

ORIGINAL ARTICLE

## **International Remittances and Labor Force Participation in Costa Rica: Explaining Contradictory Results**

Las remesas internacionales y la participación en la  
fuerza laboral en Costa Rica: Explicando Resultados  
Contradictorios

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## **Abstract**

The purpose of this article is to investigate the effects of remittances on labor force participation and labor supply decision of women in Costa Rica based on an analysis of data from the Costa Rica national survey, Encuesta de Hogares de Propósitos Múltiples (Household Survey for Multiple Purposes) in 2007. The labor force participation decision is analyzed with a Probit model. The determinants of total number of hours worked is investigated with the Heckman selection model. The labor force participation decision on female household heads is found to be affected by remittances and the frequency, reduce labor force participation rates as much as 20 percent. The effect of remittances on the number of hours supplied is found to be weaker. Those households, which receive no remittances or only receive remittances infrequently, supply 3.5 hours more per week. However, we fail to find that frequent remittance receiving household heads supply fewer hours. We find evidence that the number of hours supplied is affected by the frequency of remittances for the poor, but not the extremely poor.

**Keywords:** Labor force participation, remittances, Costa Rica, sample selection model

**JEL Classification:** J22, J6

## 1. Introduction

The growth of remittance flows to developing countries has motivated multilateral organizations to frame international remittances as a development tool. The mechanism is well known; remittances augment household income allowing remittance-receiving households to spend more on current consumption including health, education and some, albeit a small percentage, on small business creation. It is argued that remittances are important for the growth and development of developing countries (Vacaflares, 2018). Key to understanding the role of remittances as a development tool is its effect on economic growth through household decision-making regarding key economic variables. One of the most important of these household decisions, which affect economic growth, is in turn the household labor supply decision. Our objective is then to better understand the effect of remittances on labor force participation in Costa Rica.

Remittances and current consumption studies by several authors (Zarate-Hoyos, 2004; Castaldo and Reilly, 2007; Stratan and Chistruga, 2011) have analyzed the effects of remittance flows on consumption and find that migrant remittance-receiving households do spend more on items like food and durable goods. They also find that the impact on economic growth is mainly through the consumption multiplier. The impact of remittances through the household labor supply decision has been much less studied.

As stated by Fajnzylber, P. and Lopez, H (2007), “the impact of remittances on labor supply, is in principle, ambiguous.” On the one hand additional income (remittances) could lead to an “income effect” which increases the demand for leisure and reservation wages with a consequent reduction in hours worked. On the other hand, the emigration of people tends to reduce the size of the labor force thus increasing wages and leading to a “substitution effect” away from leisure and towards more hours of work. The empirical question then turns into which one of these effects is larger. Some recent studies have found that remittances tend to reduce labor force participation rates (Hanson, 2007; Acosta, 2006) while other studies have found no significant effect (Funkhouser, 1992). Thus, there is a need for more empirical studies in particular in smaller economies such as the Central American countries, which have seen increasing remittance flows in the last few years. The size of remittance flows is large, relatively to their smaller economies; hence, the overall effects may be more significant. It is well known that in smaller Central American countries remittance flows exceed foreign aid flows and foreign direct investment (Ratha and Mohapatra, 2007).

Thus, the objective of this paper is to study the way in which remittances flows to the countries of origin affect the labor force participation rate of those left behind since they are the ones using remittances and making labor supply decisions. For this task, we used a unique national dataset that has since been discontinued, namely, the *Encuesta de Hogares de*

*Propósitos Múltiples* (Household Survey for Multiple Purposes; henceforth EHPM) in 2007. Using a Probit model we teased out different scenarios to understand the relationship between remittances and labor force participation rate.

This paper aims to better inform policy makers in their efforts to maximize remittance flows that may have deleterious effect on economic growth through reductions in labor supply.

## **2. Literature Review on the Effects of Remittances of Labor Force Participation**

### **2.1. The Costa Rica**

According to the Multilateral Investment Fund (2011) remittances rose in Latin America and the Caribbean to US\$61 billion in 2011 with a year-to-year growth of 6 percent following small declines in 2009 due to the financial and economic crisis. Remittances flows have proven to be resilient and in recent times they have, once more, such resilience. Despite a worldwide record-setting year in 2019, during the first half of 2020, some Latin American countries were hit harder than others by the decline in remittances (Pew Research, 2020). Nonetheless according to Creative Associates International (2021), the region as a whole rebounded in the second half of 2020 to end up with a 1% increase for 2020 while the amount sent to Africa and Asia declined by 9% and 8% respectively.

We chose Costa Rica as a case study because it is a unique country in Central America for several reasons. Costa Rica ranks 97<sup>th</sup> in the world in per capita income, at \$10,497 a year — poorer than Mexico, Venezuela or other migrant-sending nations in the Old World like Bulgaria and Turkey but with a human development index (HDI) that ranks 69<sup>th</sup>

in the world (UNDP, 2011). Yet, Costa Rica like other Central American economies lacks sufficient economic and social opportunities, has relatively high wage differentials and has also been subjected since the 1980s to neoliberal reforms that have affected the relative price of capital and labor without meaningful increases in economic growth and employment. Thus, Costa Ricans are joining the fray of Central American countries which have essentially become exporters of labor.

## **2.2. International Migration from Costa Rica**

As Chaves (2011) states, “The belief that Costa Ricans rarely emigrate or only do so legally is thing of the past”. The importance of remittances has grown as human flows have increased. According to the World Bank (2020), in 1994 Costa Rica received US\$ 17 million while in 2019 it received US\$ 553.

Costa Rica is also a unique case because it has the rare characteristic in Central America to be an exporter of labor and also a recipient of labor. The second trend has been of concern to policy makers because foreign labor can compete with native workers for employment and can depress local wages. Costa Rica is a small country in Central America with a strong democratic tradition since it disbanded its armed forces in 1949. In recent years its economy has been driven by the growth of tourism/ecotourism and low technology sectors. Because of its stable political system and relative economic growth compared to neighboring countries, Costa Rica has attracted migrants from neighboring countries such as Nicaragua and Panama. The armed conflict of the 1980s accelerated a steady increase of Nicaraguans reaching a new height in 2000 when they accounted for about 6 percent of the total population of Costa Rica.

According to the current CIA World Factbook (202) “poverty has remained around 20-25 percent for nearly 20 years and, the government’s strong safety net has eroded due to increased constraints on its expenditures.” Another study confirms that despite average annual growth rates of over 3 percent, poverty rates barely changed in Costa Rica from the mid 1990s to the mid-2000s (Gindling, 2009). The economic trends of the last twenty years have been a catalyst for international migration of Central Americans to Costa Rica and as well as Costa Ricans to the United States. According to the Migration Policy Institute (2013), “[s]ince 1990, the number of Central American immigrants in the United States has nearly tripled. Central American immigrants’ share of total immigrant population in the United States has also grown steadily for the past five decades, from less than 1 percent in 1960 to almost 8 percent in 2011”. More recently, more than 4.4 million international migrants from Central America have settled in another country with about 3.5 million settling in the United States (Migration Policy Institute, 2019).

In the case of Costa Rica, table 1 shows that the number of Costa Ricans in the U.S. increased by 84.3 percent between the two inter-Census years.

**Table 1**

**Hispanic or Latino Origin Population by Type:  
 2000 and 2010 (2010 Census Briefs)**

Origin and type	2000		2010		Change, 2000-2010	
	Number	Percent	Number	Percent	Number	Percent
Central American (excludes Mexican)	1,686,937	4.8	3,998,280	7.9	2,311,343	137
Costa Rican	68,588	0.2	126,418	0.3	57,830	84.3
Guatemalan	372,487	1.1	1,044,209	2.1	671,722	180.3
Honduran	217,569	0.6	633,401	1.3	415,832	191.1
Nicaraguan	177,684	0.5	348,202	0.7	170,518	96
Panamanian	91,723	0.3	165,456	0.3	73,733	80.4
Salvadoran	655,165	1.9	1,648,968	3.3	993,803	151.7
Other Central American	103,721	0.3	31,626	0.1	(72,095)	-69.5

**Note.** Source is the 2010 Census Brief. U.S. Census. *The Hispanic Population: 2010.*

Source: Authors

In sum, several push factors such as failed neo-liberal employment and macro policies and FTAs are associated with weak economic growth and lack of formal jobs while old Cold War ideological battles that led to civil unrest, and persistent poverty have set the stage for increasing flows of people heading in search of better opportunities abroad. To address some of these concerns the *Encuesta de Hogares de Propósitos Múltiples* (EHPM) was adapted to include a migration module in 2007 linking socio-economic data with migration data. The richness of this dataset will be considered in analyzing the possible effect of remittances.



### 3. Remittance Flows to Costa Rica

International migration flows from migrant-sending regions to migrant-receiving destinations are usually associated with reverse flows of money known as remittances. Since 82 percent of Costa Rican migrants are in the United States, most remittance flows to Costa Rica come from the United States (Chaves, 2011).

Although one must use several sources to obtain reliable estimates, international remittance flows to Costa Rica have a clear pattern. Using Central Bank data, Chaves (2011) reports remittances flows to Costa Rica in 2005 at US\$399.7 million while the Inter-American Development Bank reports remittances at US\$ 520 million in 2006 and US\$ 590 million in 2007 (IDB News release, 2007). The Multilateral Investment Fund (2012) reports that remittances to Central American countries experienced a slight downturn prior to the 2007 financial crisis and then “began their recovery earlier in 2010, ending that year with a volume that surpassed that of the previous year by 5.2%.” A closer look at remittances to Costa Rica reveals that 70 percent of the total number of migrants sent about 25 percent of their salaries to their relatives back home with an average remittance of US\$ 420, which is higher than for most Latin American countries (IDB News release, 2007).

International remittances in-kind are also an important part of the total flow and according to Chaves (2011) who used data from the Costa Rican Balance of Payments, 50 percent of Costa Rican emigrants send on average US\$51 per person per month in articles such as clothing, toys, medicines, appliances, and food. These figures together with Central Bank data gave us a picture of the composition of these flows corresponding to 91 percent in cash and 9 percent in-kind with the average growth of remittance

flows from the United States to Costa Rica at approximately 15 percent annually. This upward trend of around 20% may be due to the increase in the number of migrants as well as to an improvement in the collection of data regarding formal and informal remittances by Central Banks.

This study proposes to shed some light on the relationship between remittance income and labor supply decisions at the household level in Costa Rica after controlling for various household characteristics such as education, work experience, number of family members and remittance flows. Below we review some of the previous studies, which have attempted to explain these specific effects.

The early work of Funkhouser (1992) shows that remittances in Nicaragua have negative effects on labor force participation (LFP) rate and positive effects on self-employment. He also found that age and education are positively correlated with LFP rates. Furthermore, he estimates that an increase of up to \$100 in remittances decreases the LFP rate of males and females by 1 and 5 percent respectively. Funkhouser adds that in times of economic decline, national welfare may be improved by emigration if the amount of remittances exceeds the amount of economic production that would have happened at home, but in times of recovery and expansion policy makers need to consider the existence of a possible brain drain.

Drinkwater, Levine and Lotti (2003) suggest that remittances have two opposing effects on unemployment in the labor exporting country. Unemployment could increase if their recipients see remittances as providing some sort of welfare payment, but they could also reduce credit constraints in developing economies and hence encourage firms to increase their investment levels, thus decreasing unemployment. The

overall effect of remittances on employment was tested by Drinkwater, Levine and Lotti (2003) using data from a panel of developing economies in different regions of the world. It was also found that remittances have a small negative effect on unemployment, but this was not statistically significant, thus suggesting that both effects cancel each other out. However due to gaps in remittance data, the authors were left with an unbalanced panel data of only 20 developing countries for which remittances were available and constituted an important part of their economy.

Taylor and Mora (2006) provide additional evidence to the idea that remittances may ease credit constraints and therefore the overall impact of remittances on unemployment may be negative in rural Mexico. Their findings show that compared with otherwise similar households without migrants, as rural incomes increase (whether from remittances or other sources), expenditure patterns change and therefore the share of income used for investments also increases, while the share spent on consumption falls.

A multi-country study for Latin America, which unfortunately did not include Costa Rica, by Fajnzylber and Lopez (2007) used cross country data to analyze the relation between remittances and labor force participation rates in Latin America. In their review of the literature, they cite a study by Mishra (2004) who concludes that remittances result in an increase in labor market participation of non-migrants. Yet, Fajnzylber and Lopez (2007) using comparison of means analysis found that with the exception of females in Haiti and Nicaragua, the labor force participation rates for remittance recipients are considerably lower than for non-recipients. They also used a Tobit model for the number of hours and

a Probit model for the labor force participation rate. Their results show that in all ten countries for which they have data, there is a reduction in the number of hours worked per week while their results for the labor force participation rate are more ambiguous. For most countries in the sample the effect on labor force participation rates was also negative with the exceptions of Guatemala, urban Mexico, Honduras and the Dominican Republic. For females in urban Paraguay and Haiti, remittances actually increased their participation. No major reasons were offered for their mixed results.

In recent years some researchers have introduced a new variable; namely the frequency of remittance sending but only in the context of Mexican migration to the United States. For example, Cox-Edwards and Oreggia (2009) used a propensity score matching technique to show that persistent remittances (flows which are sent regularly) have no effect on the LFP rates of household members staying in Mexico. A study in the same year by Amuedo-Dorantes and Pozo (2009) shows that the impact of remittances on the labor supply of Mexicans is conditioned on gender. They concluded that females reduce their labor supply while men increase it. The same authors posit that the ambiguous results may be due to the omission of the variability of remittance inflows. Their results suggest that labor supply reductions are stronger and more likely to take place if remittance inflows are regular and predictable while irregular inflows induce more work. In particular the labor supply response of females is positive and much larger than men's when remittance income uncertainty increases.

In conclusion, the review of the literature indicates that, although the relationship between remittance flows and labor force participation rate has called the attention of migration

researchers, the results have been ambiguous. In the case of Mexico-U.S. migration, introducing the frequency of remittances may be key in resolving some of this ambiguity, therefore it seems like the inclusion of a variable measuring the frequency of remittances may be necessary.

#### **4. Methodology**

We analyzed the decision to participate in the labor force as well as the labor supply decision if the person was part of the labor force. The labor force participation decision is analyzed by estimating a Probit model. To analyze the labor supply decision, we employed the selection model as found in Heckman (1976). The selection model involves a two-step decision where the first decision is analyzed by a Probit model.

The data comes from a unique Costa Rica national survey, *Encuesta de Hogares de Propósitos Múltiples* (Household Survey for Multiple Purposes; henceforth EHPM) in 2007 in order to shed some light on the labor supply decision making of head of households receiving remittances in Costa Rica. The EHPM is the only source of data on the labor market and personal characteristics of workers in Costa Rica such as wage earnings, hours of work, income inequality, and poverty and recently migration data. The surveys are national in scope based on 1 percent of the population and conducted since 1987, but the migration and remittance module were only added to the overall survey in 2007. The uniqueness of this opportunity is that the *Encuesta de Hogares de Propósitos Múltiples* was only implemented until 2009 and later replaced by the *Encuesta Nacional de Hogares*. Nonetheless, this window provided an opportunity to examine the relationship between remittances and labor force participation in remittance-receiving households in Costa Rica.

We examined the determinants of labor force participation of Costa Rican women who are household heads as well as the number of hours of labor they choose to supply. We utilized four different variables on remittances, a dummy variable that takes on the value 1 if the household receives remittances, the amount of remittances, a dummy variable that takes on the value 1 if the household receives no remittances or receives remittances infrequently and a dummy variable that takes on the value 1 if the household receives remittances regularly that is once every week, every two weeks or every month. Table 2 presents the definitions of the variables and descriptive statistics.

**Table 2**

*Variable Definitions and Descriptive Statistics*

Variable Name	Definition	# of obs.	Percent =1
inlf (in the labor force)	1 if employed or unemployed, 0 otherwise	3452	0.5353418
Remittance Receiver	1 if receives remittances, 0 otherwise	3452	0.0648899
Infrequent Remittance Receiver	Receives no remittances or receives remittances irregularly	3452	0.9397451
Frequent Remittance Receiver	1 if receives remittances regularly and at least monthly, 0 otherwise	3452	0.0388181
Elderly in the HH	1 if there is an elderly in the household, 0 otherwise	3452	0.1984357
Married	1 if married, 0 otherwise	3452	0.1868482

		# of obs.	Mean (SD)	Minimum	Maximum
Hours	The number of hours worked in all occupations per week	1843	42.02225 (19.20341)	1	99
Remittance amount	Remittance amount in local currency	3452	289702.3 (5375235)	0	1.00e+08
Age	Age of female household head	3452	49.81054 (16.35204)	18	99
Years of schooling	Years of schooling	3452	7.843279 (4.642359)	0	20
Minors in the HH	Number of children less than 12 years of age in the household	3452	0.655562 (0.9338391)	0	5
Size of HH	The total number of people in the household	3452	3.343859 (1.77745)	1	13
nivpob	0 = without income 1 = extreme poverty 2 = is not satisfying basic needs 3 = is not poor	3270	2.685015 (0.6477402)	0	3

*Note. Encuesta de Hogares de Propósitos Múltiples, 2007. Female household heads only.*

*Source: Based on author's own calculations.*

The sample of female household heads comprised 3452 observations. Of these women 53.3 percent were in the labor force, 18.7 percent were married, they had a mean age of 49.8 years and an average 7.8 years of schooling. 6.5 percent reported receiving remittances and 3.9 percent reported receiving remittances regularly and either weekly, bi-weekly or monthly. In 20 percent of the female-headed households an elderly person was present. The average number of minors in the household was 0.65, although there were households in the sample that had as many as 5 minors in the household. We ran 5 regressions under different specifications to observe the impact of remittances on labor force participation rate. They were labeled Reg # (.).

We examined the determinants of labor force participation of Costa Rican women who were household heads. We controlled for the age, education, marital status of the individual as well as household size, and the presence of elderly and minors in the household. Our main goal was to determine the effect of remittances on the decision to participate in the labor force, and in order to do so we utilized four different variables on remittances described previously.



**Table 3**

*Marginal effects for the Determinants of the Probability of Labor  
Force Participation*

Variables	Reg. (1)	Reg. (2)	Reg. (3)	Reg. (4)	Reg. (5)
Infrequent Remittance Receiver	0.0893** (0.0379)				
Remittance Receiver			-0.0835** (0.0369)		0.1247** (0.0573)
Frequent Remittance Receiver				-0.2106*** (0.0425)	-0.3105*** (0.0570)
Remittance amount		8.07e-10 (1.82e-09)			
Age	-0.0084*** (0.0009)	-0.0083*** (0.0009)	-0.0084*** (0.0009)	-0.0085*** (0.0009)	-0.0085*** (0.0009)
Years of schooling	0.0239*** (0.0022)	0.0236*** (0.0022)	0.0239*** (0.0022)	0.0241*** (0.0022)	0.0239*** (0.0022)
Elderly in the HH	-0.3429*** (0.0317)	-0.3434*** (0.0317)	-0.3428*** (0.0317)	-0.3437*** (0.0317)	-0.3456*** (0.0317)
Married	-0.1342*** (0.0349)	-0.1385*** (0.0231)	-0.1339*** (0.0233)	-0.1278*** (0.0234)	-0.1290*** (0.0234)
N	3452	3452	3452	3452	3452
c <sup>2</sup>	c <sup>2</sup> (5) = 984.83***	c <sup>2</sup> (6) = 979.60***	c <sup>2</sup> (5) = 984.45***	c <sup>2</sup> (5) = 1000.75***	c <sup>2</sup> (6) = 1005.25***
Pseudo R <sup>2</sup>	0.2065	0.2054	0.2065	0.2099	0.2108

*Note.* \*, \*\*, \*\*\* indicate statistical significance at 10, 5, and 1 percent respectively.

*Note.* Encuesta de Hogares de Propósitos Múltiples, 2007.

*Source:* Based on author's own calculations.

Table 3 above reports marginal effects from using a Probit model to estimate regressions with different variables on remittances.

## 5. Econometric Results and Discussion

We found that the ambiguity of previous results is attributed to the inability to separate the frequency of remittances. The contradictory results which were sometimes positive and sometimes negative can be explained by the frequency of remittances. Those receiving remittances steadily and frequently also are less likely to participate in the labor market while those migrant households receiving infrequently, are also more likely to participate in the labor market. We also looked at this relationship by income level and we found that households experiencing extreme poverty do not reduce their labor force participation while middle income households receiving remittances decrease the number of hours worked.

We found that remittances have a statistically significant effect on the decision to participate in the labor force. This is a robust finding, which is confirmed in regressions including different specifications of remittance flows. In Reg #1, or regression (1), we included a dummy variable for “no” or “infrequent” remittance receivers and found that households that do not receive remittances or receive remittances only infrequently have a 9 percent greater probability of joining the labor force. This seems to show that separating the frequency of remittances as an explanatory variable explains the contradictory effects found elsewhere.

In Reg #2, or regression (2), we included the amounts of remittances received without adjusting for the frequency of remittances. This variable is found to be not significant. The

amount of remittances received can vary considerably so our hypothesis is that the regularity and not so much the amount of remittances that matter. This has been found in previous studies.

In Reg #3 or Regression (3) we included a dummy variable for remittance receivers with no consideration for the amount or the frequency of remittances. This dummy variable is statistically significant at 5 percent and suggests that female household heads that receive remittances are 8 percent less likely to join the labor force.

In Reg #4 or regression (4) under this specification, we included a dummy variable for female household heads that are “frequent” remittance receivers and here we see the largest effect of remittances. Female household heads that are frequent remittance receivers are 21 percent less likely to join the labor force. This is consistent with our hypothesis that frequent receivers may see these flows as permanent and behave accordingly.

In Reg # 5 or regression (5) we used two variables to determine the effect of remittances. A dummy variable for remittance receivers and another dummy variable for frequent remittance receivers are included in order to separate the effect of frequent remittances from others. We found that remittance receivers are 12 percent more likely to join the labor force, but the frequent remittance receivers are 19 percent less likely (12.25 % - 31.07 %) to make this decision. The latter specification also seems to have the highest explanatory power.

The other socio-demographic variables have statistically significant effects on the decision to participate the labor force in the theoretically expected directions. The variables

age, the marital status, and the presence of elderly persons in the household all have a negative effect while the variable education has a positive effect. Thus, all together our analysis seems consistent with the idea that “infrequent” receivers of remittances seem to treat this income as transitory therefore they do not withdraw from the labor force while those who receive remittances on a frequent basis, treat it as permanent and therefore they seem to increase leisure at the expense of labor force participation.

We also investigated the effect of remittances on the number of hours worked for female household heads in Costa Rica. We estimated the number of hours worked with the Heckman sample selection model, correcting for the condition of being employed in the first stage.

**Table 4**

*Determinants of Hours Worked*

Variables	(1)	(2)	(3)	(4)	(5)
Infrequent Remittance Receiver	3.5370* (2.0358)				
Remittance Receiver			-2.7107 (1.9586)		-1.1404 (2.7773)
Frequent Remittance Receiver				-4.1117 (2.6920)	-3.0050 (3.8185)
Remittance amount		5.47e-08 (7.28e-08)			
Age	0.1184 (0.1073)	0.1114 (0.1070)	0.1192 (0.1074)	0.1111 (0.1071)	0.1144 (0.1074)
Number of minors in the HH	-1.3072* (0.6697)	-1.3222** (0.6711)	-1.3107* (0.6701)	-1.3770** (0.6694)	-1.3522** (0.6719)
HH Size	0.4608 (0.3667)	0.4537 (0.3680)	0.4629 (0.3668)	0.4744 (0.3668)	0.4698 (0.3669)
Elderly in the HH	-5.5501** (2.7687)	-5.5700** (2.7786)	-5.5545** (2.7689)	-5.5719** (2.7727)	-5.5716** (2.7706)
Married	1.3963 (1.5459)	1.2953 (1.5409)	1.3931 (1.5475)	1.3820 (1.5439)	1.4009 (1.5458)
Selection term	-16.8471*** (4.2738)	-16.5475*** (4.2645)	-16.8838*** (4.2782)	-16.7110*** (4.2680)	-16.7952*** (4.2753)
N	1716	1716	1716	1716	1716
Wald statistic	16.49**	14.02**	15.38**	15.82**	15.99**

*Note.* Standard errors are in parenthesis.

*Note.* Encuesta de Hogares de Propósitos Múltiples, 2007.

Source: Based on author's own calculations.

In his seminal paper, Mroz (1987) estimated the number of hours worked for married women correcting for the labor force participation in the first stage. We employed a similar methodology but corrected for the probability of being employed rather than being in the labor force. The probability of being employed is estimated in the first stage with age, education and marital status as independent variables.

We found the selection term to be significant in all the regressions providing evidence for the selection methodology we have employed. We did not find that remittances have a statistically significant effect on the number of hours worked for female household heads in Costa Rica except in regression (1). We found that infrequent or no remittance receivers work 3.5 hours more. Even though the sign of the variables related to remittances is negative under the specifications in regressions (3) to (5) indicating that remittances decrease the number of hours worked, this effect is not statistically significant. This is consistent with the previous results that those receiving remittances infrequently are more likely to participate more in the labor market, and more likely to work more hours, than those who receive them frequently.

## **6. Conclusions and Policy Recommendations**

We have investigated the impact of remittances on the labor supply decision and sought to shed light on the observed ambiguous effect found in the literature. The impact of remittances on the labor supply decision could be negative leading to a greater demand for leisure due to increased income or positive due to higher wages in the domestic labor market as a result of the emigration of local workers.

The effect of remittances is likely to be most pronounced for female household heads because they are more frequently left behind. This may change as the feminization of migration unfolds, but so far most of the empirical analysis is done on this particular demographic group. Our study shows that the labor force participation decision of female household heads in Costa Rica is found to be affected by remittances and more importantly it is mediated by the frequency or infrequency of remittance sending. It is not the amount, but rather the frequency of remittances that explains the direction of change in labor force participation rates possibly by as much as 20 percent. The frequency of remittances is then a key variable in explaining the ambiguity found in previous studies and this variable should be included in future studies.

The effect of remittances on the number of hours worked is weaker for female household heads than the effect on labor force participation. Households who receive no remittances or only receive remittances infrequently, supply 3.5 more hours per week. However, we failed to find that frequent remittance receiving household heads supply fewer hours. Female household heads in Costa Rica generally have low levels of education and tend to engage in low-skilled work. For example, the two most common types of occupation for this group are domestic work and operating a small grocery/retail store from their homes. So female households with low education who are employed would neither have many choices about the type of job they do nor about the number of hours they work.

We also looked at the number of hours worked for all household heads for different income levels and found that the frequency of remittances reduces the number of hours

by as much as 15.5 hours per week for those households that are not extremely poor (defined as those satisfying only their basic needs). Thus, we conclude that the frequency of remittances is a key variable that merits to be included in studies looking at the relationship between remittances and labor force participation rates and/or number of hours worked in poorer households. It is also worthwhile to examine these labor market effects at other levels of income because it is well known in the literature that the probability of migration is highest for individuals in the middle-income brackets.

We also believe that a more targeted approach to complement remittances with incentives to participate in the labor market should be considered. Bottlenecks in the remittance sending process through financial institutions should be investigated to facilitate a steady flow. In this regard, decreasing the cost of sending money could also contribute to a steady rather than infrequent flow of remittances. While the cost of sending money has decreased in recent years, more can be done to take advantage of electronic and internet money transfers which have a much lower cost.

Finally, this study suggests that policy makers need to consider appropriate policies to provide incentives to low- and middle-income groups to engage in the labor market. Despite being the recipients of remittances, migrant-receiving households can engage in self-employment activities that could be partially financed by remittance flows. A matching funds program such as Mexico's 3x1 may be extremely helpful here. A partnership with micro-lending institutions may also provide a vehicle to enhance the value of remittances while encouraging remittance-receiving households to consider starting a small enterprise. These NGOs also provide business



training to increase the probability of success. These efforts should be guided by the idea that migrant and non-migrant households may better respond to structural incentives such as better infrastructure, available credit, and technical assistance than the sometimes-meager financial flows from abroad; hence, the need for government funds to complement remittances. In this regard, government resources could strengthen the linkages between micro-finance institutions and the remittance community as well as invest in infrastructure that could enhance the positive effects of these flows for migrant and non-migrant households alike.

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### **Conflicts of interest**

The author declare that there is no conflict of interest regarding the content of this work.