	-0.27
Atlantic Urban	-0.4978424	0.0362808	-13.72	0.2839149	0.1336145	2.12
Atlantic Rural	-0.0778077	0.0549651	-1.42	-0.1565982	0.1536424	-1.02
Adult Female	-0.3786382	0.0454104	-8.34	0.4133655	0.1935574	2.14
Preschool	-0.0412906	0.0154623	-2.67	-0.1058543	0.0431438	-2.45
Adult Education	-0.3214696	0.1644868	-1.95	-0.0182622	0.5164847	-0.04
Primary Education	-0.0221961	0.0525287	-0.42	-0.1896086	0.1576983	-1.2
Secondary Education	0.0664501	0.0116339	5.71	-0.1274269	0.0370176	-3.44
Basic Technical	0.2047226	0.0135774	15.08	-0.220064	0.0373685	-5.89
Medium Technical	0.1610801	0.0966391	1.67	-0.2273254	0.3029231	-0.75
Teacher	0.3556587	0.0441975	8.05	-0.1230893	0.1338548	-0.92
Advanced Technical	0.1978856	0.0474435	4.17	-0.0694458	0.1439267	-0.48
University	0.3992076	0.0810853	4.92	-0.4947114	0.1830199	-2.7
Master	0.4274812	0.0276593	15.46	-0.165609	0.0541718	-3.06
Doctorate	1.273512	0.1854046	6.87	0.5324678	0.379823	1.4
Household Size	1.166998	0.1788287	6.53	-1.033788	1.043874	-0.99
Constant	-0.1260434	0.0058541	-21.53	-0.0823055	0.0209419	-3.93
Mean Age	9.098968	0.1043118	87.23	3.590208	0.3638608	9.87
/athrho				-0.442201	0.1042999	-4.24
/lnsigma				-0.6641122	0.0197614	-33.61
Rho				-0.4154672	0.0862964	
Sigma				0.5147303	0.0101718	
Lambda				-0.2138535	0.0468481	

Table 1: Destinations and Demographics by Household Consumption Quintile[6]

Quintile	% Costa Rica*	% United States*	Mean Migrant Age	% Female	% Completed Primary School	% Completed Secondary School	Mean Years Abroad
1	74.45	3.58	28.33	47.08	85.79	18.79	4.69
2	84.48	4.12	28.30	42.75	82.28	34.15	4.73
3	60.38	30.66	29.82	51.31	95.89	49.08	5.04
4	48.98	44.15	30.62	44.83	93.35	59.36	5.48
5	36.46	56.47	32.37	48.23	97.06	79.24	6.41
Total	54.65	35.85	30.45	47.36	93.00	55.74	5.48

*Represents households with migrants in the U.S. or Costa Rica as a percentage of all households with migrants. In other words, of all households who have migrants, 54.65% have migrants in Costa Rica and 35.85% have migrants in the U.S.

Table 2: Remittances by Destination Country and Quintile*

Quintile	Mean P.C. Consumption	U.S.		Costa Rica	
		Mean	Median	Mean	Median
1	165.45	0	0	59.05	22.49
2	288.46	6.39	0	187.33	49.85
3	414.77	221.91	50.23	245.46	44.98
4	619.57	350.23	89.96	196.32	44.98
5	1543.49	388.30	149.93	251.37	37.48
Total	713.23	344.96	106.45	209.15	39.28

*Figures calculated for only households with migrants. All values are reported in U.S. Dollars using the mean exchange rate for the year 2001 of 13.33983 Cordoba per USD.

Table 3: Destination, Quintile, and Mean Impact (Heckman Estimates)

	Mean Net Impact on P.C. Household Consumption		Ratio of Net Impact to Average Household Consumption	
Quintile	United States	Costa Rica	United States	Costa Rica
1	*	69.42	*	0.42
2	*	96.80	*	0.34
3	252.21	34.28	0.61	0.08
4	129.99	-37.14	0.21	-0.06
5	-916.11	-286.15	-0.59	-0.19
Total	-459.08	-57.81	-0.64	-0.08

*Only one household of the 4,191 surveyed in the first quintile and two in the second quintile had migrants in the USA, so these estimates were omitted due to

[6] The most common destinations for Nicaraguan migrants apart from the U.S. and Costa Rica are Mexico, Honduras, El Salvador, Panama, Cuba, and Haiti

small sample size.

Table 4: Percent of Poor and Extremely Poor who Benefit from Remittances*

Poverty	Costa Rica	U.S.
Extremely Poor	3.72	0.38
Poor (not extreme)	3.35	0.34
Non-Poor	2.01	2.5
Total	2.54	1.72

***Percentages represent proportion of families for whom the net impact of remittances is positive.**

Table 5: Net Monetary Impact of Migration on the Poor in U.S. Dollars

	Costa Rica		United States	
	Mean	Median	Mean	Median
Extremely Poor	91.3	93.07	126.98**	126.98**
Poor	72.47	39.95	133.93*	0.94*
Non-Poor	-113.98	-107.54	-488.42	-237.95
Total	-57.81	-48.3	-459.08	-172.02

*This table uses only data from families who received remittances. Thus, the mean is among families receiving remittances, and is not representative of the Nicaraguan population as a whole.

**Only 1 extremely poor and 8 poor families surveyed had migrants in the United States, so these figures may be unreliable.

Table 6

Poverty		Headcount Ratio ($\alpha=0$)	Poverty Gap ($\alpha=1$)	Squared Poverty Gap ($\alpha=2$)
Consumption	Observed	0.36574	0.12772	0.06117
	Counterfactual	0.37107	0.12938	0.06179

Table 7

Gini Index	**Observed**	**Counterfactual**
Consumption	0.447	0.433