

REMITTANCES AND DEVELOPMENT

The Experience of Northern Central America



Edited by Tanida Arayavechkit,
Kinnon Scott, and Liliana Sousa

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1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

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Table of Contents

Executive Summary	9
Why this study?	9
What did we learn?	10
Policy Implications	11
1. Overview	13
Introduction	13
Context Matters	14
What Have We Learned? Main Findings	19
Policy Implications	35
References	42
2. The Evolution of Migration from Northern Central America	47
Introduction	47
Background	47
Methodology	58
Findings	60
Conclusion	68
References	70
Annex	73
3. Human Capital Losses: Selection into Migration from the Northern Central America	75
Introduction	75
Background	76
Methodology	77
Findings	85
Conclusion	93
References	95
Annex	97

4. Remittances in Northern Central America: Why do Migrants Remit?	101
Introduction	101
Background	102
Methodology	106
Findings	123
Conclusion	123
References	124
Annex	127
5. Remittances and their Effects on Poverty and Inequality	131
Introduction	131
Background	132
Poverty and Inequality in Northern Central America: Lagging Behind the Rest of Latin America and the Caribbean	134
Methodology	141
Household Income without Remittances	141
How Households Adjust to the Lack of Remittances	143
Findings	145
Conclusions	154
References	156
Annex	159
6. Remittances and Human Capital Accumulation	169
Introduction	169
Background	172
Remittances and Education	178
Conclusions	189
References	191
Annex	195
7. Remittances and Labor Supply in Northern Central America	201
Introduction	201
Background	202
Methodology	206
Findings	211
Conclusion	217
References	219
Annex	221

8. Do Remittances Promote Financial Development in Northern Central America?	223
Introduction	223
Do Remittances Promote Financial Development?	227
Conclusions	237
References	239
Annex	242
 9. And Then the World Changed: First Insights on How the Pandemic Affected Remittances in Northern Central America	 243
Introduction	243
Overview of the Global Pandemic	244
Methodology	252
What really happened to remittances?	254
Were remittances able to protect households during the pandemic?	258
Conclusions	265
References	267
Annex	272

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Executive Summary

Why this study?

Migration and remittances are intertwined with the development of Northern Central America. According to the most recent data, more than one in ten people born in El Salvador, Guatemala, and Honduras are living in foreign countries. These migrants, in turn, remitted over \$23 billion in 2019, accounting for between 14 and 22 percent of the GDP of these countries and constituting 20 percent of the total value of remittances received by all countries in the Latin America and Caribbean region. While, on one hand, migration represents a loss of human potential for Northern Central America, on the other hand, remittances can compensate for this loss, improving the welfare of the family members of migrants and even positively affecting the macroeconomic situation in these countries. The sheer magnitude of the migration and remittance flows suggests that they have had a critical impact on the region.

Significant research has been done on migration, especially in destination countries, and on remittances and their effects on different socioeconomic outcomes. Yet much of this research has focused on countries and migration flows that differ substantially from the situation in the countries of Northern Central America. To what extent are those results applicable to these NCA countries? In this study, we take a close look at the way in which migration and remittances affect the three countries in Northern Central America. The analytical work is designed to answer questions that are key to public policy. For example, who is migrating and what does that imply for the economies of the region? What are the drivers of remittances? How do remittances affect household outcomes? How do they affect labor supply? Based on our analysis, we identify a number of policy priorities for the countries of Northern Central America.

What did we learn?

There are many myths related to migration and remittances in Northern Central America. The analytical work carried out in this study sheds light on some of the more common myths, debunking some and confirming that at least one is not a myth.

Myth 1: Migrants come from the poorest and least educated households in the population and, thus, households who receive remittances are also the poorest.

Migration is a costly endeavor. This cost acts as a barrier to migration for the poorest groups in Northern Central America. As shown in this study, migrants from Northern Central America are disproportionately young adults who, though not highly skilled by international standards, represent key human capital in their countries of origin. Based on their observable characteristics, migrants from Northern Central America are disproportionately drawn from the middle and upper half of the wage distribution of their country of origin. The flip side of this migratory pattern is that it is not the poorest households that receive most remittances, either as a share of households or as a share of the amount of remittances. Even so, while most remittances do not go to the poorest households, they are a critical income source for those that do receive them. This suggests that these households are highly vulnerable to any reduction in the amount that they receive. Thus, economic shocks in the destination countries for NCA migrants (such as the global financial crisis of 2008 and the ongoing COVID-19 pandemic) can have a significant negative impact on the welfare of these households.

Myth 2: Remittances are driven by need in migrants' countries of origin and function as a safety net.

Almost half of the population in Honduras, 43 percent of the population in Guatemala, and 22 percent in El Salvador are considered poor at international poverty line of \$5.50 per day. Given these high poverty levels in these countries, it could be expected that the flow of remittances would be driven by need in the migrants' countries of origin. However, in Northern Central America, remittances are pro-cyclical with the destination economy – in other words, they are driven by migrants' earnings opportunities in the destination country rather than by need in the source country. Thus, while they may serve as a safety net against some idiosyncratic household shocks, the remittances sent to Northern Central America are not an effective safety net against cyclical shocks. Also, evidence on migrants' motives for remitting (such as altruism, investment, or exchange motives) is mixed.

Myth 3: Remittances are wasted by being spent on consumption and not invested.

An oft-heard comment is that households do not use remittances for productive purposes but instead “waste” them on increasing their levels of consumption. In the first place, increasing

consumption is not always a waste: the odds of a remittance-receiving household reporting that they have insufficient food are nearly 40 percent less than those for a similar household that does not receive remittances. This impact is substantial as a 10 percent increase in the amount of remittances received by a household reduces the likelihood of food insecurity by 4 percent. Second, there is evidence that remittance-receiving households in Northern Central America spend more on schooling and have higher enrollment levels than non-remittance receiving households. In other words, the receipt of remittances is associated with greater investments in human capital. And finally, the evidence suggests that recipients of remittances are also more likely to be self-employed or employers, which indicates that remittances are being used to support small enterprises, although this does not appear to increase earnings. However, it is interesting to note that the flow of remittances into Northern Central America have had only a limited positive effect on financial sector development, which is certainly a lost opportunity.

Fact 1: Remittances lower the labor supply.

This is not a myth. Our analysis shows it to be true, albeit with important nuances. Remittances may decrease the labor supply by increasing the reservation wage of recipients, in other words, the lowest wage at which an individual will accept a job. Indeed, we found evidence that remittances were associated with substantial reductions in labor force participation rates, particularly for women in El Salvador, and may be contributing to the high rates of boys and young men who are *ninis* in Guatemala and El Salvador (those who are neither in school nor working). The impact on women in the other two countries, while potentially large, may be masking other differences between women who receive and do not receive remittances. This decrease in the labor supply is likely to be due to a welfare-increasing reallocation of labor within the household. In other words, remittances may be allowing families to purchase more time for home production or to care for children or elderly members. The larger impact on women's labor supply than on that of men also reflects local gender norms in Northern Central America that value more women's home production than their participation in the labor market.

Policy Implications

These misperceptions have implications for policy in the three countries. As our analysis shows, migration and remittances present Northern Central America with challenges but also important opportunities. However, there are still ways in which the countries of Northern Central America are missing out on some of these opportunities. And there are risks created by a heavy reliance on remittances. Each country's experience is different so we can give no universal policy advice as both time and context matter. However, several suggestions arise from the analysis.

- **Migration has costs for migrants' countries of origin.** While all migration represents a loss of human capital, the characteristics of Northern Central American migration mean that

the three countries incur a disproportionate cost. Another challenge related to the labor force is the decrease in labor force participation by recipients of remittances in the NCA countries. Policies aimed at upgrading the skills of lower skilled workers and increasing female labor force participation could help to compensate for these losses in productivity. Programs to certify skills of returnees could also benefit sending countries as these could help labor market re-insertion.

- **Remittances are not a substitute for strong social safety nets.** On the one hand, the very poorest households are the least likely to receive remittances, but those who do depend heavily on them. Hence, anything that negatively affects remittances could lead to serious hardship for those households. Given the pro-cyclical nature of remittances, economic shocks in the origin countries may not prompt greater remittance flows, and shocks in the destination country can actually decrease remittances. The response to the pandemic seems to show similar pro-cyclicality.
- **Remittances have the potential to enhance household welfare, but policies are needed to complement and leverage these inflows.** In terms of economic activity, while remittances seem to be supporting small businesses and creating jobs, they are not associated with increased earnings. Policies that can promote business formation, training, and productivity increases would complement the basic investments funded by remittances and thus improve welfare and promote job creation. Skill certification programs for returning migrants could also increase the net benefits of migration. With regard to education, remittances increase household investments in schooling. To maximize the returns on such investments will require policies aimed at improving the quality of the education being provided. Also, to ensure that household investments in nutrition have the highest possible return, parallel public investments in clean water sources and health care are needed.
- **Knowledge gaps remain.** The data needed to investigate some of these topics are still lacking. Better and more frequent information is needed in order to design smart policies to tackle the challenges and opportunities of remittances and migration in Northern Central America.

1 Overview

Kinnon Scott and Liliana D. Sousa

Introduction

The sheer magnitude of the migration and remittance flows to and from Northern Central America (NCA) suggests that they must be having a critical impact on the region. While the three countries of NCA – El Salvador, Guatemala, and Honduras – together represent less than 0.5 percent of the world’s population, they receive 3.3 percent of the world’s remittances. Yet, two of these countries continue to have high levels of poverty and none of them has experienced strong economic growth, especially in per capita terms. Labor markets fail to deliver quality jobs and attaining the Sustainable Development Goals by 2030 remains a challenge, despite recent progress.

The key questions for the NCA countries are: in what manner do these inflows and outflows affect the welfare of their populations and what policies might improve social and economic outcomes? *A priori*, the full impact of migration and remittances on the development of each of these three countries is unclear. While migration represents a loss of human potential for the migrants’ countries of origin, to what extent do remittances compensate for this loss? The analytical work carried out in this book aims to answer this and other questions that are key to public policy. Who is migrating and what does this imply for the country’s labor force? To what extent do remittances provide a social safety net, and, if so, to whom? Are remittances just replacing the forgone earnings of migrants or do they make households better off? Do households use these flows for productive investment or do they “waste” them on consumption? Do remittances raise reservation wages and deter labor force participation? Does the additional flow of funds translate into increased development of the financial sector? How do remittances behave in the face of crisis? While substantial research on remittances and migration has been carried out globally, the findings are often contradictory, highlighting the impact that country- and time-specific factors can have on outcomes. And most of the research

has focused on countries and migration and remittance flows that differ substantially from the conditions that prevail in the NCA countries.

The motivation behind this study is to understand the mechanisms, challenges, and opportunities associated with migration and remittances in El Salvador, Guatemala, and Honduras to inform future policymaking. This study considers both sides of the coin: the outflow of people from and the resulting inflow of remittances into NCA. The first two chapters consider the differences in migration patterns among the three countries as well as the economic implications for the source countries of this loss of labor. The other six chapters look at the various ways in which remittances affect the NCA countries. The selection of topics has been driven by a central question: How are remittances related to development in migrants' source countries? The analysis begins by considering how remittance flows are correlated with economic activity in both the sending and receiving countries and what this tells us about the motivations behind the sending of remittances. Subsequent chapters then tackle the questions of how remittances affect core elements of economic development such as poverty, health and education outcomes, the labor supply, and financial development. A final chapter provides an early assessment of the changes wrought by the SARS-CoV-2 virus. A synthesis of policy implications based on this analysis is presented at the end of this chapter.

The findings of this study highlight the contradictory roles played by migration and remittances in the development of the NCA region. On the one hand, we find that migration and remittances come at a cost: positive self-selection into migration implies an outflow of more productive workers, while the subsequent receipt of remittances depresses labor force participation. Remittances are not an effective insurance mechanism against cyclical shocks for the NCA countries as they are driven by the health of destination countries' economies. And surprisingly, given the magnitude of these remittance flows, they have not led to financial sector development in Northern Central America. On the other hand, there are clear benefits that accrue to the countries in the region from their large migration and remittance flows. Remittances reduce monetary poverty, albeit only marginally, and they tend to be spent in positive ways that lead to increased school enrollment and decreased food insecurity.

Context Matters

Globally, research on the relationship between migration, remittances, and economic development has produced mixed results.¹ (See Box 1.1 for the definitions used here.) By increasing income and liquidity, remittances are generally associated with positive outcomes for the households that receive them. Research has found that they reduce poverty,² can lead to better health and education outcomes,³ and can promote asset accumulation and

1 For overviews of the literature, see Ratha et al (2011) and Adams (2011).

2 For example, Adams and Page (2005), Acosta et al (2008), Anyanwu and Erhijakpor (2010), and Imai et al (2014).

3 Zhunio et al (2012), Amuedo-Dorantes et al (2010), Cox Edwards and Ureta (2003), and Bansak and Chezum (2009).

Box 1.1

Words Matter: Migrants, Immigrants, and Emigrants

Since this study considers both source and destination countries, to simplify the discussion we use the word “migrant” throughout to refer to either “immigrants” to destination countries or “emigrants” from source countries. Similarly, we use the word “migrate” instead of both “immigrate” and “emigrate.” However, it is important to point out that these words have different meanings and connotations. Immigrant and emigrant imply more permanence than migrant. Merriam-Webster’s Dictionary defines an immigrant as “a person who comes to a country to take up permanent residence” and an emigrant as “a person who leaves one’s place of residence or country to live elsewhere.” A migrant, on the other hand, is defined as “a person who moves regularly in order to find work especially in harvesting crops.” It is clear from the long tenure of many emigrants from Northern Central America in their destination countries that they have undertaken a permanent or long-term international move.

investments.⁴ Evidence also suggests that, in many countries, remittances can serve as income stabilizers and *de facto* insurance for receiving households.⁵ Migration can also be a channel for the introduction of new knowledge and skills, either directly through the migrants who return home or through information flows, as well as fostering international trade and enterprises.⁶

Compared to the impact of migration and remittances on remittance-receiving households, their effect on wider social and economic outcomes is more mixed. Remittances are associated with increased stability of a country’s economic output⁷ and help to dampen the negative effects of food price shocks.⁸ At the same time, remittances have been associated with Dutch disease outcomes, in which household spending patterns lead to real effective exchange rate appreciation and the reallocation of resources to non-tradeable sectors.⁹ The migration of skilled and educated workers from their countries of origin constitutes a brain drain¹⁰ that, combined with the reduction in the labor supply of remittance-receiving households,¹¹ can lead to lower productivity and growth and leave recipient countries less competitive.

4 Adams (1996) and Chiodi et al (2012).

5 Ambrosius and Cuecuecha (2013).

6 Bahar and Rapoport (2018).

7 Hakura et al (2009).

8 IMF (2012).

9 Lartey et al (2012).

10 Niimi and Özden (2008).

11 Amuedo-Dorantes and Pozo (2006) and Cox-Edwards and Rodriguez-Oreggia (2009).

Over the past 20 years, a significant amount of research has been done on migration and remittances in countries with large flows, including India, the Philippines, and Mexico. For Latin America as a whole, Fajnzlyber and Lopez (2008) found that remittances were associated with positive outcomes. The authors estimated that a 1 percentage point increase in remittances as a share of GDP led to a 0.4 percent reduction in poverty. Additionally, they found evidence of improvements, albeit modest, in household welfare and financial development. However, they did find some evidence of remittances having had Dutch disease effects.

Several studies have explored the effect of remittances on various outcomes such as education, labor supply, and poverty in NCA countries.¹² More work has been done on El Salvador than on the other two countries, which probably reflects the longer history and larger flow of migration from that country. Most recently, work on inclusive growth in each of the three countries has highlighted the positive impact of remittances on household income.¹³ The results of these studies have varied because the countries themselves vary. Context matters. Migration and remittances need to be understood within the social and economic realities of each country.

The similarities and dissimilarities of the three countries are reflected in their migration and remittance stories. They are all small countries with service-dominated, low-growth economies and highly informal labor markets (Table 1.1). As a share of GDP in 2019, agriculture accounted for 5 to 11 percent of value added in each country, but, as a sector of employment, it was much more important in Guatemala and Honduras where it employed approximately one-third of workers, whereas in El Salvador, agriculture accounted for only 16 percent of the workforce. Per capita income in Honduras, the poorest of the three countries throughout the 20 years covered in this study, was only 55 to 61 percent of per capita income in Guatemala and El Salvador respectively. As a result, half of the population of Honduras was living on less than \$5.50 per day in 2019, while 15 percent were living under the global extreme poverty line of \$1.90. Although Guatemala is an upper-middle-income country, unlike El Salvador and Honduras (lower middle-income countries) it has the fifth lowest level of GDP per capita and the third highest poverty rate in Latin America and the Caribbean (LAC).

The population of these countries has limited employment opportunities. Even when agriculture is excluded, the majority of jobs are in the informal sector, which absorbs 63 percent of workers in El Salvador and 74 percent in the other two countries. Workers rely heavily on self-employment: half of Honduran workers are self-employed as are 39 percent of workers in Guatemala and El Salvador. As reflected in the low educational attainment of the adult population, most of these workers are low-skilled. Only about a quarter of the potential labor force has completed upper secondary school, and only about one in ten has completed any type of tertiary education.

12 See Adams (2003) and Adams (2004) on education, Adams (2004) and Acosta (2006) on the labor supply, and Adams (2004), World Bank (2006), World Bank (2015), and Hernandez et al (2014) on poverty.

13 Calvo-Gonzalez and Lopez (2015), Sanchez et al (2016), and Hernandez et al (2017).

The three countries share high rates of crime and violence. Homicide rates are high in all the countries, with either El Salvador or Honduras recording some of the highest rates globally each year between 2008 and 2019 (the most recent year for which global data are available). Combined with the lasting effects of long civil wars in El Salvador and Guatemala, these levels of violence have led to the internal displacement of an estimated quarter of a million people in Honduras, Guatemala, and El Salvador.

The demographics of each country tell us something about the past trends and potential future demand for migration. El Salvador's population is older and more urbanized than those of its two neighbors. In part, these demographics reflect the large share of El Salvador's working age population living outside of the country. Guatemala and Honduras, with roughly one-third of their populations being under the age of 15, have faster population growth (1.6 percent and 1.7 percent compared with 0.5 percent in El Salvador) and are still highly rural. Absorbing these future workers into the labor force will require higher growth and more job creation. Insufficient growth will likely lead many to migrate.

Table 1.1

The NCA Countries at a Glance: Socioeconomic Indicators, 2019

	El Salvador	Guatemala	Honduras
Population (millions)	6.5	16.6	9.7
Population growth (%)	0.5	1.6	1.7
Urban (%)	72.7	51.4	57.7
Age dependency ratio (% of working-age population)	54.6	63.4	56.2
Population ages 0-14 (% of total)	26.9	33.9	31.2
Population ages 65 and above (% of total)	8.5	4.9	4.8
Educational attainment, population 25+ (%)			
At least completed short-cycle tertiary	8.0 (2018)	8.5 (2015)	9.7
At least completed upper secondary	29.6 (2018)	26.6 (2015)	23.1
At least completed primary	58.6 (2018)	61.8 (2015)	59.5
Literacy rate, adult (% of 15+)	89.0	81.3 (2016)	87.2
Literacy rate, youth (% of 15-24)	98.0	94.4 (2016)	96.5
Poverty (\$5.50)	22.3	49.1 (2014)	49.0
Extreme poverty (\$1.90)	1.3	8.8 (2014)	14.8
Intentional homicides (per 100,000)	52.0	22.5	38.9
Internally displaced persons	289,410 (2015)	242,000	247,000
Per capita GDP (current US\$)	4,187	4,620	2,575

Table 1.1 Continued

	El Salvador	Guatemala	Honduras
Per capita GDP, PPP (current international \$)	9,164	9,020	5,981
Per capita GDP growth (annual %), 2010-2016	1.9	2.2	1.0
Value added as % GDP			
Agriculture	5.1	9.4	10.7
Manufacturing	15.8	13.8	16.3
Services	59.9	62.7	57.6
Labor force participation rate (% of 15+)	59.1	62.6	69.0
Unemployment (%)	4.0	2.4	5.6
Self-employment (% of employed)	39.1	39.2	50.2
Informal employment (% of non-agricultural employment) (2016)	63.2	73.5	73.8
Employment in agriculture (% of employment)	16.3	31.3	29.5

Source: World Development Indicators, World Bank.

Notes: Indicators are for 2019 unless otherwise indicated. Poverty rates are internationally comparable and do not coincide with national poverty rates. Labor force and employment indicators are modeled ILO estimates. Internally displaced persons are those displaced due to conflict and violence.

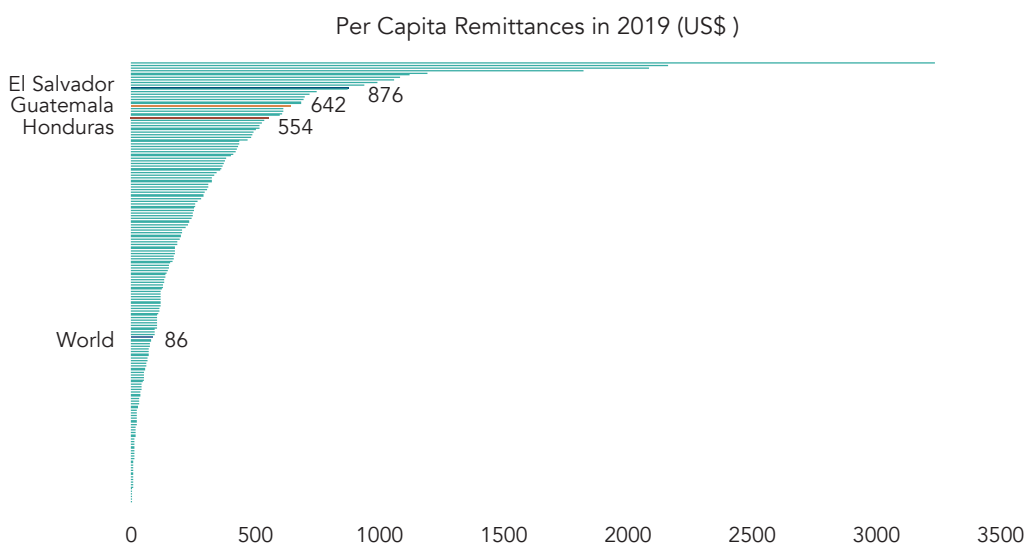
Migration and remittances have become increasingly important factors in the development of El Salvador, Guatemala, and Honduras over the past three decades. As of 2017, an estimated 3.4 million people born in the countries of Northern Central America were living in foreign countries, representing 11 percent of the people born in these three countries.¹⁴ According to the most recent global estimates of international migration, an estimated 1.6 million Salvadorans, 1.1 million Guatemalans, and over 790,000 Hondurans lived outside their countries of birth in 2013. These migrants represented 6 and 7 percent of all people born in Guatemala and Honduras respectively and 20 percent of all Salvadorans.

These migrants, in turn, remitted close to \$22 billion in 2019, accounting for 3 percent of global remittance flows and constituting nearly a quarter of the total value of remittances received by all countries in the Latin America and Caribbean region. Remittance inflows have increased substantially over the past two decades and were, as of 2019, more than seven times the level they had been in 2000. This represents a remarkable average growth rate of 8.1 percent per year, even after accounting for inflation and purchasing power. For each of the three countries, remittances are a key component of economic activity, comprising 21.5 percent of the nation's

¹⁴ World Bank (2017a).

GDP in Honduras, 21 percent in El Salvador, and 14 percent in Guatemala in 2019 compared with the world average of 0.8 percent. El Salvador has the highest per capita remittances in Northern Central America at \$876, followed by Guatemala with \$642 (Figure 1.1). Per capita remittances in Honduras were \$554, the lowest among the NCA countries but still six times higher than the world average (\$86).

Figure 1.1 Per Capita Remittances, 2019 (US\$)



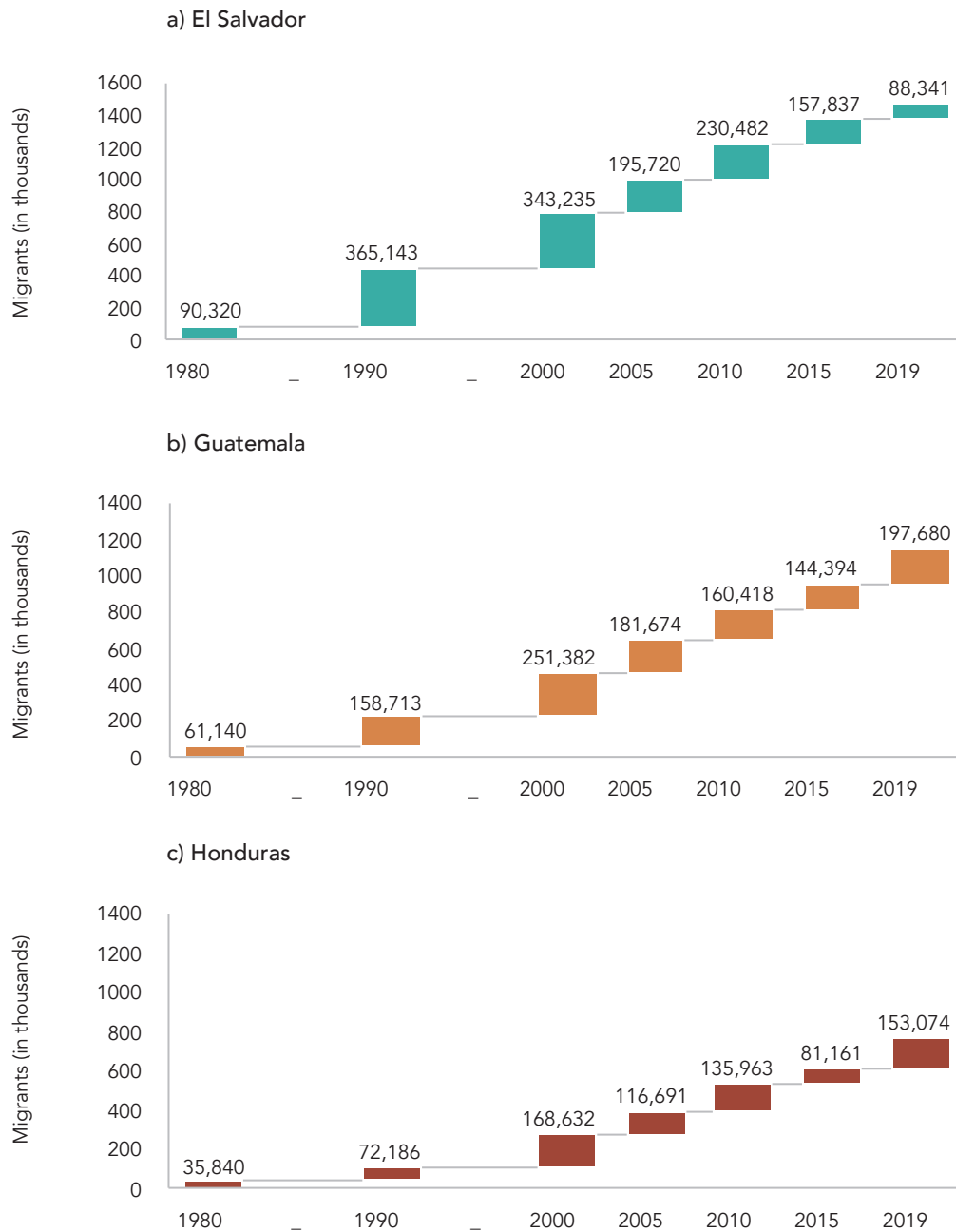
Source: World Bank's World Development Indicator and IMF's World Economic Outlook Database.

What Have We Learned? Main Findings

Despite many apparent similarities, the trends and drivers behind migration differ between the three countries

In Chapter 2, the analysis of del Carmen and Sousa of the demographics of the NCA migrant population in the United States suggests that the three countries are at different stages in the development of a migration network and have different levels of migration intensity. El Salvador stands out for its larger and more established diaspora. Despite being the smallest of the three countries, from the 1990s the number of migrants from El Salvador migrating to the US has surpassed that of the other two countries in every decade (Figure 1.2). As a result, 23 percent of the Salvadoran-born population lived in the United States in 2019. Honduran migration to the US is the smallest of the three NCA countries at just over 670 thousand people, but it represented 7 percent of the Honduran-born population in 2019.

Figure 1.2 Growth of the Migrant Population from Northern Central America in the USA, 1980-2019

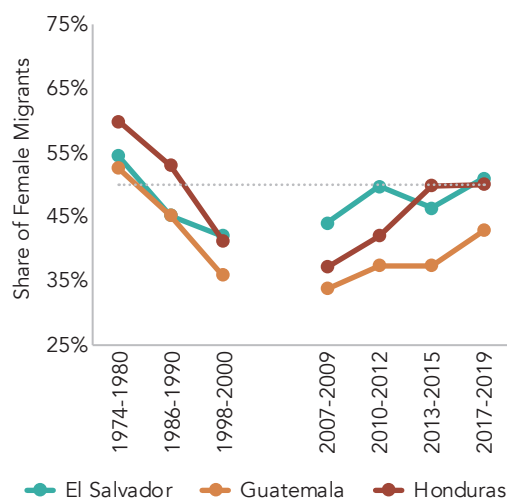


Source: Authors' tabulations using ACS 2005-2019 and IPUMS US Population Census 1980-2000 data.

Note: These figures reflect the change in the estimated population of migrants in the US between each year. The value for 1980 is the total population of that migrant group in the 1980 Population Census.

The Guatemalan diaspora differs in two key ways from the Salvadoran and Honduran diasporas.¹⁵ First, it is more biased towards young men. Women and children are underrepresented among Guatemalan migrants, suggesting that there is a lower proportion of family or long-term migration from Guatemala (Figure 1.3). Recent Salvadoran and Honduran migrant cohorts have been more demographically representative of their populations than Guatemala's. Second, the level of formal schooling among Guatemalan migrants fell between the cohort that arrived in the late 1990s and the cohort arriving between 2017 and 2019 (Figure 1.4). The share of migrants with only a primary school education or less increased from 47 percent to 52 percent, while it fell by 13.6 and 0.2 percentage points among Salvadorans and Hondurans respectively. This suggests that more people from the poorer segments of Guatemala are migrating. Given Guatemala's demographics, this probably means more rural migrants. Along these lines, there is an increasing proportion of college-educated individuals among migrants from El Salvador and Honduras, contrasting with a decrease in the share of college-educated Guatemalans.

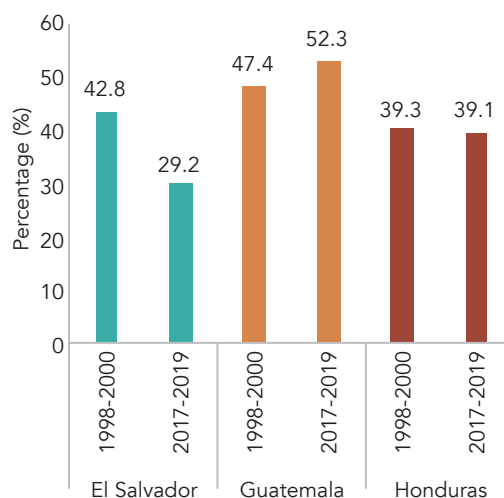
Figure 1.3 Share of Arrival Cohort Consisting of Women and Girls by Country of Birth



Source: Authors' tabulations using American Community Survey and IPUMS US Census data.

Note: Recent arrivals are defined as individuals who arrived two years prior to the survey, with the exception of 1980 and 1990 when the second most recent year was used (1974 and 1986 respectively).

Figure 1.4 Share of Migrants in the US with a Primary Education or less by Arrival Cohort and Country of Birth



Source: Author tabulations using American Community Survey and IPUMS US Census data.

Note: Recent migrants are defined as those who arrived two years prior to the census or survey used. For the 2000 census, only immigrants arriving between 1998 and 2000 are shown, while for the 2019 ACS survey, only immigrants arriving after 2017 are included. The data presented are for migrants aged 25 and over at the time of entry.

15 This analysis is based only on migration to the United States, which accounts for over 80 percent of migration from each of the three countries. In the case of Guatemala, there is a longer history of migration, including circular migration, to Mexico. This is discussed in Chapter 2.

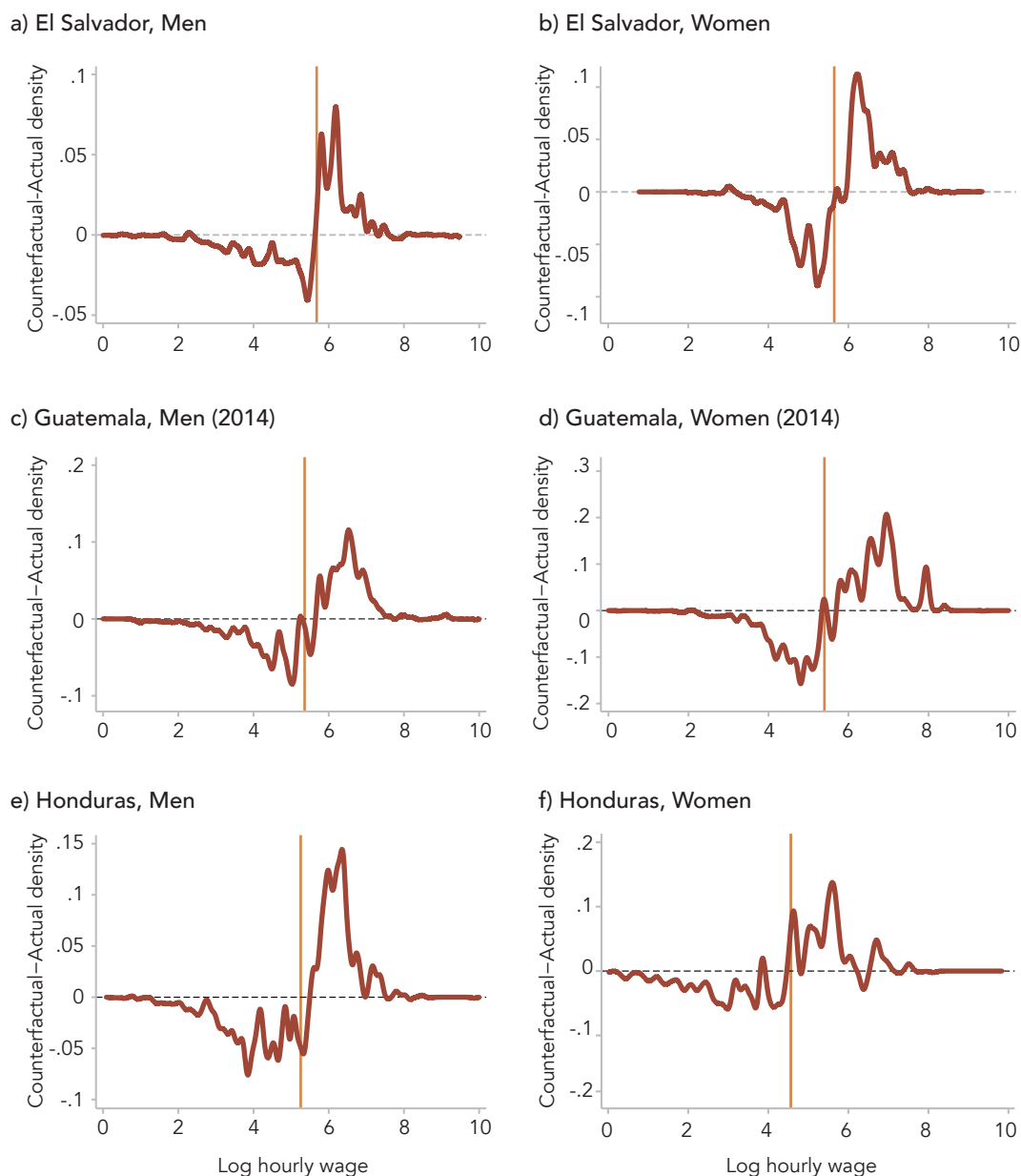
While it can be argued that most migration from Northern Central America is driven by economic considerations, it is clear that a mixture of push and pull factors are influencing these individual decisions. At times, these push factors have included devastating natural disasters, criminal activity and violence, and civil wars. In recent years, migrants have cited crime and violence as an important reason for their migration. This has particularly been the case among Salvadoran and Honduran migrants, which may be why so many of them are women and children. Rather than households sending one of their members, usually a young man, who can earn the most in the destination country, all members of the household may now be increasingly taking on the costs and facing the risks of migration in an effort to escape specific threats.

Migration involves a loss of human capital

Migration from Northern Central America may not represent a classic case of brain drain, but migration patterns suggest that there is a broad loss of productivity from the NCA labor force. In Chapter 3, del Carmen and Sousa found that migrants from NCA countries are disproportionately young adults who, though not highly skilled by international standards, represent important human capital in their source countries. The authors estimated this loss in productivity by calculating the local wages that the migrants would have received had they not migrated. This was done using household surveys from the source countries (El Salvador, Guatemala, and Honduras) combined with household surveys and population census data from the destination country. (See Box 1.2 for a discussion of the methodological and data issues for this and other chapters.) In other words, based on the observed characteristics of migrants, the authors estimated what the migrants' wages would have been if they had they not migrated and compared them with the wages of non-migrants.

Their analysis showed that migrants from Northern Central America are, in general, positively selected into migration. In other words, based on their observable characteristics, these individuals are disproportionately likely to be drawn from the middle and upper half of the earnings distribution in their countries of origin. This result is illustrated for both men and women in Figure 1.5. Each graph shows the difference between the counterfactual distribution, which shows the distribution of the forgone wages of those individuals who migrated to the US and the wage distribution in the source country. Positive values along the vertical axis reflect parts of the earning distribution that are overrepresented among migrants, while negative values are areas of underrepresentation. Each graph also includes a vertical line delineating the median wage in the source country in 2014 for Guatemala and 2019 for El Salvador and Honduras. In each case, there was evidence that the workers who migrated were positively selected, in that they were disproportionately drawn from the top half of the wage distribution. This selection was stronger for women and strongest for Honduran migrants.

Figure 1.5 Difference between the Wage Distribution of Residents and the Counterfactual Wage Distribution of Migrants by Country and Gender, 2019



Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: Sample is limited to individuals 21-65 years old and recent migrants (those that have been in the U.S. for 10 years or less) with hourly wages greater than zero. Log hourly wages using 2011 US\$ PPP in cents. Actual and counterfactual wage densities based on Gaussian kernel function with implied bandwidths of 0.07 log wage units. Only non-imputed observations from the US data are used. The vertical line represents the average wage for each country-gender group. For Guatemala, the latest available data were from 2014.

Box 1.2

Addressing Self-selection into Migration

A standard challenge in all research related to migration and remittances is the problem of self-selection based on unobservable characteristics. It is likely that individual and family characteristics that are not measured by surveys play an important role in the decision about whether or not to migrate and that these same characteristics are related to other outcomes of interest such as poverty and labor supply decisions. A canonical example is ambition, a characteristic that may be expected to be positively correlated with migration and with labor supply. The empirical challenge is to be able to distinguish between the causal effect of remittances and migration and the effect of these unmeasured characteristics.

While a number of empirical methodologies have been used in the literature to address self-selection bias, the data sources for Northern Central America limit the extent to which these can be applied. A common approach is to use instrumental variables. Many of these relate to geographical or temporal variations (for example, concentrations of previous flows of migrants, the location of Western Unions, or the distance to the border). This method requires data to be collected at frequent intervals and/or at highly disaggregated geographical levels. Censuses are not collected frequently enough, while surveys are not disaggregated enough geographically.

An innovation in this study is the use of data sources from the destination countries. Migrants do not appear in the data from their countries of origin, so household surveys are usually unable to fully provide information on the population of migrants. These individuals are not present in the household at the time when the data are collected: in the most extreme case, the entire household migrates and thus is invisible in the national data. Surveys do ask households about any members who have migrated, but it is often not obvious which migrants are recorded. For example, an adult son or daughter who migrated a decade ago is unlikely to be considered part of the household. The most recent population census in Northern Central America, the 2018 Guatemalan Census, asked questions about which household members had migrated, and the data indicate that approximately 242,200 migrants left the country between 2002 and 2018. However, this is only about half of the increase in the Guatemalan-born population living in the United States during the same period. An additional complication is that most migration from the NCA countries is informal and undocumented, hence official statistics on the size of this population are unreliable and incomplete.

The vast majority of migrants from each of the three NCA countries go to the United States, a country with good household and population surveys. By bringing together survey data from the United States and the NCA countries, we have been able to understand more about who migrates and about the process of selection into migration. However, using destination country data does not avoid all potential biases that stem from under-reporting as undocumented migrants in the destination countries are less likely to respond to surveys. To the extent that undocumented and documented migrants differ in terms of demographic and economic characteristics, some degree of bias will remain in the analysis due to the larger undercounting of undocumented migrants.

What is the economic size of this outmigration in terms of forgone wages? The data suggest that the forgone wages of migrants represent a disproportionate share of labor earnings in each source country. While the cohort of migrants included in the analysis represented 3.6 percent of the Guatemalan labor force, their forgone earnings represented 3.0 percent of labor earnings, equal to 1 percent of GDP in 2014. In Honduras, migrants constituted 3.8 percent of the labor force, and their forgone wages accounted for 3.3 percent of earnings, equivalent to 1.3 percent of GDP in 2019. In El Salvador, migrants accounted for 6.0 percent of the labor force and would have earned an estimated 4.7 percent of all labor earnings in the country, equivalent to 1.7 percent of GDP in 2019.

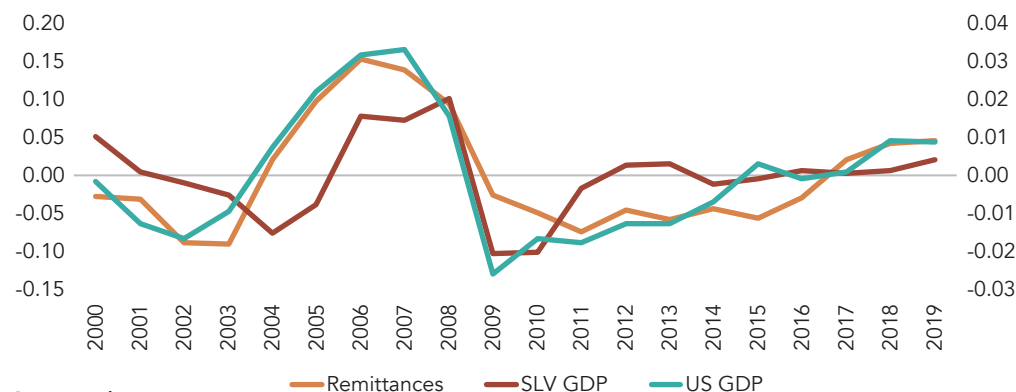
Remittances are driven by economic opportunities in the destination countries, though altruism and family obligations also play a role

In Chapter 4, Arayavechkit explores the reasons why migrants from NCA countries remit. Remitting may be driven by pure altruism on the part of migrants or by incentives and enforcement mechanisms contained in an informal contractual agreement between the migrants and the households to which they remit. The economic theoretical models provided testable predictions both at the macro and micro levels. The macro and micro evidence pointed to the same motives behind the remitting behavior of migrants who left the NCA region. At the macro level, remittances increased in response to positive GDP growth in the destination country, suggesting that there is an exchange or investment motive under a contractual agreement in NCA countries and it appears to be strongest in Honduras. At the micro level, unlike in Guatemala and Honduras, a negative correlation between pre-remittance household income and the size of remittances received suggests that altruism is a driver for Salvadorian migrants. While altruistic motives may co-exist with other motives, they are strongest in El Salvador and weakest in Honduras where exchange or investment motives seem to prevail.

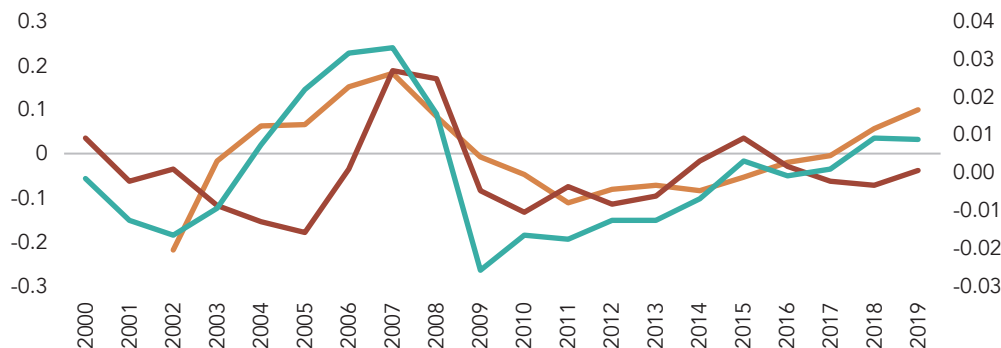
At the macroeconomic level, remittance flows are not sufficient to constitute a good safety net. Remittance flows persistently dwarf official development assistance (ODA) and foreign direct investment (FDI) as a source of capital inflows to NCA countries. However, the flows are procyclical, partly due to the synchronization of the business cycles of the NCA countries and the US, which is both the main sending country and an important trading partner for the region. In particular, remittances lead the GDP of NCA countries and lag the GDP of the US (Figure 1.6). While some insurance motives can be found at the household level, this procyclicality means that remittances are not sufficient to insure recipient households in NCA countries against macroeconomic shocks.

Figure 1.6 Cyclicality in Remittances and GDP

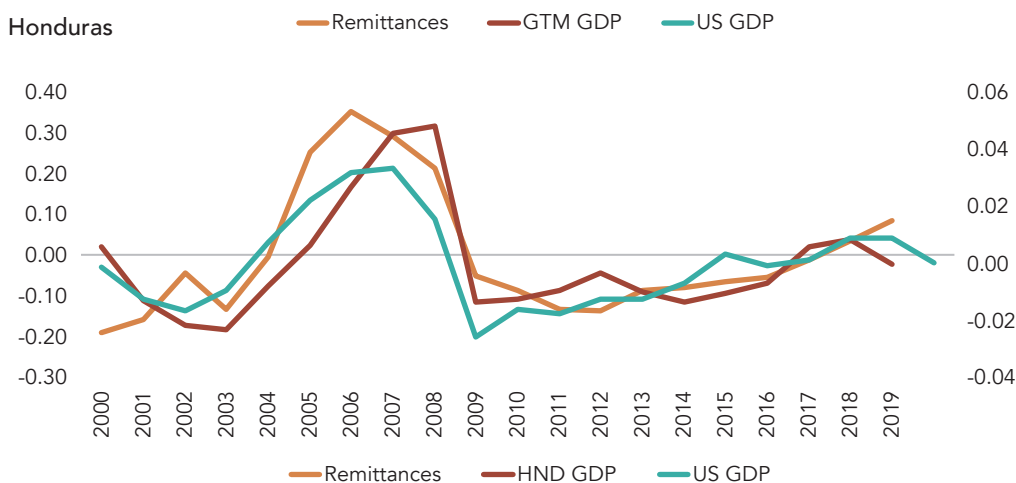
El Salvador



Guatemala



Honduras



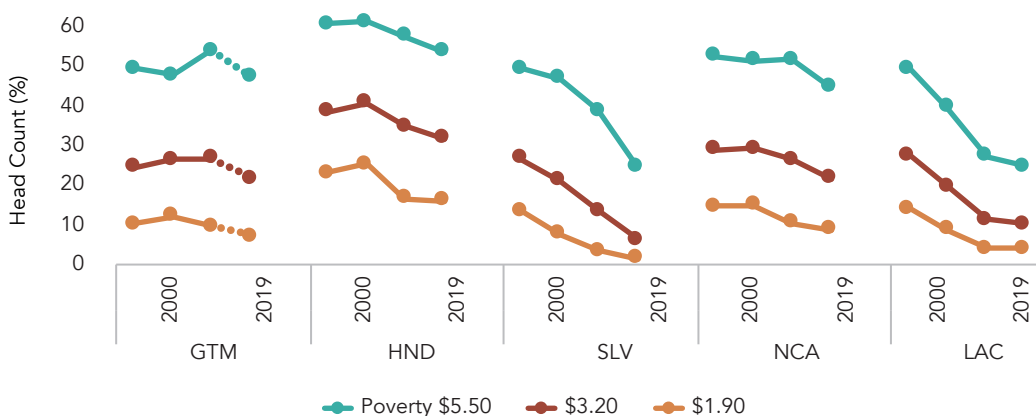
Source: Own calculation from World Development Indicators, World Bank
 Note: Deviations from trend in logarithm: remittances (left axis) and GDP (right axis).

Despite their magnitude, remittances had only a small effect in terms of reducing poverty and inequality

Poverty rates are high in Northern Central America, persistently so in Honduras and Guatemala, with only El Salvador having been able to reduce poverty at equivalent rates to the average for Latin America and the Caribbean (LAC) countries (Figure 1.7). Previous studies have shown that migration and remittances can reduce monetary poverty in the migrants' countries of origin.¹⁶ Acosta et al (2008) found that remittances in the three countries in the early 2000s led to a reduction in poverty. However, whether remittances have led to a reduction in poverty in recent years, given the financial crisis of 2008 and the stagnation of economic growth in the LAC region in the 2014 to 2019 period is not clear, a priori. The positive selection into migration in NCA, found by del Carmen and Sousa (Chapter 3), reduces the skills and experience available within the remaining pool of workers, which could cause poverty to increase. It also could mean that poorer households are less likely to receive remittances and, thus, the poverty impact of observed remittance flows could be negligible. Finally, within each household, overall monetary welfare gains depend on the extent to which the migrant remits more than his or her original earnings minus his or her consumption needs.

Figure 1.7 Poverty Rates over Time

a) Poverty Rates in the Past Two Decades



Source: SEDLAC (CEDLAS and World Bank).

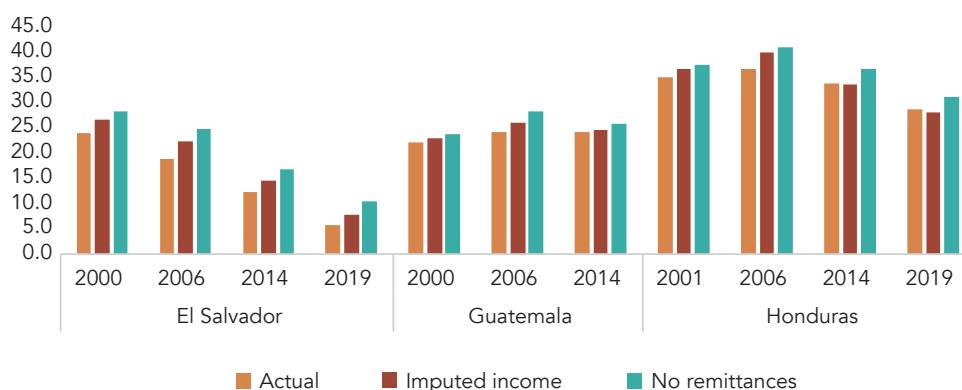
Note: All poverty line in 2011 PPP terms. Guatemala 2019 numbers are interpolated since the last survey was done in 2014. NCA = Northern Central America, LAC = Latin America and The Caribbean, as defined by World Bank regions.

16 Adams and Page (2005), IMF (2007), and UNCTAD (2011).

In Chapter 5, Scott and Soler-Lopez look at how remittances to the NCA countries affect poverty rates over time. Using household survey data from the three countries, the authors estimated counterfactual poverty rates in the absence of migration and remittances. A first, or naïve scenario, approximates the effect of remittances on monetary poverty simply by looking at the difference in poverty rates between the present distribution of household income and what that distribution would be if remittance income were excluded. This naïve scenario treated remittances as exogenous to households when in fact, the propensity to migrate is itself a function of household characteristics. To account for this endogeneity, the authors followed the methodology of Acosta et al (2008) in using a Heckman selection model to model household income based on the income of households that do not receive remittances. Next, they estimated what the household income would have been for these remittance-receiving households if no one from their household had migrated. This involved adjusting the composition of these households to “re-incorporate” the absent migrants.

The results of these counterfactual scenarios revealed that, under the naïve scenario, in the absence of remittances, poverty rates in each country would have been higher in all years. The same is true for the imputed income scenario in the 2000- and 2006-time frames. By 2019, however, this was no longer true in Honduras. In fact, there is evidence that migration of the very poorest from Guatemala and Honduras were unable to remit enough to offset their income prior to migration. The overall impact on inequality was small in all three countries.

Figure 1.8 Poverty Rates under Different Scenarios (LMIC poverty line of US\$3.2)



Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EHPM for Honduras.

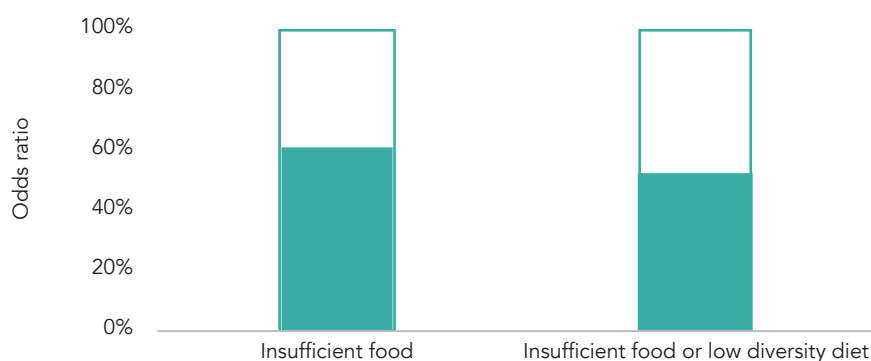
Notes: The three scenarios are: (i) actual or observed poverty rates (actual total household income including remittances); (ii) 'no remittances' i.e. the poverty rates if remittances were subtracted from total household income; and (iii) imputed income where remittance earnings are subtracted and the earnings that the migrant would have earned if she or he had not migrated are added to the household income. Poverty rates were calculated based on per capita household income. For comparability, all income figures are in 2011 PPP terms.

Remittances have a positive effect on welfare by increasing human capital

The impact of remittances on overall welfare goes beyond monetary poverty. In Chapter 6, Oliveri, Scott and Sousa present evidence that remittances affect human capital formation. Investing in health and education has been shown to improve individual welfare by increasing lifetime earnings as well as improving overall economic development.¹⁷ The receipt of remittances can cause households to increase their investments in human capital by relaxing the household's budget constraints. However, migration networks can affect the cost-benefit ratio of investments in education, for example, by raising its value if education leads to better earnings among migrants and lowering it if households regard the opportunity costs of schooling as too high. The evidence of how remittances have affected education is mixed, with some studies finding that they had a positive effect on school enrollment in several countries, while others have found that they had only an insignificant or negative effect in other countries.¹⁸

Remittance-receiving households in Northern Central America do appear to invest more in human capital than those that do not receive them. Nutrition, health, and education are three areas of human capital investment that can be affected by remittances. Food insecurity has been found to be lower among remittance-receiving households than among those that do not receive any remittances. Evidence from Guatemala shows that remittances are associated with lower levels of food insecurity, even after controlling for other household characteristics (Figure 1.9). In Guatemala, the odds of a remittance-receiving household reporting that they

Figure 1.9 Odds of Being Food-insecure if Remittances Are Received, Guatemala, 2014



Source: Authors' calculations based on household surveys.

Note: This figure reports the odds ratio of the change in food insecurity (along two definitions) associated with the receipt of remittances. These effects are significant at the 99 percent confidence level.

17 See Mincer, (1974), Case et al (2005), Smith (2009), Barro (1991), and Barro and Lee (2013) for example.

18 Positive effects have been found by Zhunio et al (2012), Amuedo-Dorantes et al (2010), Cox Edwards and Ureta (2003), and Bansak and Chezum (2009), while McKenzie and Rapoport (2011), Acosta (2011), and Nguyen and Purnamasari (2011) have found negative or insignificant effects.

have insufficient food are nearly 40 percent less than those for a similar household that does not receive remittances. This impact is substantial as a 10 percent increase in the amount of remittances received by a household reduces the likelihood of food insecurity by 4 percent.

Education spending and enrollment rates are also higher among remittance-receiving households (Figure 1.10). As a share of total expenditures, spending on education is higher among remittance-receiving households than among households without remittances, as is spending on a per child or per enrolled child basis. The authors estimated the relationship between a household's human capital investment in education and the probability that the same household received remittances using ordinary least squares (OLS) and then a linear

Figure 1.10 Difference in Means of School Enrollment for Subsamples (percentage points)



Source: Authors' calculations based on EHPM 2014 and 2019 (SLV); EHPM 2014 and 2019 (HND) and ENCOVI 2014 (GTM) and SEDLAC (CEDLAS and The World Bank).

Note: All differences are statistically significant except in Guatemala for the 19-24 age group in 2014, in Honduras for the 6-24 and 19-24 age groups in 2019, and in El Salvador for the 13-18 age group in 2014 and for the under 19 age groups in 2019. Turquoise bars indicate statistically significant results. For details see Annex Table 6.2.

regression with endogenous treatment effect model (ET) to take into account the endogeneity of the investment decision. They found that spending was higher among the remittance-receiving households. School enrollment rates were also higher among these households. The impact of remittances varied between urban and rural areas as well as by level of schooling. However, by 2019, the link between remittances and enrollment had disappeared in El Salvador.

Unfortunately, evidence of the effect of remittances on investments in human capital is limited because of the data sources that are available. The analysis could not be done for all three countries for all indicators. Only Guatemala had data on food insecurity, and Honduras had no data on education spending by households. Data on health spending are limited, and the share of spending that they show is so low as to render any analysis suspect.

Remittances reduce labor supply, especially for women and young people

A particular concern regarding the NCA countries is that remittances may be reducing the labor supply of individuals who receive them. An increase in income (for example, as a result of receiving remittances) can alter how an individual chooses to allocate his or her time between market activities and household production, increasing the wage at which he or she will agree to work. In other words, individuals are able to buy more leisure or household production time because of remittances, at the expense of time spent working in the labor market. At the same time, the returns to home production for non-migrating household members may be higher than those in households with no migrants if these individuals take over household tasks previously performed by migrants (for example, parenting obligations and upkeep of the dwelling).

Garcia-Suaza and Sousa used propensity score matching to estimate the impact of remittances on labor supply in the NCA countries. These negative labor supply effects appear to have been more pronounced in El Salvador, the NCA country with the longest history of migration and the greatest migration flows. El Salvador's results suggest that recipients of remittances decreased their labor force participation by 6 percentage points among males and 15 percentage points among females. However, propensity score matching does not fully address the potential selection bias inherent in receiving remittances. A sensitivity analysis to address this issue revealed that the negative effect on participation rates for men in all three countries was robust to selection bias, whereas the negative effects of remittances on the participation of women in Guatemala and Honduras were sensitive to selection bias.

Remittances were also associated with young adults neither working nor being in school (being a *'nini'*), suggesting that remittances may delay employment and potentially lead to long-term non-participation in the labor force. This effect was particularly robust for boys and young men in El Salvador and Guatemala. However, the results suggest that the relationship between remittances and being a *nini* has become less pronounced for El Salvadoran boys and young men over time.

Table 1.2

Labor Force Participation by Gender (Propensity Score Matching Results)

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Men	Treated	0.757	0.781	0.795	0.903	0.858	0.838	0.858	0.876
	Control	0.819	0.831	0.853	0.936	0.894	0.88	0.872	0.885
	Diff (p.p.)	-0.062	-0.049	-0.058	-0.033	-0.036	-0.042	-0.014	-0.009
	Diff (%)	-0.076	-0.059	-0.068	-0.035	-0.041	-0.048	-0.017	-0.010
	t-stat	-7.48	-6.86	-8.80	-4.44	-3.19	-6.23	-1.12	-0.74
Women	Treated	0.382	0.403	0.393	0.462	0.392	0.445	0.463	0.506
	Control	0.558	0.537	0.545	0.523	0.468	0.506	0.555	0.544
	Diff (p.p.)	-0.175	-0.134	-0.152	-0.061	-0.075	-0.062	-0.092	-0.038
	Diff (%)	-0.315	-0.25	-0.279	-0.116	-0.161	-0.122	-0.166	-0.070
	t-stat	-21,010	-17,430	-20.55	-5,390	-5,480	-7,780	-5,640	-2.31

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Note: This table reports the labor force participation rate of the treated group (those who received remittances) and the control group (similar individuals who did not receive remittances).

Beyond affecting labor supply, remittances can also affect employment choices. The NCA countries each have small formal employment sectors, and, as a result, self-employment rates are high. The authors found that remittances appeared to be associated with higher rates of informality and self-employment in El Salvador and Guatemala (Table 1.3). In these countries, adults who received remittances were 7 and 11 percentage points more likely to be self-employed than similar adults who did not receive remittances respectively. In Honduras, there was no effect on self-employment. In El Salvador and Honduras, recipients of remittances were also more likely to be employers, which suggests that remittances were being used to support small enterprises. The estimated increase in the likelihood of being an employer was 4 percentage points in Honduras and 2.9 percentage points in El Salvador in 2019. This effect grew over time, suggesting that other factors such as increased access to credit or to markets may have contributed to the ability of households to convert their remittances into investments. However, additional analysis did not show that remittances had had any effect on wages except among the self-employed in rural Honduras. Hence, even as they may have influenced recipients' choice of employment type, they did not seem to be leading to particularly inefficient (or efficient) self-employment or small businesses.

Table 1.3

Self-employment Rates (Propensity Score Matching Results)

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Self-employed	Treated	0.348	0.361	0.339	0.419	0.377	0.306	0.309	0.303
	Control	0.286	0.287	0.269	0.335	0.267	0.293	0.293	0.290
	Diff	0.062	0.074	0.070	0.084	0.109	0.014	0.016	0.013
	Diff (%)	0.219	0.257	0.260	0.251	0.409	0.046	0.056	0.045
	t-stat	7.55	9.89	10.10	8.40	8.12	1.86	1.10	0.92

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Remittances can help to develop local financial markets, but the effect was not found across all three NCA countries

An important way in which remittances can contribute to growth and development is through financial development. Financial systems serve as a lubricant of the real economy by reducing the information, enforcement, and transactions costs that can be incurred when channeling funds from savers to borrowers. This reduction in costs leads to higher capital accumulation and better allocation of funds. There are two contrasting views of how remittances affect financial development. The first posits that remittances sent via formal channels allow banks to offer banking services or financial products to remittance-receiving households, while the second suggests that remittances may substitute for bank loans by relaxing households' budget constraints, thus reducing their need for banking services. In the specific case of the NCA countries, we wanted to find out how remittances affect the four dimensions of financial development – financial depth, financial access, financial efficiency, and financial stability.

In Chapter 8, Arayavechkit carries out a cross-country analysis and finds the effect of remittances on financial development in Guatemala is different from other developing countries for most indicators. For the financial depth indicators, the positive effect on the deposits to GDP ratio is stronger while the positive effect on the credits to GDP ratio is weaker in Guatemala than in other developing countries (Table 1.4). The high level of remittances is also associated with a lower ratio of overhead costs to income or higher financial efficiency in Guatemala. For financial access, the impact of remittances in the NCA countries is not different from that found in other developing countries. Overall, the impact is weak or even negative for the share of adults borrowing from a financial institution, suggesting that remittances might have substituted for formal loans. Lastly, while the high level of remittances is associated with higher financial stability in other developing countries, it is associated with a higher Z-score or lower financial stability in El Salvador.

Table 1.4

Impact on Financial Development Indicators of a 1 Percentage Point Increase in the Remittances to GDP Ratio

	All	El Salvador	Guatemala	Honduras
% Deposits to GDP [Depth]	-	*	0.86	*
% Private credits to GDP [Depth]	1.44	*	0.70	*
Bank branch per 100,000 adults [Access]	-	*	*	*
Loans % of adults [Access]	-8.62	*	*	*
Overhead cost to income [Efficiency]	-	*	-2.52	1.88
Z-score [Stability]	-0.48	0.76	0.08	*

Source: Authors' calculations.

Note: Results from a fixed effect IV estimation. - not significant. * not significantly different from the overall impact.

The positive effects of remittances can be overwhelmed under extreme conditions such as the COVID-19 pandemic

Large external shocks affect the flow of remittances and thus curtail their positive effect on welfare in the migrants' countries of origin. As seen in Chapter 5, there is some evidence that the global financial crisis of 2008 limited the welfare effects of migration and remittances in NCA. Since 2020, the ongoing SARS-CoV-2 virus (COVID-19) represents an even larger shock as, in response to the crisis, governments in both the countries of origin and in the countries of destination of NCA migrants brought their economies to a standstill in an attempt to prevent deaths and the collapse of their health systems. Given the sharp rise in unemployment in host countries, it was expected, and widely predicted at the beginning of the pandemic, that the pandemic-related restrictions would lead to a sharp decline in remittances.

Remittances, however, did not behave as expected during the pandemic in the NCA countries. There was a brief decline, but they then rebounded and have grown steadily ever since. Scott and Soler-Lopez, in Chapter 9, attempt to answer the question of why remittances did not act as expected and whether or not remittances played a protective role for household welfare. They tested the hypothesis that the observed rise in remittances actually reflected a shift from informal to formal channels for remitting. Evidence of this switch has been found in a multi-country study and tentatively in Mexico, but not in Nicaragua. The authors used a High Frequency Phone Survey¹⁹ to test the hypothesis and fail to find any evidence of a shift in remittance channels. Instead, they found the pro-cyclical patterns seen prior to the pandemic

19 The pandemic also disrupted data collection in the three NCA countries and the data sources used in the rest of the book were unavailable. Instead, the new phone survey was used for the analysis. See Annex 1 of Chapter 9 for details.

(see Chapter 4) appeared to hold although there may also have been an increased element of altruism.

Scott and Soler-Lopez found that households that received remittances prior to the pandemic's onset and continued to receive them had a lower probability of food insecurity than households not receiving remittances. The authors found evidence that government programs developed in response to the pandemic also had a protective effect. In contrast, households who had not received remittances prior to the pandemic, but began to receive them during, showed greater signs of stress, reducing food consumption, drawing down savings and/or ceasing to pay bills, suggesting that remittances were an additional coping strategy that was insufficient to meet the needs. On a final note, the intention to migrate remains high, with the most food insecure the most likely to indicate an intention to migrate. There is also evidence of the migration network effect: those individuals with the highest levels of intention to migrate are those who have family members abroad.

Policy Implications

How can the governments of Northern Central America maximize the development impact of the existing migration and remittance situation? The findings of this study show that migration and remittances present them with important opportunities but also some costs. On the positive side, poverty would have been higher in the absence of migration and remittances. Households would have suffered from greater food insecurity, and less progress may have been made in the region in terms of educational enrollment and attainment. Remittances sent to NCA households may be supporting small enterprises and self-employment, which are important sources of job creation in countries with small formal sectors and limited wage opportunities. On the cost side, remittances may reduce the labor force in each country, with self-selection into migration meaning that the countries lose productive workers, while the strongly negative impact of remittances on female labor force participation, in particular, also costs the countries a large part of their productive labor force. The goal, thus, is to identify policies that will reduce or mitigate these costs while increasing the benefits to households and the country as a whole. In this section, we bring together insights from the foregoing chapters and outline some of the main policy implications arising from this analysis.

Whatever policies are developed, two nuances need to be kept in mind. First, although we have been referring to the Northern Central America region, there can be no policy prescription that will apply to all three countries. Because the study has shown that there are differences among the three countries in terms of the drivers and effects of migration and remittances, each country will require contextually nuanced policies. The role of remittances can, and does vary, due to shocks in the destination countries, economic shifts in the sending countries, and with the passage of time. The longer history of large-scale migration from El Salvador means that it has a larger and more well-established diaspora with higher earnings. While remittances are less likely to increase school enrollment rates in El Salvador than in the other two countries,

they have greater dampening effects on the labor supply. Honduras's diaspora has followed a similar path to that of El Salvador but is more recent, and their migrants represent a smaller proportion of the population. Even so, given its much lower income levels, its remittances constitute approximately the same proportion of GDP as those of El Salvador. Among the three countries, migration and remittances are least important at the macro level in Guatemala, but they lead to better outcomes for recipient households and have led to a deepening of the country's financial sector.

Second, policies need to be developed to reflect the present situation, not the historical one, and need to be designed to be flexible. The findings of this report show that there have been significant changes in the past 20 years. Migration flows are different, while positive selection has decreased over time. The characteristics of remittance-receiving households have varied over the years, as has the impact of remittances on those households. Policies based on the migration or remittances patterns of even five years ago may be ineffective in today's environment. Therefore, policies will need to be based on recent data in order to be effective – which implies a need for more frequent data collection efforts and should be designed in such a way to be easy to adapt as the data show that circumstances have changed.

Addressing the Loss of Human Capital due to Migration

The data presented in this study suggest that the workers leaving Northern Central America are disproportionately drawn from the middle and upper half of the wage distribution. While all migration represents a loss of human capital, the characteristics of migration from the NCA region implies that it results in a disproportionate cost to the three countries. While the forgone earnings of these workers may be partially or even fully recovered through remittances, the loss of human capital, particularly when there is positive selection into migration, can lead to lower productivity and lower growth potential. This result suggests that steps should be taken to replace this lost labor. For example, upgrading the skills of lower skilled workers can help to compensate for the loss in productivity. At the same time, Chapter 2 suggests that the disproportionate migration of college-educated labor, known as a “brain drain,” has become an issue for El Salvador. An in-depth analysis of the drivers of this recent change is warranted, particularly as no similar pattern has been observed in its neighboring countries.

Another challenge related to the labor force is what happens to the labor supply of individuals who do not migrate but receive remittances. Chapter 7 shows evidence of sizeable drops in their labor supply, especially for women. El Salvador in particular needs to tackle this fall in labor supply. Beyond boosting demand for labor (i.e. creating more and better jobs) and hence increasing wages, one policy that might help would be providing more support to working parents such as affordable childcare options or longer school days. This may be especially helpful for families with migrant members as the adults who remain may be shouldering more of the household responsibilities than would otherwise be the case.

The effect that remittances had in reducing female labor force participation was large, but it needs to be considered in the context of the reality of female labor supply in the region. The countries of Northern Central America, like their neighbors in Central America, lag behind the Latin America and Caribbean region in female labor force participation. In 2014, the labor force participation rates of women in urban areas varied between 55 and 61 percent in the three NCA countries. In Costa Rica and Panama, neighboring countries that do not receive significant inflows of remittances, the participation rates for urban women were similarly low at 58 and 62 percent respectively. According to opinion surveys, a majority of people in Central America, including in each of the NCA countries, believe that women should only work if their husbands do not earn any income. Remittances may be magnifying this effect. This suggests that, if policymakers want to reduce the negative effects of remittances on labor force participation, they should consider supporting changes in the attitudes towards women's roles and aspirations.

In recent years, thousands of migrants have returned to Northern Central America, both long-term migrants and those who have only recently migrated. Policies designed to facilitate their reintegration are necessary and also can be useful in mitigating the losses in productivity associated with migration. For adults, these might include skill and education certification programs, additional vocational education, and employment or entrepreneurship initiatives to channel the returnees into jobs. Reintegration programs for children should focus on school enrollment and counseling, and language programs where needed. To this end, El Salvador has established the Integral Program for the Reintegration of Returnees (*Programa Integral de Inserción a Personas Retornadas*) led by its Ministry of Foreign Affairs, which includes support for the creation of new businesses. As of April 2018, the Honduran authorities have opened nine centers for returned migrants in communities with high out-migration rates, with the aim of addressing some of the reasons that individuals have attempted to migrate. These centers aim to coordinate national and local resources to help to reintegrate returned children and family migrants, including giving them access to social protection programs.

Maximizing the Development Impact of Remittances

There is evidence that remittances reduce poverty and, even when spent on consumption, are used productively. In particular, our analysis found that they were associated with higher rates of school enrollment in Honduras and Guatemala in 2014 although not in 2019, and with lower levels of food insecurity in Guatemala. The idea that remittances are ill-spent and have no positive impact has led governments to invest in programs to stimulate productive uses for remittances, such as investing in businesses. However, we found that households were investing in productive assets: themselves. When it comes to the effects of remittances on health and particularly on nutrition, public investments in complementary services can be used to leverage the positive effect of private remittances on human capital accumulation. Specifically, expanding access to improved water and sanitation services and to quality healthcare has the potential to boost the positive impact on human capital of improved nutrition.

Increased household spending on education and higher enrollments represent an investment with long-term payoffs. Supporting the use of remittances for education can increase this investment and hence the productivity of the future labor force. A study in El Salvador that looked at increasing investments in education by creating matching funds found that recipients were increasing the quality of their children's schooling by using the additional resources to move them to private schools. However, when recipients are unaware of the preferences of remitters regarding how the remittances are spent, this can sometimes lead to the lower levels of remittances. Studies of both Filipino and Salvadoran migrants found that decreasing these information asymmetries led to increases in remittance flows. The Filipino migrant study showed that even soft commitments by recipients to spend remittances on education increased remittances. Therefore, there is clearly room for government policies to increase information flows and foster ways of earmarking remittances for specific uses.

The impact of remittances on financial development in Northern Central America is weaker than in other developing countries. The findings of the analysis in Chapter 8 point to the importance of macroeconomic stability for translating remittance inflows into increased financial development. Fiscal deficits and instability can result in crowding out of formal banking services and lower levels of financial intermediation. This may explain why there is a link between remittances and financial development in Guatemala and not in the other two countries— because Guatemala's economy is much less volatile than that of its neighbors. However, all three countries need to have larger fiscal buffers than would otherwise be the case given their reliance on remittances because remittances are procyclical in nature and, hence, are one of the transmission mechanisms for international shocks.

Households that depend on remittances are in particular need of savings and credit instruments since remittance flows can be irregular and are often received by households that are liquidity constrained. Access to instruments that allow them to smooth consumption and make investments can enhance the welfare of these households. While it might be expected that the transfer of remittances would lead to greater demand for services offered by the banking sector, most of these households use money transfer operators that are outside the banking sector. Research on the effect of transferring government payments through the formal financial system shows that there are many constraints – such as distance, fees, and documentation requirements – that prevent the unbanked from using these services. Overcoming some of these constraints could encourage migrants to use banks as would the adoption by formal financial institutions of money transfer systems and new financial products, such as pre-paid options and card-based services. Policymakers should also look beyond the traditional banking sector and consider other actors. For example, strengthening credit unions could boost the use of banking among lower-income households as these tend to be located in areas that are not served by traditional banking institutions and serve clients with fewer assets and less access to credit.

Improving the quality of institutions and governance is another way to foster the use of remittances to meet development goals. The business environment in the three countries is weak, with Guatemala and Honduras being in the bottom half of the world's countries in terms of the ease of doing business. In each of the three NCA countries, high rates of corruption, extortion, and impunity negatively affect both households and businesses. Guatemala ranks 176 out of 190 countries and Honduras at 152 in terms of contract enforcement, and El Salvador ranks 160 and Guatemala 172 in terms of protecting minority investors.

While the findings in Chapter 7 suggests that remittances may be supporting self-employment in El Salvador and Guatemala and employers in El Salvador and Honduras, boosting the effect of remittances in the private sector will require improving the business climate in each of the three countries. There has been a lack of high-quality public investment in basic infrastructure and services that has resulted in costly yet unreliable electricity service, limited internet connectivity, and low-quality education. One quarter of the firms in Honduras and 20 percent in Guatemala consider transportation to be a key bottleneck for their firms, and between a quarter and one-third of firms in all three countries consider the lack of an adequately educated workforce a major challenge. Crime, theft, and disorder are also considered major constraints by 48 percent of firms in El Salvador, 38 percent in Guatemala, and 30 percent in Honduras, while corruption has been identified as a major constraint by almost two-thirds of firms in Honduras and Guatemala and 48 percent of firms in El Salvador.²⁰ These challenges may be preventing small entrepreneurs from expanding their businesses. Strengthening the rule of law – including in areas such as contract enforcement and property rights – and improving the quality of public investments both need to be prioritized to encourage households to invest their remittances in private enterprises and contribute to the development of the financial sector. Policies that promote business formation, training, and productivity increases would complement households' investment of their remittances and thus increase welfare and create jobs.

The region's limited access to insurance and its exposure to shocks – both aggregate and at the household level – is another obstacle to improving the development outcomes of remittances. The role played by natural disasters and climate change in motivating remittances cannot be ignored. While nature cannot be controlled, there are steps that can be taken to reduce its destructive power. In particular, access to insurance at the household, community, and country levels and scalable social protection programs can help to rebuild assets and livelihoods after disasters. Investments in resilience and adaptation can also mitigate the effects of natural disasters. As shown in our analysis, it is likely that remittances are used as insurance mechanisms by households. Therefore, decreasing their reliance on remittances for this purpose could free up some of these resources for other uses and perhaps dampen the motivation to migrate.

20 World Bank (2016a), World Bank (2016b) and World Bank (2017b)

Finally, it is important to highlight the fact that remittances cannot be considered a substitute for strong social safety nets. While the very poorest households are the least likely to receive remittances, those who do, depend heavily on them. Hence, anything that negatively affects remittances could lead to serious hardship for a group of households. Given the procyclical nature of remittances, economic shocks may not increase greater remittance flows, while, at the same time, shocks in the destination country can lead to decreases in remittances. As seen during the global financial crisis, remittances to the NCA fell. During the ongoing COVID-19 crisis, remittances have contributed to household welfare but have not been enough to protect households from welfare losses. For the countries of Northern Central America, improving the social safety net (by improving targeting and payment mechanisms, for example) remains crucial for ensuring the welfare of the poorest households.

Closing Knowledge Gaps

New, better, and more frequent data will be needed to enable governments to design, implement, and evaluate the effectiveness of policies to maximize the development impact of remittances and migration. The 2018 Global Compact on Migration puts data front and center as its first objective is to “Collect and utilize accurate and disaggregated data as a basis for evidence-based policies.” As highlighted in this study, when countries have only incomplete data and infrequent data collection efforts, this creates a problem for analysts that even the best empirical methods cannot fully solve. The result is that many important questions can only be partially answered or remain completely unanswered when it comes to the causes and effects of migration and remittances in Northern Central America.

Collecting more and better data can be done in several ways. First, ensuring the production of, and access to, high quality administrative data at the subnational level would generate reliable and up-to-date information on populations such as migrants (through consular services), returnees, and children with migrant parents. However, given how much migration from and remittances to the region are informal, administrative data alone will not suffice. Rather, there is a need for a better system of quantitative surveys to collect data on households who have sent a migrant abroad and households who receive remittances, ideally with a panel component that could be used to identify what factors have led to the observed outcomes. This would also be useful to explore the motivations behind households’ behavior and perceptions. A detailed overview of data sources and recommendations for the types of data needed can be found in Global Migration Group (2017). However, as shown in the present study, to understand how remittances work, additional data on households that can be linked to migration and remittances data are needed. For example, basic information on topics such as food security and health would substantially improve our understanding of remittances role in human capital formation.

In the case of El Salvador and Honduras, which collect data fairly frequently at the household level, even small improvements in the survey instruments could lead to substantial new insights. In the case of Guatemala, there is a need to collect data more frequently as six to eight years between survey rounds is too long to enable policymakers to understand the dynamics of migration and remittances and to develop relevant policy solutions, and the lack of data since 2014 leaves policy-makers blind. Because data are collected so infrequently, an urgent priority might be to develop smaller survey instruments that could be fielded more often or only in targeted regions.

Immediate attention should be given to those questions on which there is very little information at present. Topics that are vital for future research might include: (i) the long run effects on family and child welfare of migration; (ii) what policies can help families to use remittances in ways that will generate more income, leading to higher productivity and increased development impact; (iii) how best to assess the general equilibrium effects of migration and remittances and how the counterfactual situation of no migration would affect local labor markets and potentially change equilibrium wages; (iv) what skills are possessed by returned migrants and whether those skills are applicable in the country to which they return; (v) what are the dynamics of remittances and the labor choices made by household members in the countries of origin (using panel data if possible); and (vi) why remittances are not fostering more financial development in Northern Central America. Expanding on the analysis of the impacts of the pandemic when more recent data are available will be critical for future planning around all types of disasters.

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2 The Evolution of Migration from Northern Central America

Giselle Del Carmen and Liliana D. Sousa

Introduction

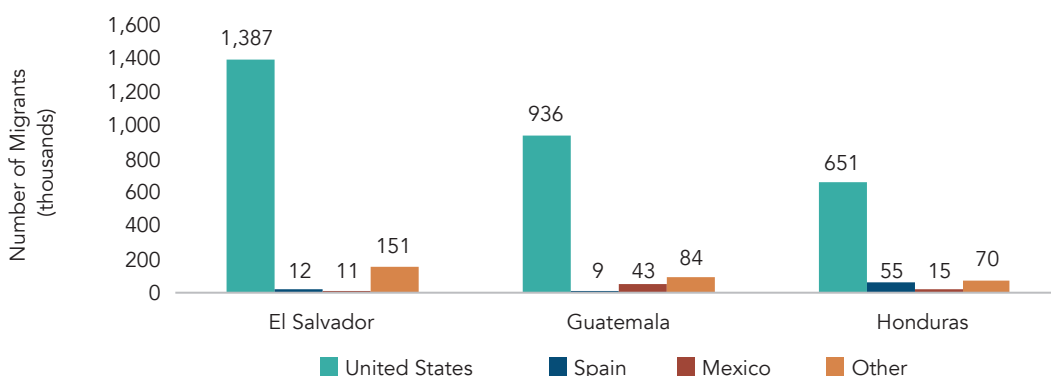
As of 2017, an estimated 3.4 million individuals, or 11 percent of the population who were born in the Northern Central America (NCA) region, lived outside their countries of birth –El Salvador, Guatemala, and Honduras. This chapter discusses this significant migration flow and explores how it has evolved since the 1980s. It investigates the demographic characteristics of the migrants and analyzes the push and pull factors associated with migration from the region and how these differ among the three countries. Along with Chapter 3 of this study, this chapter explores the “who migrates” side of the equation in Northern Central America. This chapter aims to provide some background on who chooses to migrate and how this decision may have shifted over time to set the stage for the remainder of the chapters, which quantify and analyze migration flows from El Salvador, Guatemala, and Honduras since the 1970s.

Background

The most critical detail about migration from Northern Central America is that nearly all migrants go to the same destination country. Nine out of every ten of these migrants (88 percent) migrate to the United States (Figure 2.1). In 2017, the most recent year for which global estimates of international migration are available, nearly 1.4 million Salvadorans lived in the US, while only about 170,000 Salvadoran migrants lived in all of the other countries in the world combined. Similarly, there were over 935,000 Guatemalans in the US in 2017 compared with only about 42,000 in Mexico, even though Guatemala has a history of seasonal migration

into neighboring Mexico (Figure 2.1). Over half a million Hondurans lived in the US in 2017 compared with 55,000 in Spain and just under 84,000 in the rest of the world. This concentration of migration to just one country means that it is possible to identify migration trends and the characteristics of migrants using data from just one destination country.

Figure 2.1 Top Destination Countries for Migrants from Northern Central America by Country of Origin, 2017



Source: The World Bank's Bilateral Migration Matrix (www.knomad.org/data/migration/emigration).

The flow of migration out of Northern Central America has grown substantially in the past 35 years. In 1980, fewer than 200,000 immigrants from the three countries lived in the US, but by 2015, this number had grown to 2.8 million (Figure 2.2). This is equal to an annualized growth rate of 8.1 percent, far outpacing growth in the overall immigrant population in the US during this period (3.3 percent). Importantly, while the single largest group of migrants to the US are those who were born in Mexico, which suggests that there has been no net migration from Mexico in recent years, migration from the NCA region has continued and at high levels. Estimates suggest that the number of NCA migrants in the US grew by 25 percent between 2007 and 2015.²¹

²¹ Pew Research Center (2017).

Box 2.1

Circular Migration from Guatemala to Mexico

There is a history of seasonal or circular migration from Guatemala to southern Mexico, largely by agricultural workers but also, to a lesser degree, by construction and domestic workers. This is in addition to the estimated 43,000 Guatemalans who were living permanently in Mexico as of 2013. The seasonal workers stay in Mexico for just hours, days, weeks, or months before returning to Guatemala. Since this is a largely undocumented population, the best way to get an accurate estimate of its size is to use the Survey of Migration in the Southern Border of Mexico (*EMIF SUR* in Spanish), in which information is collected at the border between Mexico and Guatemala. According to the 2011 round of the survey, 204,000 Guatemalans went back across the border after spending less than a day in Mexico. This group consisted mainly of Guatemalans who lived near the border and traveled to Mexico regularly for work. About half of them worked in commerce, with the rest split between construction and services. An estimated 413,000 Guatemalans returned home from Mexico after having spent more than a day there. This group largely consisted of short-term migrants, with 80 percent engaged in seasonal agricultural work. About 89 percent of these short-term migrants were men, more than half were between the ages of 15 and 29 years old, and 61 percent of them had not completed primary school. Speakers of indigenous languages accounted for 33 percent of these migrants.

Source: Mexican authorities based on data from the 2011 Survey of Migration in the Southern Border of Mexico.

Figure 2.2 Growth of the Migrant Population from Northern Central America in the US, 1980-2019

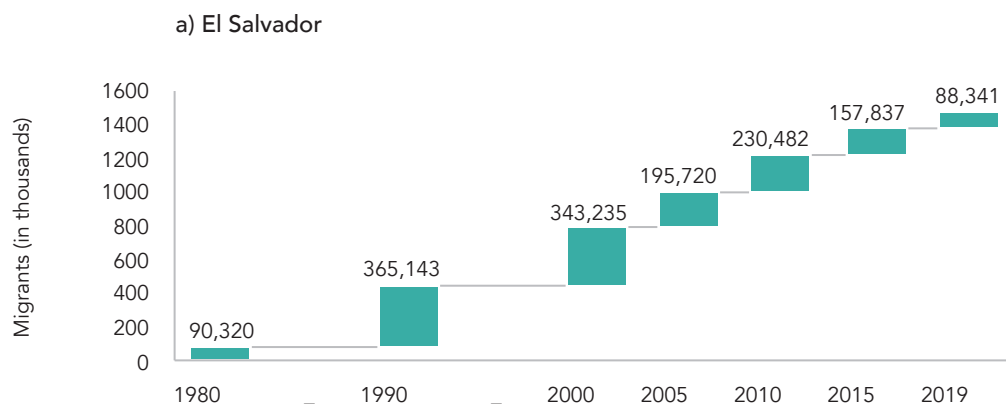
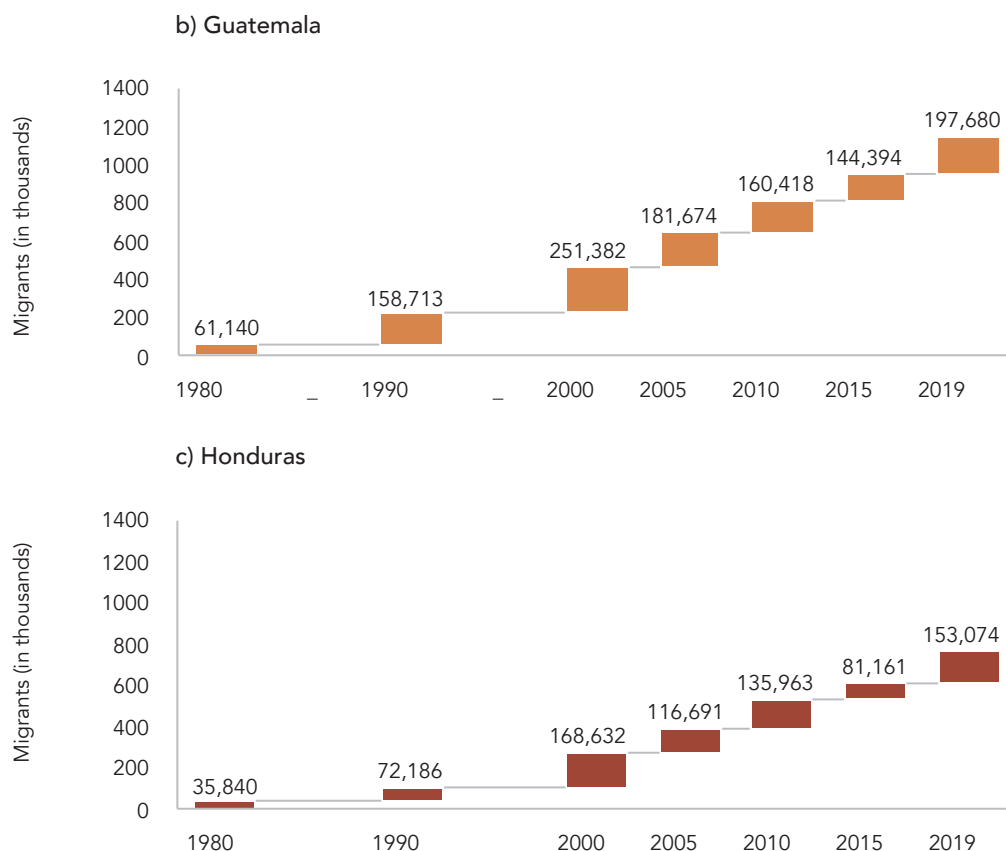


Figure 2.2 Continued

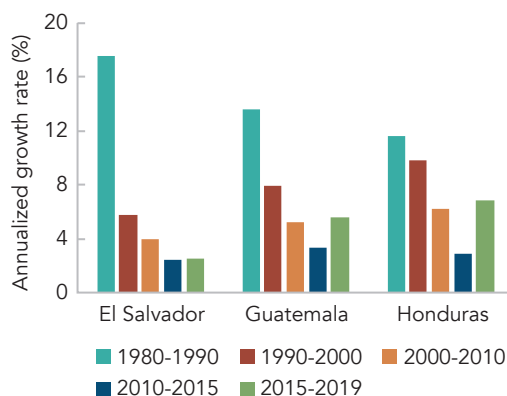


Source: Authors' tabulations using ACS 2005-2019 and IPUMS US Population Census 1980-2000 data.

Note: These figures reflect the change in the estimated population of migrants in the US between each year. The value for 1980 is the total population of that migrant group in the 1980 Population Census.

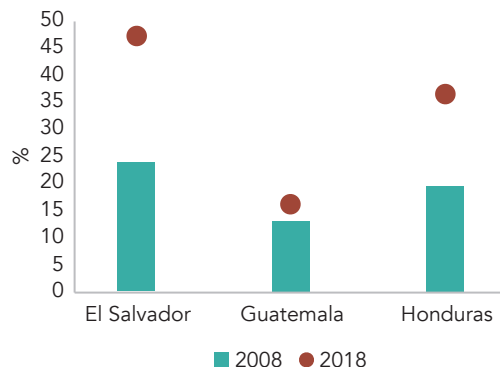
Yet there are significant differences in the timing and size of out-migration flows between the three countries of the NCA region. Before 1980, there was very little difference in the size of the migrant populations from the three countries, but since then, migrants from El Salvador have outnumbered those from neighboring Honduras and Guatemala. During the 1980s, the Salvadoran-born population in the US grew at an annualized rate of 18 percent (Figure 2.3). The Guatemalan and Honduran population in the US also grew fast during the 1980s, albeit from a smaller initial base, at annual rates of 14 and 12 percent respectively. Migration flows from these two countries accelerated even more during the 1990s, when their growth rates were faster than Salvadorans. Even so, by 2019, migrants from El Salvador represented 43 percent of the NCA population in the US.

Figure 2.3 Annualized Growth Rate of the Migrant Population in the US, 1980-2019



Source: Authors' tabulations using ACS 2005-2019 and IPUMS US Population Census 1980-2000 data. Note: Includes extrapolated values. Data values are designated by a marker.

Figure 2.4 Positive Responses to the Question: "Have you and your family seriously considered living abroad?" 2008-2018



Source: Latinobarómetro database 2008-2018.

Recent opinion surveys suggest that these high rates of migration are likely to continue. In El Salvador, Guatemala, and Honduras, there are more individuals considering moving abroad today than there were a decade earlier (Figure 2.4). If these surveys are correct, then migration from the NCA region will continue to be a consequential phenomenon well into the future.

Despite these differences in the timing and size of migration flows from the three countries, a snapshot of NCA migrants living in the US reveals that there are broad similarities between the three diasporas. The migrants tend to be male and to live in urban areas (Table 2.1). Most are between the ages of 25 and 45 and did not complete secondary education. Over 40 percent of Guatemalans have only a primary education or less, as do over one-third of Hondurans and 22 percent of Salvadorans. Migrants from all three countries make an average per capita income of \$37,000. Despite having lived in the US for an average of 15 to 20 years, only one-third are US citizens while the majority are undocumented. As of 2017, approximately 1.75 million NCA immigrants living in the US were undocumented. According to Pew Research Center estimates, this consists of 750,000 Salvadorans, 600,000 Guatemalans, and 400,000 Hondurans.²²

²² <https://www.pewresearch.org/hispanic/interactives/unauthorized-trends/>

California, New York, and Texas are the preferred states of residence for migrants from North Central America. Nearly one-third of both Salvadorans (30 percent) and Guatemalans (29 percent) live in California, in contrast to only 11 percent of Hondurans.²³ Los Angeles, New York City, Washington D.C., Miami, and Houston were the cities with the most NCA migrants between 2015 and 2019.²⁴ In Washington D.C., Salvadorans constitute the largest immigrant group in the metropolitan area. On average, NCA migrants have lived in the US for more than 15 years (Table 2.1). This means that there is a strong and well-established migration network in the US, which is a crucial factor for prospective migrants as they decide whether to leave their home country.

Table 2.1

Demographic Characteristics of Migrants from Northern Central America in the US, 2019

	GTM	HND	SLV
Number of people	1,010,704	673,004	1,412,894
Number of households	471,000	315,000	672,000
Number of undocumented (2017)	600,000	400,000	750,000
% documented	40.6	40.6	46.9
Mean household size	2.6	2.5	2.6
% Households with own dwelling	31.7	30.1	44.8
% Male	57.4	50.8	50.8
% Metro area	96.9	97.8	98.6
% US citizens	27	22.4	32.9
Mean no. of years in US	17.1	15.4	19.9
Median no. of years in US	15	13	8
Age Distribution			
<15	7.5	8.6	4.9
15-24	13.3	12.9	10.3
25-35	28.3	27.5	20.5
36-45	23.3	24.8	25.7
46-55	14.4	13.4	19.6
55+	13.2	12.8	19.2

23 Pew Research Center estimates. <http://www.pewhispanic.org/2017/12/07/geography-and-characteristics-of-northern-triangle-immigrants/>

24 Migration Policy Institute tabulation of data from the US Census Bureau's pooled 2015-2019 American Community Survey. <https://www.migrationpolicy.org/programs/data-hub/charts/us-immigrant-population-metropolitan-area>

Table 2.1 Continued

	GTM	HND	SLV
Education Distribution			
Primary or less	41.4	35.0	22.4
Incomplete secondary	19.3	21.9	26.3
Complete secondary (incomplete tertiary)	33.0	36.2	42.1
Complete tertiary	6.2	6.9	9.1
Household Annual Income (2015 prices)			
Mean household income	\$ 73,948	\$ 65,740	\$ 78,534
Median household income	\$ 56,006	\$ 50,061	\$ 62,900
Mean per capita household income	\$38,088	\$34,724	\$38,220
Median per capita household income	\$23,066	\$21,453	\$25,629

Source: Authors' tabulations using ACS 2019. Data for undocumented and share of documented migrants from the Pew Research Center (<https://www.pewresearch.org/hispanic/interactives/unauthorized-trends/>)

Push and Pull Factors

While most migration from Northern Central America seems to occur for economic reasons, at times it has also included refugees and others fleeing for non-economic reasons. Devastating natural disasters, violence, and civil wars have all contributed to the large flows of migration from the region. In the cases of El Salvador and Honduras, large-scale migration to the US can be traced to a significant trigger event in each country – a civil war and a devastating hurricane respectively. Guatemala's migration to the US, on the other hand, has increased more gradually, fed by migrants seeking economic opportunities as well as those fleeing from war and natural disasters. Over the years, migrants from each of the three countries have built communities and social networks in the US, and these, in turn, may play an important role in facilitating new migration.

The civil war in El Salvador (October 1979 to January 1992) was a significant trigger event for migration to the US and Mexico. During the civil war, El Salvador lost an average of 29,000 people per year due to migration. In the 1990s, this figure had increased to 63,000 per year. The economic crisis during the civil war caused GDP to plunge by 25 percent and halved exports.²⁵ As a result of this crisis, Salvadorans were among the first groups that the US government declared as eligible for Temporary Protected Status (TPS) in 1990. While this program did not bestow permanent residency, it provided protection from deportation and temporary working permits for undocumented migrants in the US who satisfied certain requirements.

²⁵ Calvo-Gonzalez and Lopez (2015)

For Honduras, the most significant event that triggered a wave of migration to the United States was Hurricane Mitch in 1998. After the hurricane had devastated much of the country, with economic damage estimated to be around 81 percent of GDP,²⁶ undocumented Honduran migrants who were already in the US were granted work authorization and protection against deportation through the TPS program. Between 1990 and 2000, the number of Hondurans living in the US increased from 109,000 to 283,000. Before Hurricane Mitch, remittances to Honduras represented only 4 percent of GDP, but by 2002, four years later, they had increased to nearly 11 percent of GDP.

Guatemala's long civil war (1960 to 1996) led to the forcible displacement of hundreds of thousands of Guatemalans beginning in the late 1970s,²⁷ including an estimated 200,000 Mayans. Most fled to Mexico, with thousands living in refugee camps set up by the United Nations. Many also fled to the United States, with the total peaking at nearly 46,000 in 1989. While neither Mexico nor the United States recognized this group as refugees, it was internationally acknowledged that war crimes, including genocide, had been committed during the civil war. More natural disasters since the late 1990s have also exerted incremental economic pressure to increase migration, including Hurricanes Mitch (in 1998), Stan (in 2005), and Agatha (in 2010), an earthquake in 2012, and the spread of the coffee rust fungus in recent years.²⁸

A lack of economic opportunities and high levels of poverty and inequality have also led many in Northern Central America to leave. These countries have some of the highest poverty rates in Latin America, with 49.0 percent of Hondurans, 49.1 percent of Guatemalans,²⁹ and 22.3 percent of Salvadorans living on less than \$5.5 a day (2011 PPP) in 2019. In Guatemala and Honduras, poverty rates have increased by 4 and 2 percentage points respectively since 2000 and 2011³⁰ (Figure 2.5). The lack of opportunities in the NCA region is also illustrated by the fact that it has the highest share of youths who are neither employed nor enrolled in school (*ninis*) in Latin America.³¹ As of 2019, a quarter of Salvadoran youths (26 percent) were *ninis*, surpassing the regional average of 20 percent. Similarly, nearly half of all Guatemalan girls aged between 15 and 24 (in 2014) and 12 percent of Honduran boys in the same age group (2019) were considered to be *ninis* compared to rates of only 28 percent and 12 percent respectively for the LAC region as a whole.³² Interviews carried out with individuals apprehended in Mexico on their way to the US have shown that the search for employment was a key factor in their

26 Global Facility for Disaster Reduction and Recovery (<https://www.gfdrr.org/hurricane-mitch-honduras-1998>)

27 See Jonas (2013) for more detail on Guatemalan migration to the US.

28 World Bank (2016)

29 The latest available data for Guatemala are from 2014.

30 The earliest comparable year for Honduras is 2011, using the latest poverty measurement methodology adopted by the Government of Honduras in January 2020.

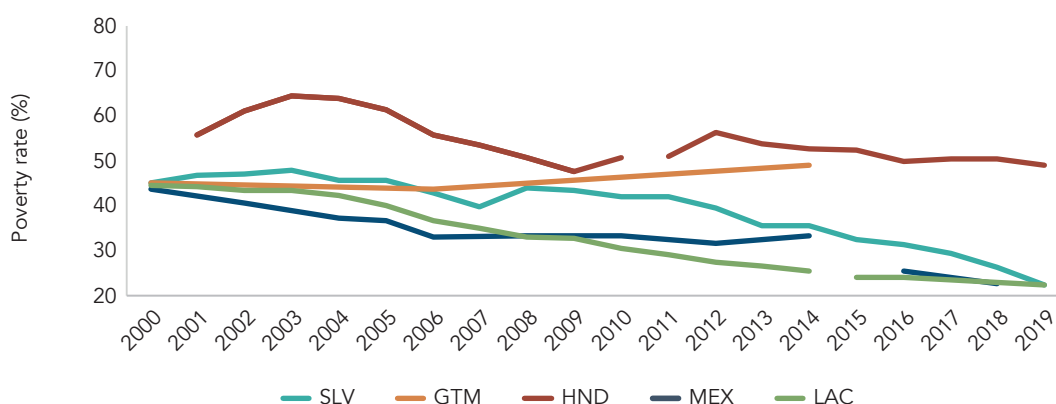
31 Youths who are neither employed nor enrolled in school are described as "*ni estudian ni trabajan*" (neither studying nor working) or "*ninis*" (De Hoyos et al, 2016).

32 LAC Equity Lab tabulations of SEDLAC (CEDLAS and the World Bank) based on the methodology of de Hoyos et al (2016).

decisions to migrate.³³ As of 2015, approximately 95 percent of these migrants reported that their motive for travelling to the US was to work. Despite this, a 2011 Pew Research Center survey found that Central American migrants, 83 percent of whom are from Northern Central America, were less likely (46 percent) than other Latino migrants (58 percent) to list economic opportunities as their main reason for migrating to the US.

Another major push factors for migration is the fact that the countries of Northern Central America have some of the world's highest rates of crime and violence related to gangs, drug trafficking, and organized crime combined with the weak enforcement of the rule of law (Box 2.2). Homicide rates in each of the three countries are among the highest in the world. In 2019, there were 52 murders per 100,000 people in El Salvador, 38.9 per 100,000 people in Honduras, and 22.5 per 100,000 people in Guatemala.³⁴ In 2011, 13 percent of Central American migrants cited violence as their primary reason for migrating compared with only 4 percent of other Latino migrants in the US.³⁵ A 2014 Department of Homeland Security report indicated that poverty and violence in the NCA countries were among the key factors that motivated unaccompanied children to attempt to cross the US border illegally.³⁶ Clemens (2017) found that violence had a causal effect on child migration from the NCA countries, estimating that short-term increases in violence at the local level had the same effect as long-term economic issues in terms of the reasons why unaccompanied minors migrated to the US.

Figure 2.5 Poverty Rates in Northern Central America, Mexico, and LAC (\$5.5/day 2011 PPP), 2000-2019



Source: World Bank calculations using PovcalNet.

Note: Gaps indicate a break in the comparable series.

33 EMIF 2010-2015

34 World Development Indicators, World Bank.

35 Pew Research Center's 2011 National Survey of Latinos.

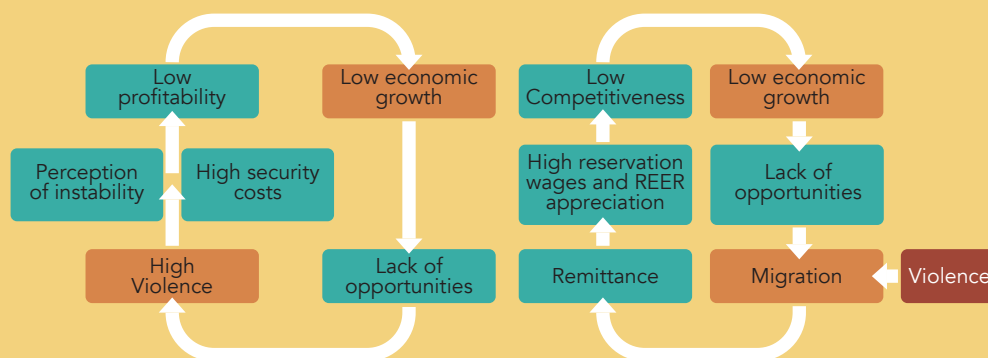
36 Department of Homeland Security (2014).

Box 2.2

The Vicious Cycles of Migration, Crime, and Lack of Opportunities in Northern Central America

Low economic growth and a lack of opportunities are believed to be part of the vicious cycles that feed both high crime and high migration rates (see Figure B2.2). Surveys of migrants have shown that a lack of employment opportunities leads many to leave their countries of birth in search of better opportunities. Many then send money back to their families once they have found work in the destination country. These remittances increase reservation wages in the country of origin (leading to a decrease in labor supply as seen in Chapter 7) and, in some cases, can be associated with real effective exchange rate appreciation as local consumption increases. This reduces the country's competitiveness and slows its economic growth, thus further limiting employment opportunities. Similarly, a lack of economic opportunities increases participation in criminal activities and violence, leading to increased security costs and greater instability. These factors lead to lower profitability, decreasing economic growth and also further limiting opportunities. Finally, as mentioned above, there may also be a direct link between crime and migration as high rates of violence can lead some people to flee the country.

Figure B2.2 Two Interrelated Cycles of Crime and Migration



Sources: Hernandez et al (2017) and Calvo-Gonzalez and Lopez (2015).

There are also pull factors associated with migration to the US from Northern Central America, including the importance of family reunification. Between 2010 and 2015, approximately 80 percent of Guatemalans and Hondurans deported from the US and 96 percent of deported Salvadorans reported having a family member in the US.³⁷ Moreover, 67 percent of Salvadorans indicated that they had friends or relatives living in the U.S. and over 60 percent believed that those who move to the US have a better life than those who stay.³⁸ However, in surveys, a smaller share of Central American migrants than of other Latino migrants cited reuniting with family members as their main reason for leaving their countries (18 percent and 24 percent respectively).

The development of large social networks connecting immigrant enclaves in the US to the NCA countries may also encourage more migration to the extent that they facilitate the migration of newer cohorts. The existence of a large migrant network in the destination country decreases the uncertainty associated with the migration decision, especially for the low-skilled.³⁹ Migration networks have been shown to increase the expected returns from migration, for example, by increasing the likelihood that the migrant will find a job after migrating. Munshi (2003) found that, in places where large migrant networks exist, Mexican individuals in the US are more likely to be employed and hold higher-paying non-agricultural jobs. Migration networks are particularly important for poorer and low-skilled migrants and for those who are undocumented.⁴⁰

For liquidity-constrained would-be migrants, these social networks may also provide access to financing for the expensive trip to the US. Legal migration involves high transaction costs and long wait times. However, most migrants from Northern Central America who enter the US through the southern border are undocumented. As enforcement has increased over time, the costs of migration have also increased. Recent migrants from NCA countries are more likely to hire a smuggler than earlier cohorts, and the average cost of hiring a smuggler has increased. Specifically, 80 to 95 percent of apprehended border crossers used a smuggler in 2015 at an average cost of \$4,000, with some paying as much as \$9,200.⁴¹ McKenzie and Rapoport (2007) showed that, in the absence of well-established migration networks, migrants are more likely to come from the middle of the income distribution. The probability of migration has an inverse U-shaped relationship with income, meaning that as networks increase, the poor become more likely to migrate since wealth becomes less of a constraint. Similarly, McKenzie and Rapoport

37 Cohn et al (2017).

38 Pew Research Center (2013).

39 Likewise, Massey and Espinosa (1997) found that US-Mexico migration is largely a result of social and human capital formation. Social capital is formed because individuals related to migrants are more likely to migrate themselves, thus each migrant generates more social capital capable of instigating and supporting additional migration. Human capital is formed as a result of the migration experience itself, as the more international experience that the migrant accumulates (by crossing the border and living and working in the US, for example), the higher the probability of more migration occurring subsequently, both documented and undocumented.

40 Massey (1988), Orrenius (1999), Palloni et al (2001), Orrenius and Zavodny (2005), and Dolfin and Genicot (2010).

41 Department of Homeland Security (2017).

(2010) argued that the pattern of self-selection depends on how costly it is to migrate from a given community. In a similar spirit, Massey and Riosmena (2010) found that the increasing costs of migration due to stronger border enforcement led to a reduction in circular migration.

It is clear that a mixture of push and pull factors are influencing individual decisions to migrate from the NCA countries. A 2017 survey focusing on migration and remittances in El Salvador identified work opportunities, better living conditions, and the possibility of sending remittances home as the main reasons why Salvadorans travel to the US.⁴² Nearly one-fifth (19.7 percent) of migrants reported all three as the driving factors for their migration, while over 30 percent (31.6 percent) reported both work opportunities and better living conditions. This mixture of motives was also found for unaccompanied minors, who are among the most vulnerable migrants. Using data from a survey of unaccompanied minors from Central America living in shelters, Lorenzen (2017) found that one-third of the respondents reported having both forced and voluntary reasons for migrating. Specifically, many of the children interviewed were indeed fleeing violence, especially those coming from El Salvador and Honduras. However, the respondents who reported violence as a driver of migration were also likely to report other motives as well, such as a lack of economic opportunities in their home countries.

Methodology

The evolution of migration trends and the distinct push and pull factors discussed above have led to significant changes in the composition of migration from Northern Central America. To measure these changes, we analyzed data on six different cohorts of migrants who arrived in the US between the late 1970s and 2015. Arrival cohorts can be thought of as a cross-section of migration at a given time and can easily differ from earlier cohorts of migrants. As a result, they capture the flow rather than the stock of migrants. We begin by analyzing the demographic composition of each cohort, focusing in particular on their age, gender, and educational attainment.

Throughout this chapter, each arrival cohort is defined as those individuals who arrived two years prior to the survey. The earlier cohorts, those arriving in the late 1970s and late 1980s, were defined as those who had arrived in the previous six and four years respectively because of differences in how the year of arrival was reported. The data on the first three cohorts came from the US population censuses of 1980, 1990, and 2000, and for the last three cohorts, we used the American Community Survey (ACS) rounds for 2009, 2012, 2015, and 2019 (Table 2.2).⁴³ Undocumented migrants are more likely to be undercounted in censuses and household

42 International Organization for Migration (2017).

43 Data from both sources were obtained from the Integrated Public Use Microdata Series (IPUMS-USA), which consists of more than 50 high-precision samples of the American population drawn from 15 federal censuses and from the American Community Surveys of 2000-2012. IPUMS-USA uses uniform codes across all samples. In the 2000 US Census, most households received a short-form questionnaire, while one in six received a long form that contained additional questions and yielded more detailed socioeconomic information. In 2010, the census only used the short-form questionnaire, as information on the long-form questionnaire is now collected by the ACS. (https://www.census.gov/history/www/programs/demographic/american_community_survey.html)

surveys than legal migrants, but the undercount of unauthorized migrants in recent ACS data is likely to be low. Even so, several studies have found evidence of serious coverage problems in data collected before the 2000 census but fewer issues in the post-2000 census and surveys.⁴⁴ This suggests that the more recent data sources may be more representative and reliable.

Table 2.2

Number of Observations by Arrival Cohort, Country, and Year

Country	Year	Unweighted	Weighted
El Salvador	1974-1980	3,678	73,560
	1986-1990	7,642	167,875
	1998-2000	4,086	88,455
	2007-2009	718	37,178
	2010-2012	669	30,377
	2013-2015	690	98,871
	2017-2019	1,187	34,815
Guatemala	1974-1980	2,226	44,520
	1986-1990	4,227	91,591
	1998-2000	3,241	69,004
	2007-2009	943	44,768
	2010-2012	636	30,055
	2013-2015	520	75,040
	2017-2019	1,396	44,921
Honduras	1974-1980	988	19,760
	1986-1990	2,141	45,374
	1998-2000	2,219	48,488
	2007-2009	431	23,036
	2010-2012	441	19,595
	2013-2015	501	75,434
	2017-2019	1,177	37,526

Source: Authors' tabulations using American Community Survey and IPUMS US Census data.

Note: Arrival cohorts are defined as individuals arriving two years prior to the survey, with the exception of 1980 and 1990 when the second most recent year was used (1974 and 1986 respectively). Sample sizes are smaller for cohorts from 2007 onwards because these were from the American Community Survey whereas earlier samples were from the long-form US Census of Population.

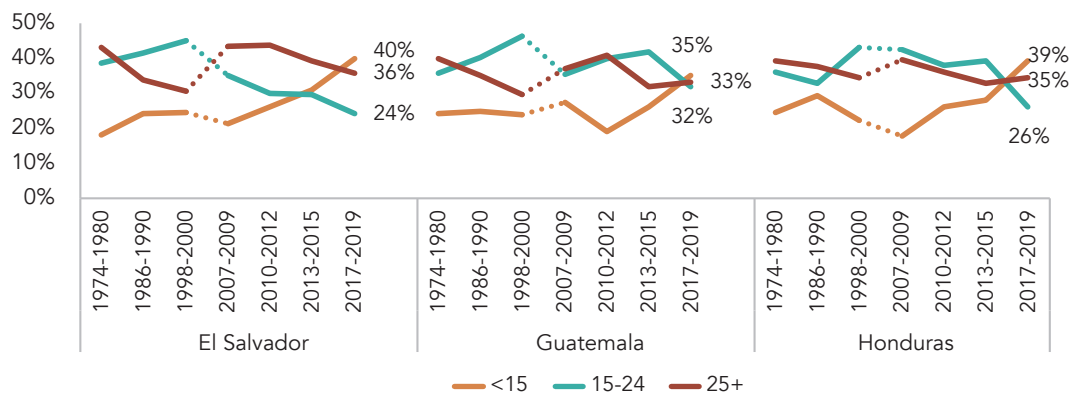
44 While no official counts of undocumented immigrants in the U.S. exist, researchers have used residual estimation methodologies that compare the total number of immigrants measured in household surveys and censuses with official statistics of immigrants living legally in the US (for example, Passel and Cohn, 2016 and

Findings

Looking at the basic demographic information related to arrival cohorts from the 1970s through 2019, a general tendency becomes apparent: recent cohorts, especially from El Salvador and Honduras, appear to be more representative of the source country's population than earlier cohorts. This suggests that a wider segment of the population in each of the three countries is now migrating. The difference between Guatemala and its two neighbors highlights the extent to which migration patterns in El Salvador and Honduras have converged towards a model that appears to be based more on family migration than in some earlier cohorts.

From the earliest cohorts, young people have represented a majority of migrants from Northern Central America. Roughly 60 percent of the cohort arriving in the late 1970s from each of the three countries was under the age of 25 (Figure 2.6). This share increased over the next two decades to reach 69 to 70 percent of Salvadoran and Guatemalan emigrants and 65 percent of Hondurans in the 1998-2000 cohort. In particular, young adults between the ages of 15 and 24, in other words, those just finishing their education and transitioning into the labor force, represented between 30 and 46 percent of each cohort from the three countries.

Figure 2.6 Age Distribution of Arrival Cohorts, 1980-2019



Source: Authors' tabulations using the American Community Survey and IPUMS US Census data.

Note: Recent arrivals are defined as individuals who arrived within two years prior to the survey, with the exception of 1980 and 1990 where, due to differences in the questionnaires, arrivals after 1974 and 1986 respectively were included. The dotted line reflects the change in the data source from censuses to the American Community Survey.

Warren and Warren, 2013). Although undocumented immigrants are generally more likely to be undercounted than lawful immigrants, researchers estimate that the undercount of unauthorized immigrants in recent ACS data is low. For 2000 to 2009, coverage adjustments increased the estimate of the unauthorized immigrant population by 8 to 13 percent, and these adjustments fell to 5 to 7 percent for data between 2010 and 2014. See Chapter 3, Box 1 for further details.

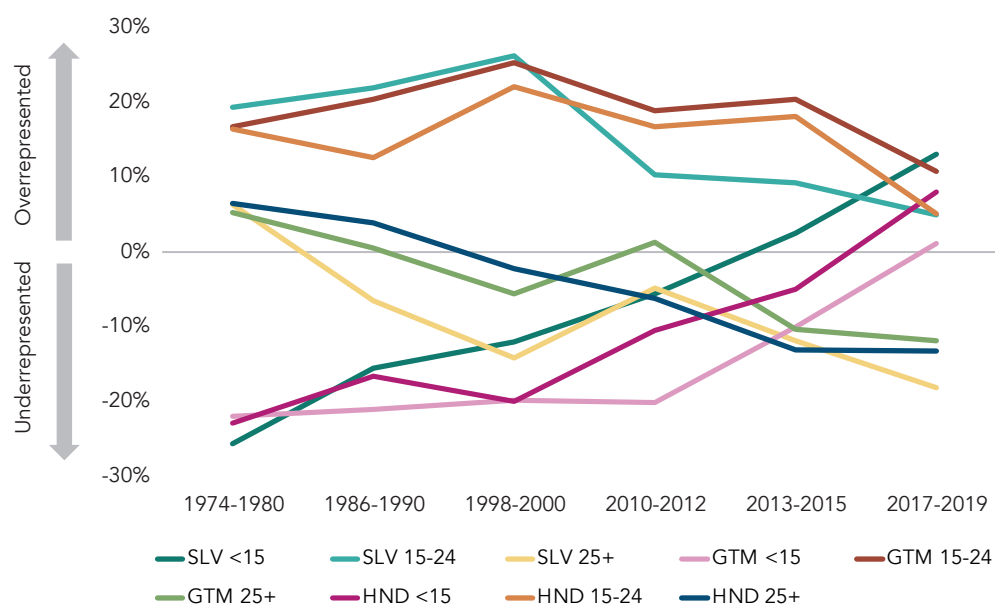
The cohorts arriving from El Salvador and Guatemala during the two-year periods ending in 2009, 2012, 2015, and 2019 had higher shares of adults over 25 than earlier cohorts. It is possible that this stark change in the age distribution reflects either an actual change in migration patterns or an improvement in the measurement methodology or a combination of both. At the same time, the share of children under the age of 15 arriving in the US from all three countries increased. Between 2017 and 2019, nearly one-third of migrants from the NCA countries were aged 15 or younger – 40 percent of those from El Salvador, 35 percent of those from Guatemala, and 39 percent of those from Honduras. The combination of increased migration by adults over the age of 25 and children under the age of 15 may suggest increased migration aimed at reuniting families.

While the migrant population from Northern Central America is young, the populations of these three countries are themselves young. Figure 2.7 shows how the age distribution of each migrant cohort compared to the age distribution in their country of origin during the same period of time. Taking this information into account, it is evident that young adults aged between 15 and 24 continue to represent a disproportionate share of migrants in each cohort. This is particularly the case for Honduran and Guatemalan migrants. In both cases, this age group represents 21 percent of the source country's population but about 30 percent of the migrant cohort. While this group is less overrepresented among recent cohorts from El Salvador, it is still 5 percentage points higher in the migrant cohort than in the Salvadoran population as a whole. Children were disproportionately less likely to be part of the initial cohorts, with underrepresentation ranging from 23 to 28 percentage points. This gap has closed considerably and, by the time of the 2019 cohort, children were overrepresented among Salvadorans (13.1 percentage points), Hondurans (8 percentage points), and Guatemalans (1.1 percentage points).

The increase in the number of children among recent NCA migrants to the US supports the hypothesis that non-economic factors, particularly the region's high rates of violence, are becoming key push factors. As mentioned above, Clemens (2017) identified violence (such as high homicide rates in a given year) and long-term economic forces (such as high unemployment) to be among the principal drivers of unaccompanied child migration. Moreover, he found that "an increase of one homicide per year ... sustained over four years caused about 0.9 additional unaccompanied child migrant apprehensions in the United States in any given year between 2011 and 2016." Some evidence has suggested that smugglers in the NCA region misrepresent the legal process involved in applying for children's asylum in the US to would-be migrants to build more business.⁴⁵ There is also some evidence to suggest that smugglers even cut their fees in 2014 in expectation of future increased enforcement.

45 Rosenblum (2015).

Figure 2.7 Degree of Over- and Under-representation in Arrival Cohorts by Age Group, 1980-2019

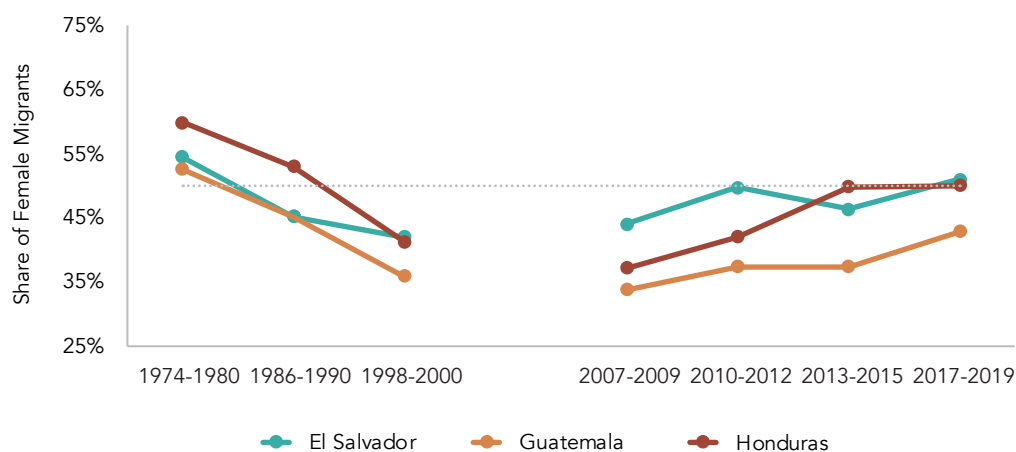


Source: Authors' tabulations using the American Community Survey and IPUMS US Census data, and the United Nation's World Population Prospects (2017) for source country information. This figure shows the difference between the share of each age group in the country's population and in the arrival cohorts of migrants from that country in the US. Annex Figure 1 reports the values for each cell.

Note: Recent arrivals are defined as individuals who arrived two years prior to the survey, with the exception of 1980 and 1990 where, due to differences in the questionnaires, arrivals after 1974 and 1986 were included respectively.

The growth in migration from Northern Central America in the 1990s was driven mainly by men, as seen by the falling share of migrants who were women (Figure 2.8). By the late 1990s, women and girls were a minority of recent migrants from all three NCA countries, representing 40 percent of migrants from El Salvador and Honduras and only 36 percent of those from Guatemala. However, the 2017-2019 cohorts of migrants from El Salvador and Honduras were approaching gender parity. The growing share of child migrants as well as an increasingly balanced gender ratio suggest a widening of migration networks and, potentially, more migration from NCA countries with the aim of reunifying families. In this, migration from Guatemala differs significantly from migration from the other two countries as women and girls continue to account for only one out of every four migrants from Guatemala to the US.

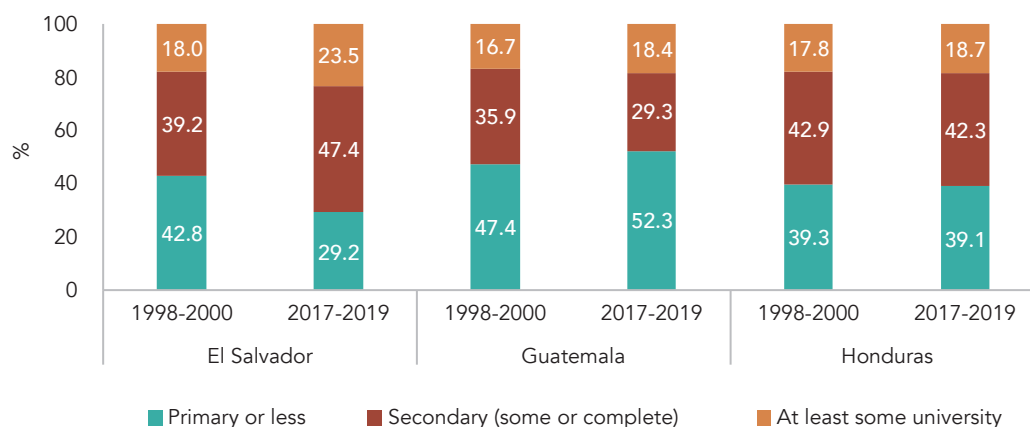
Figure 2.8 Proportion of Arrival Cohort Consisting of Women and Girls



Source: Authors' tabulations using American Community Survey and IPUMS US Census data.

Note: Recent arrivals are defined as individuals who arrived two years prior to the survey, with the exception of 1980 and 1990 when the second most recent year was used (1974 and 1986 respectively).

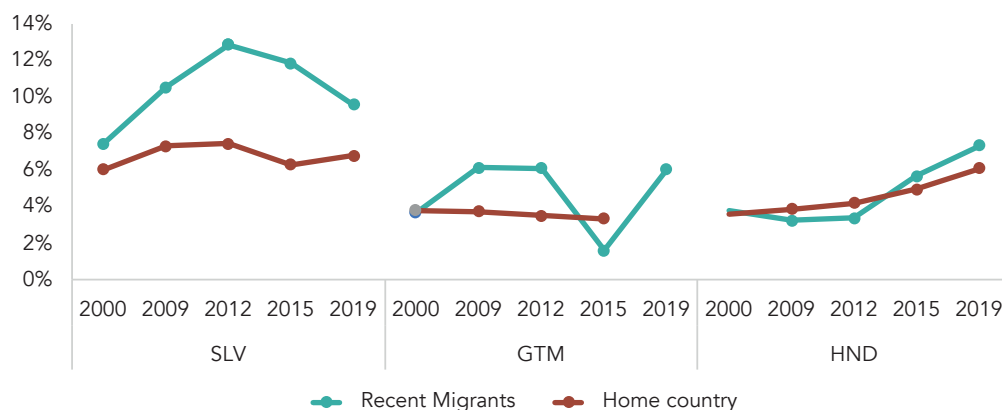
Figure 2.9 Educational Attainment of Recent Migrants aged 25 and Over at Entry by Arrival Cohort



Source: Authors' tabulations using American Community Survey and IPUMS US Census data.

Note: Arrival cohorts are defined as those who arrived two years prior to the census or survey used. For the 2000 cohort, only immigrants who arrived between 1998 and 2000 are shown. For the 2015 cohort, only immigrants who arrived after 2017 are included. As shown in Chapter 3, there are concerns that imputed values for education for the foreign-born population in the US data are biased towards the US-born distribution. As a result, this figure is based only on non-imputed values.

Figure 2.10 Ratio of College-educated Migrants to College Graduates in the Total Population Aged 21-65 by Migration Status and Year



Source: Authors' tabulations using American Community Survey and IPUMS US Census data, as well as household surveys from El Salvador, Guatemala, and Honduras. Latest household survey data available for Guatemala is 2014.

Note: This figure is limited to individuals who migrated at the age of 18 or older. Recent migrants are defined as those who arrived two years prior to the census or survey used. ACS data excludes imputed education observations.

Reflecting the low levels of educational attainment in the population of these three countries, the NCA migrant flow is largely made up of low-skilled workers. However, with the exception of Guatemala, recent cohorts have had higher levels of schooling and are more likely to have attended secondary school (Figure 2.9). Whereas those with a primary education or less accounted for 43 percent of pre-2000 Salvadoran migrants, they represented just 29 percent of adult migrants after 2017. This trend was similar, though less pronounced, for Honduran migrants. Nearly 40 percent of the 2000 cohort had a primary education or less compared with 39 percent after 2017. In contrast, the share of Guatemalan migrants who had only a primary education or less grew from 47 percent to 52 percent during the same period. This may suggest an increase in the migration of people from poorer socioeconomic groups in Guatemala, probably including more rural migrants. Chapter 3 investigates in more detail the change in the human capital of migrants relative to that of the population of their countries of origin.

Despite the low levels of human capital among migrants from Northern Central America, there are concerns about a brain drain from the region. A brain drain is defined as the loss of skilled professionals from a source country to a recipient country. Özden (2006) reported that nearly one-third of college-educated people from the NCA countries and Nicaragua lived in the US in the 1990s and in the first decade of 2000. This ratio pales in comparison to migration from the Caribbean – 80 percent of college-educated people from Jamaica, Haiti, Guyana,

Belize, and Grenada were living in the US during the same period of time. College-educated migrants represent a very small share of migration from the NCA region, yet 27 percent of the most recent cohort of migrants from El Salvador were university-educated. In fact, taking into account the education distribution within the three source countries, university-educated individuals from El Salvador and Honduras have become disproportionately likely to migrate (Figure 2.10). As of 2019, approximately 10 percent of recent Salvadoran migrants in the US had a college education compared to only 7 percent of the population in their home country. Similarly, recent migrants from Honduras are slightly more likely to have a college education than their peers living in Honduras (7.3 and 6.1 percent respectively). Conversely, recent migrants from Guatemala are less likely than earlier cohorts to have a college degree. In the most recent cohort included in the analysis, college graduates were proportionally represented among migrants in contrast to earlier cohorts in which they had been overrepresented.

Economic Outcomes of Migration

As discussed above, a significant proportion of migrants from Northern Central America are low-skilled and undocumented. This combination puts serious constraints on their employment prospects and earnings opportunities in the US. Even so, as will be shown in Chapter 3, these migrants earn significantly more in the US than they would have earned in their source countries (even after adjusting for the cost of living). The data also suggest that migrants from the NCA region have low unemployment rates in the US. In 2015, only 3.7 percent of Salvadoran, 3.9 percent of Guatemalan, and 4.3 percent of Honduran migrants in the US labor force were unemployed.⁴⁶ In this sub-section, we look at the types of jobs obtained by migrants from these three countries in the US.

Migrants from Northern Central America are concentrated in a few occupations. As of 2019, nearly half worked in construction, housekeeping, janitorial work, or food preparation (Table 2.3). Among Hondurans, the share of migrants working in these sectors increased by 11 percentage points between 2000 and 2019. The share of men working in construction has also increased for all NCA migrants, while women continue working primarily in housekeeping and janitorial work (Figure 2.11). On the other hand, the share of NCA migrants employed in production (manufacturing) fell, especially for women. Among the 2000 cohort, production work accounted for 14 percent of the employment of Salvadoran women and 20 percent of the employment of Honduran and Guatemalan women. In 2019, it accounted for between 6 and 11 percent of jobs for NCA women. Production work also fell steeply for men from Guatemala and Honduras, from 18 percent in 2000 to 6 percent and 10 percent for Guatemalan and Honduran men respectively. In part, this reflects a general shift of US employment away from manufacturing. In 1990, for example, manufacturing jobs accounted for 17 percent of US employment, but by 2010, it accounted for only 10 percent.⁴⁷

⁴⁶ Based on estimates from the ACS, which is not the official source of unemployment statistics in the US.

⁴⁷ <https://fred.stlouisfed.org/series/USAPEFANA>

Table 2.3

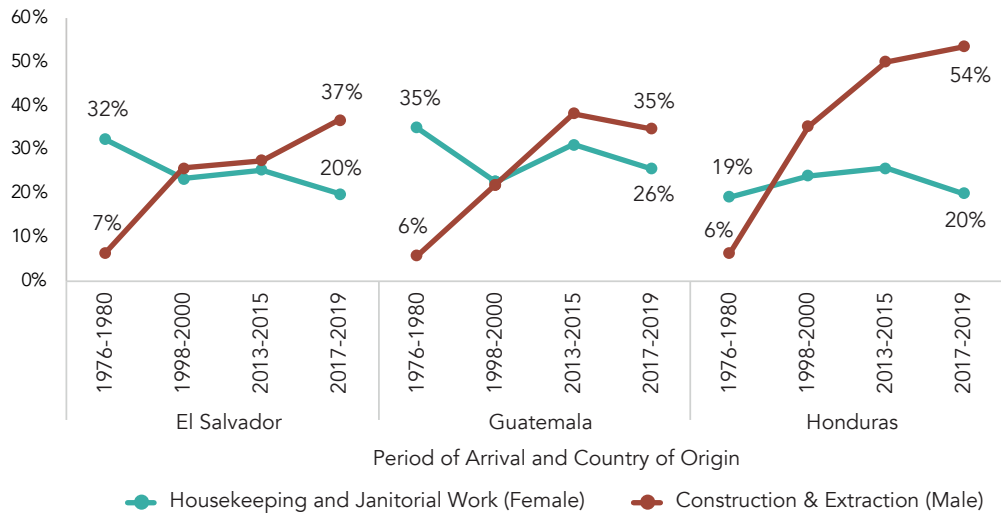
Occupation of Recent Migrants by Arrival Cohort, Country of Origin, and Gender (%)

		El Salvador		Guatemala		Honduras	
		1998-2000	2017-2019	1998-2000	2017-2019	1998-2000	2017-2019
Female	Construction and Extraction	1.1	2.1	0.8	9.9	3.1	15.1
	Food Preparation and Serving	21.7	29.5	16.6	15.6	16.6	21.1
	Housekeeping and Janitorial Work	23.4	19.9	22.7	25.6	24.0	20.0
	Production	14.3	10.7	19.8	8.2	20.0	6.1
	Transportation and Material Moving	6.3	7.8	3.0	8.0	6.4	10.1
	Sales and Office	16.2	13.8	14.3	12.3	14.0	6.1
	Management, Professional, and Related	5.3	5.4	5.5	5.5	5.3	6.0
	Other	11.5	10.9	17.4	15.0	10.6	15.5
Male	Construction and Extraction	25.8	36.8	22.0	34.8	35.2	53.5
	Food Preparation and Serving	15.2	8.4	12.0	12.0	6.1	7.2
	Housekeeping and Janitorial Work	12.1	5.2	17.2	1.8	12.1	4.3
	Production	14.9	6.4	18.3	6.4	17.5	9.8
	Transportation, and Material Moving	10.6	13.2	9.9	9.5	10.4	7.4
	Sales and Office	9.0	6.9	5.5	1.5	6.8	2.1
	Management, Professional, and Related	3.9	6.7	4.3	4.7	3.3	3.9
	Other	8.5	16.4	10.9	29.3	8.6	11.8

Source: Authors' tabulations using American Community Survey and IPUMS US Census data.

Note: Arrival cohorts are defined as individuals arriving two years prior to the survey, with the exception of 1980 and 1990 when the second most recent year was used (1974 and 1986 respectively). Sample sizes are smaller for cohorts from 2007 onwards because these were from the American Community Survey whereas earlier samples were from the long-form US Census of Population.

Figure 2.11 Primary Female and Male Occupations by Period of Arrival and Country of Origin

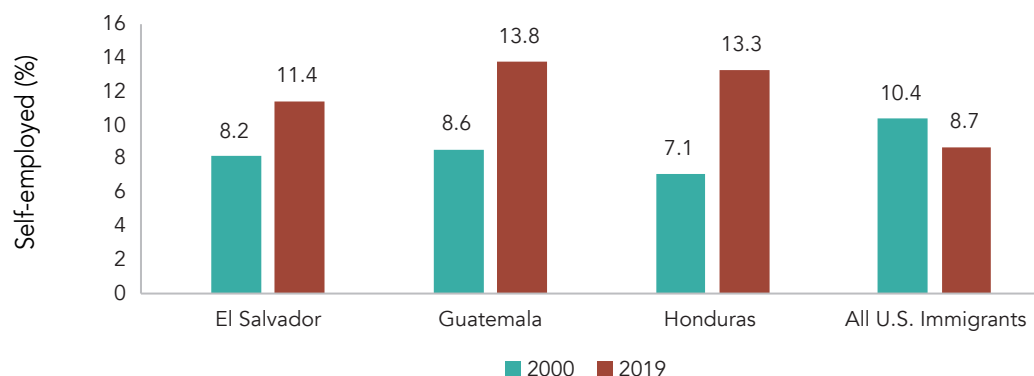


Source: Authors' tabulations using the American Community Survey and IPUMS US Census data.

Note: The sample is limited to employed migrant workers.

The vast majority of employed migrants from Northern Central America in the US (about 9 in 10) work in wage or salary jobs. Even so, they are now more likely to be self-employed than the average immigrant in the US, a change from the situation in 2000 (Figure 2.12). On average, self-employed migrants from the NCA region work in low-skill sectors and have lower wages than other self-employed immigrants in the US. Over half of all self-employed women from the NCA countries work in housekeeping and janitorial work, compared to only 7 percent of all self-employed US immigrants. Similarly, approximately half of all self-employed men from the NCA countries work in either construction or transportation compared to only 20 percent of all immigrants to the US. Wages for self-employed migrants from the NCA region are roughly 40 percent lower than those of their US counterparts.

Figure 2.12 Migrants' Self-employment Rates in the United States (2000-2019)



Source: ACS and US Census data.

Note: Self-employment rates reported for workers aged 18-64.

Conclusion

The evolution of migration, including its changing age and gender profile, has important implications for the source countries. Even though the populations of Guatemala, Honduras, and, to a lesser extent, El Salvador are young, the large outflow of young workers is a significant loss for the NCA countries. Migration has directly decreased their labor forces. As of 2019, 8.6, 9.3, and 29.5 percent of the working-age populations of Guatemala, Honduras, and El Salvador respectively were living outside of their countries of birth. Moreover, the out-migration of skilled workers results in a loss of the positive externalities generated by increasingly educated workers, and results in a loss of potential tax revenue leading to a loss of the public funds spent on their education and reducing funds for improving opportunities for the next generation.⁴⁸

The shifting demographics of the migrant population from Northern Central America suggest two key findings. In general, migration seems to have become more “inclusive.” By this, we mean that a wider segment of the population in each of the three countries seems to be migrating. This is supported by our finding that recent migrant cohorts differ less from the general population in terms of age, gender, and educational attainment than earlier cohorts. In this regard, Guatemala is an outlier as women and girls and children under the age of 15 remain underrepresented among migrants. This same demographic shift in migration also suggests a second finding – that the three NCA countries are at different stages in the development of their migration networks. After El Salvador’s migration grew rapidly during the 1980s and Honduran migration grew at a similar pace during the 2000s, recent cohorts of migrants from

48 Niimi and Özden (2008).

these countries are more likely to reflect the demographic characteristics of their national populations. Guatemala is very different in that it has a higher proportion of temporary or circular migration rather than long-term migration for family unification.

While migration and remittances have played a crucial part in the stories of these three countries over the past 40 to 50 years, this is a population facing great uncertainty. Nearly 9 out of 10 people who have emigrated from Northern Central America live in the United States, and a majority are there with no formal authorization. NCA migrants are driven by a mixture of push and pull factors – primarily pulled by the search for economic opportunities and pushed by the high rates of violence and crime in their countries of birth. As migration and enforcement policies in destination countries are again being revised, it is an important time to take stock of the challenges that are driving people to migrate from these countries and to find effective ways to address them.

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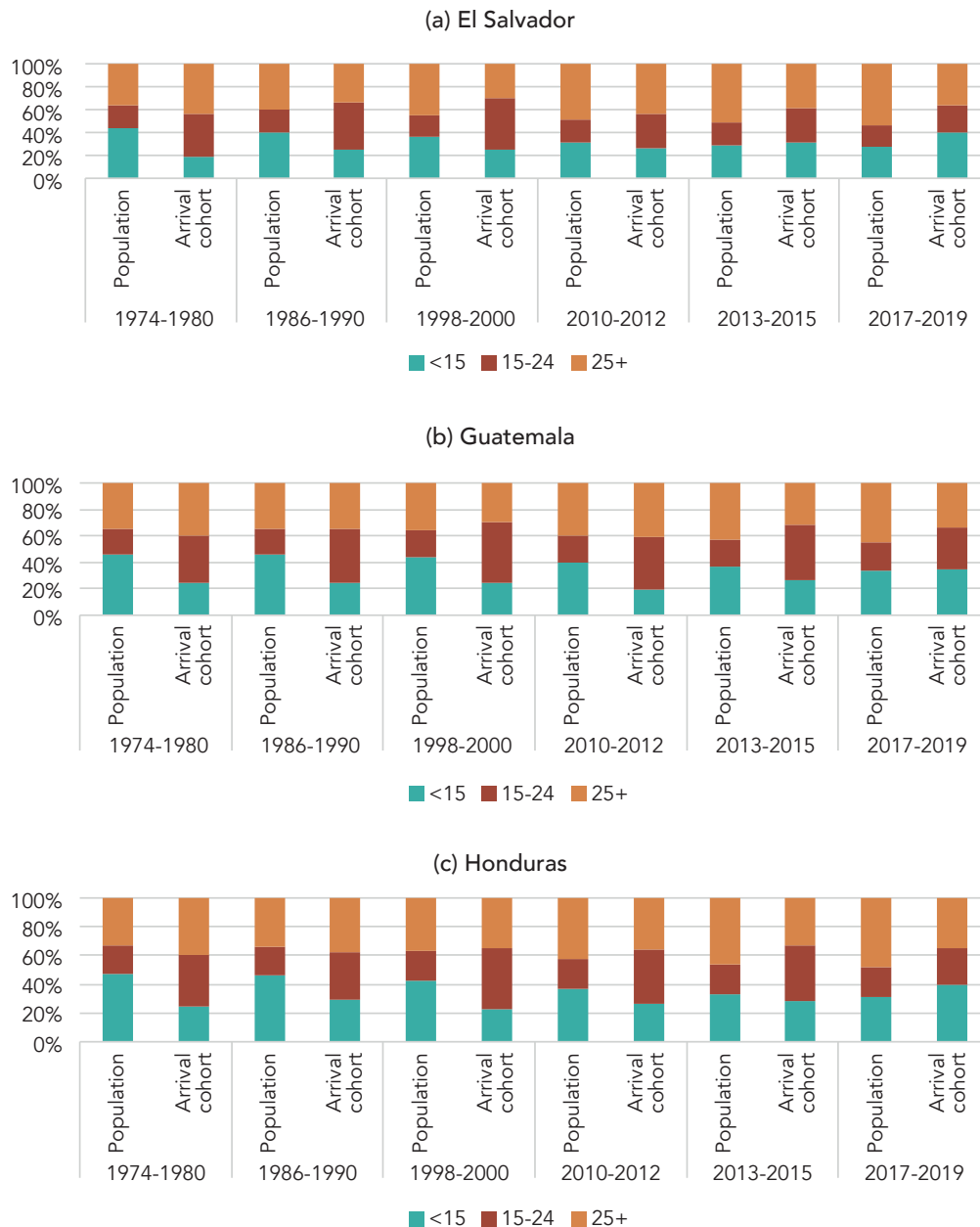
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Annex 2.1

Table 2.1 Age Distribution of Migrant Cohorts and Populations of Northern Central American Countries, 1980-2019



Source: Authors' tabulations using ACS and US Census data. The share of each country's population under the age of 15 comes from the World Bank's World Development Indicators.

Note: Recent arrivals are defined as individuals arriving two years prior to the survey, with the exception of 1980 and 1990 where 1974 and 1986 were used respectively.

3 Human Capital Losses: Selection into Migration from the Northern Central America

Giselle Del Carmen and Liliana D. Sousa

Introduction

Eleven percent of the population born in Northern Central America – El Salvador, Guatemala, and Honduras – lives outside of their home countries. Migration rates of this magnitude can have profound implications for the development and labor markets of the countries that the migrants leave behind. Much has been made of the economic costs of the brain drain, in which highly skilled workers such as doctors and engineers leave the country in significant numbers, but migration patterns can also lead to a broader loss of skills and productivity, even among lower-skilled groups. The analysis in this chapter shows that most migrants from Northern Central America (NCA) are young adults of working age, and although they are not high-skilled by international standards, their absence represents a considerable loss of human capital for the source countries.

In this chapter, we quantify the value of these human capital losses due to migrant outflows from Guatemala, El Salvador, and Honduras since 2000.⁴⁹ As shown in Chapter 2, migration between Northern Central America and the primary destination countries, particularly the US, has become more widespread across economic groups. In other words, while most migrants used to come from higher-income households, more recently they have increasingly come from lower-income households. This implies a loss of potential labor from low-income households but also increased their receipt of remittance income. It also suggests that there has been a change in the process by which migrants choose to migrate. In order to set the stage for the

49 The last available survey data for Guatemala is 2014. For El Salvador and Honduras, we use data for 2019.

discussion of the distribution of remittances and their social and economic impact in later chapters, in this chapter we take a close look at how the selection of workers into migration has changed between earlier cohorts in the 1990s to more recent groups of migrants.

To measure the outflow of skills and human capital and how this has changed over time, we focus on NCA migrants now living in the United States, the single largest destination for migration from the three countries. As noted in Chapter 2, over 90 percent of all NCA migrants living abroad lived in the United States in 2019. Our findings suggest that, based on their observable characteristics, these individuals would have had higher than average earnings in their country of birth than individuals who did not migrate. Furthermore, the findings suggest that the difference between those who migrate and those who do not has only marginally decreased between the cohort of migrants who had arrived in the US by 2000 and those who had arrived by 2019. Migration by lower-skilled individuals at the bottom of the distribution remains relatively low while migration from the top of the distribution continues to be relatively high, especially among women. The data suggest that the loss of human capital associated with migration, as measured by the forgone wages of those individuals who left the three countries in the 10 years before 2019, represented 1.7 percent of GDP in El Salvador, 1.3 percent in Honduras, and 1.0 percent in Guatemala in 2014.

Background

Borjas (1987 and 1995) has argued that the decision to migrate depends on the distribution of wages in the source and destination countries. Depending on the dispersion of wages and on the relative returns to skills in the source and destination countries, there may be biased selection from the upper or lower tail of the skill distribution. Economic models would predict that countries with higher returns to skills and high wage inequality are likely to attract more lower-skilled migrants. This is known as negative selection into migration. In contrast, those workers with above-average skill levels have the greatest incentive to migrate to countries with low returns to skills and low wage dispersion. This is known as positive selection. In support of this, Borjas (1987) argued that negative selection of migrants from Latin America in the 1970s led to a greater decrease in relative wages at the time of their arrival in the United States than for the earlier waves of migrants from Western Europe.

Despite the importance of this topic, there has been very little empirical research on how the skills of migrants compare with the skills of non-migrants in their countries of origin, and the few studies that do exist have yielded mixed findings. Ramos (1992) found evidence of negative selection in Puerto Rico, while Funkhouser (1992) found evidence of positive selection in El Salvador. Chiquiar and Hanson (2005) and Cuecuecha (2003) analyzed migration from Mexico to the US using a combination of data from both countries, and both studies found evidence that contradicted Borja's negative selection hypothesis in Mexico. Instead, Chiquiar and Hanson argued that there was intermediate selection of Mexican migrants to the US, while

Cuecuecha found evidence of positive selection. However, Ibarra and Lubotsky (2007) found that the US data may have over-reported the education levels of migrants and undercounted younger migrants and concluded that Mexican migrants tend to be less educated than non-migrants. Unlike other research, Yashiv (2008) used a single data source (the 1987 quarterly Territories Labor Force Survey conducted in both Israel and Palestine) to evaluate the self-selection of Palestinian workers in Israel and found evidence in favor of negative selection. Similarly, Kaestner and Malamud (2014) used data on pre-migration earnings from the Mexican Family Life Survey to test for negative selection into migration to the US. They found that Mexican men in the top 20 percent of the income distribution were less likely to migrate and, importantly, that the negative selection into migration is driven by higher relative returns to migration for workers in the lower end of the income distribution. They also found that Mexican migrants were largely drawn from the middle of the educational distribution with no evidence of selection into migration based on cognitive ability or health. Orrenius and Zavodny (2005) used data from the Mexican Migration Project to assess how changes in economic conditions, migrant networks, and border enforcement might influence the selection of undocumented migrants. They found that the migrants came from the middle of the skill distribution and that stricter border enforcement was associated with a more positively selected migrant population with higher skill levels in the US. They also concluded that selection becomes more negative as economic conditions in both the source and destination countries improve.

Methodology

To evaluate migrant selection from Northern Central America to the US, we followed the methodology used by Chiquiar and Hanson (2005). Given differences in the returns to skills in the host and source countries, just comparing the skill distributions of migrants and non-migrants is not sufficient. Thus, we compared what migrants and non-migrants would each earn in the same labor market under common skill prices. Using data from the source countries (El Salvador, Guatemala, and Honduras) and the host country (United States), we evaluated the selection of NCA migrants in terms of their observable skills and tested Borjas' (1987) negative selection hypothesis for migration in 2000 and 2019.⁵⁰ In this way, we were able to measure the extent to which selection into migration had changed between those two years. The changes in the composition of migrant cohorts can be explained by the growing presence of migration networks between the NCA countries and the US.

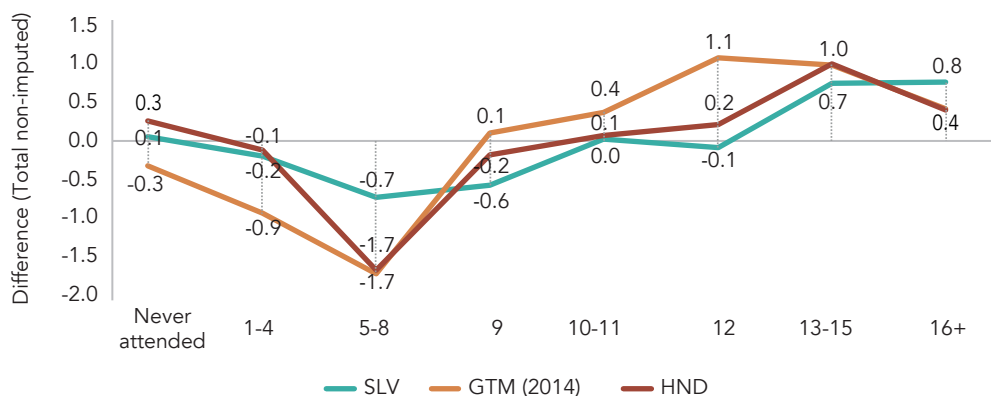
In order to compare the skills of migrants and non-migrants from El Salvador, Guatemala, and Honduras, we used data on NCA migrants from the 5 percent Public Use Microdata Sample (PUMS) from the 2000 US Census of Population and Housing and data for 2014 from the American Community Survey (ACS). For clarity throughout this discussion, we will refer to non-migrants as "residents." To study these residents, we used data from the 2000 and 2019 household

50 The latest available household survey data for Guatemala are from 2014.

surveys for El Salvador and Honduras, and for 2000 and 2014 for Guatemala.⁵¹ For each country and year, we created a stacked dataset that combined a limited set of variables from the two data sources – the US data and the source country data. We restricted the US sample to recent migrants (those who had arrived in the previous 10 years). Because of differences in returns to US and foreign education on the US labor market, we limited the sample to individuals who had arrived in the US at the age of 18 or older. Since we were analyzing labor market returns, we further limited it to individuals between the ages of 21 and 65.

One potential measurement issue is the likely undercounting of undocumented migrants in the US data. As of 2017, an estimated 750,000 Salvadorans, 600,000 Guatemalans, and 400,000 Hondurans were undocumented migrants⁵². To the extent that undocumented migrants are undercounted in the US data and tend to have lower skill levels than documented migrants, any results reached using these data may be biased against any finding of negative selection, with this bias likely to be smaller for the 2014 and 2019 cohorts than for the 2000 cohort (Box 3.1).

Figure 3.1 Difference in the Distribution of the Educational Attainment of Migrants due to Imputed Values



Source: Authors' tabulations using 2014 and 2019 ACS data. The figure reports the difference in the distributions of adult educational attainment (all observations minus non-imputed) in the foreign-born populations from the three NCA countries. Positive values indicate increases in the share of the population in that educational group due to imputation.

51 The data for Honduras are from the 2001 and 2019 Permanent Multi-purpose Survey of Households (*Encuesta Permanente de Hogares de Propósitos Múltiples* or EPHM). The data for El Salvador are from the Multi-purpose Household Survey (*Encuesta de Hogares de Propósitos Múltiples* or EHPM) for the same two years, while the data for Guatemala are from the National Survey of Living Conditions (*Encuesta Nacional de Condiciones de Vida* or ENCOVI) for 2000 and 2014.

52 <https://www.pewresearch.org/hispanic/interactives/unauthorized-trends/>

Box 3.1

Undercounting of Undocumented Migrants

While no official counts exist of undocumented migrants in the US, researchers such as Passel and Cohn (2016) and Warren and Warren (2013) have used residual estimation methodologies that compare the total number of migrants measured in household surveys and censuses with official statistics of migrants residing legally in the US. These official statistics consisted of counts of migrants lawfully admitted to the US since 1980 according to the Department of Homeland Security's Office of Immigration Statistics. The researchers then presumed that the difference between the total foreign-born population as measured by the surveys and censuses and the estimated lawful migrant population was the number of undocumented migrants who took part in the surveys, a number which they later adjusted to take account of any omissions from the survey.

Even though undocumented migrants are generally more likely to be undercounted than lawful migrants, analysts estimate that the undercount of unauthorized migrants in recent ACS data is low. Passel and Cohn (2016), Van Hook et al (2014), and earlier studies found evidence of serious coverage problems in surveys collected before the 2000 census but found fewer issues in the 2000 census and subsequent surveys. Between 2000 and 2009, the surveys and censuses made coverage adjustments that increased the estimate of the unauthorized migrant population by 8 to 13 percent, but subsequent coverage adjustments between 2010 and 2014 only increased the estimate by 5 to 7 percent. In other words, most undocumented migrants are covered by the survey data, and the undercount has been falling over time. At the same time, rates of undocumented migration from Northern Central America were lower for the 2000 cohort of migrants than for the 2014 and 2019 cohorts, hence reducing the extent that this undercount affects the results from the earlier cohort.

To the extent that undocumented migrants are more likely to be poor and to have lower levels of human capital, this [undercounting?] can bias the results by yielding an inaccurate distribution of educational attainment. By the same token, given the dangers that migrants encounter in illegally migrating from NCA countries, the age and gender distribution of the undocumented migrants may also differ from the distribution within the full population of migrants. On the other hand, push factors that are not strictly economic, such as violence and civil war, can give more skilled individuals who would otherwise not migrate or would try to migrate through formal channels an incentive to migrate illegally. Given the considerable levels of violence that prevail in Northern Central America, this factor may mitigate the extent to which undocumented migrants are negatively selected compared to documented migrants.

Source: Pew Research Center (2017)

Another measurement issue relates to the comparability of data on the migrant and non-migrant populations, especially in measuring education. Ibarra and Lubotsky (2007) suggested that the evidence of positive selection found by researchers when using the US data may have been driven by a high prevalence of imputed values for the education of migrants in the US Census. Indeed, when we analyzed the 2014 and 2019 ACS data, we found that imputed values altered the distribution of educational attainment towards more secondary school completion for all three countries (Figure 3.1).⁵³ To address this concern, we excluded any observations that include imputed education, which accounted for 12 to 15 percent of the US sample. In effect, we implicitly assumed that information on education is missing at random within the sample of migrants from Northern Central America in the US Census. Another potential source of bias in the measurement of education can be differences in the way in which the questions are asked in the US data and in the surveys in the source countries. However, as shown in Table 3.1, this was not a problem for us as the questions were largely consistent between the US data and the source country surveys.

As is common in research on migration outcomes, another source of potential bias can be return migration. If return migration is not random among migrants, then migrants who remain in the destination country vary systemically from those who returned to the source country. Borjas and Bratsberg (1996) argued that “return migration accentuates the type of selection.” This suggests, for example, that, if migrants from Northern Central America are negatively selected, then those who are most successful (and hence more likely to reach their migration “earnings goal”) are more likely to return, thus skewing the remaining sample to look more negatively selected.⁵⁴ We addressed this potential source of bias by analyzing only recently arrived cohorts of migrants as attrition can be expected over time and hence return migration is less likely among these cohorts than among previous cohorts. To ensure that the sample was not too small, we chose to analyze the arrival cohorts for the 10 years preceding 2000 and 2014 for Guatemala and the 10 years preceding 2000 and 2019 for the other two countries.

Table 3.2 reports the average age, the distribution of schooling, labor force participation, and average hourly wages for residents of NCA countries and of migrants to the US from those countries for 2000 and 2019 by country of origin. We found that migrants from all three countries were younger and more educated and had higher hourly wages than residents (even after adjusting for purchasing power parity). Although educational attainment among those

53 This is because the US Census Bureau’s hot-deck imputation strategy stratifies by ethnicity and race but not by country of origin. As a result, the values that it imputes for migrants are largely determined by the distribution of education among the US-born population.

54 One theory behind return migration is that it may have been planned as an optimal strategy at the time of migration (Borjas and Bratsberg, 1996). This suggests there are two types of migrants – those who plan to return and those who do not – and that those who plan to return are only partially included in the data. The selection into each type of migration decision would be different. Another theory behind return migration is that the migrants did not realize the returns that they expected to make prior to their migration. The migrants who are least successful in the destination country are those who are most likely to return home. If this is the case, then this would bias the sample towards more successful migrants.

Table 3.1

Education Questions by Country and Survey Year

Country	Survey Question
El Salvador	(i) What is the highest level of education completed? (ii) What is the highest level of school passed?
Guatemala	If currently enrolled...(i) What is the highest level of education completed? (ii) What is the highest level of school passed?
Honduras (2001)	What is the highest level of education completed or currently studying? and what is the last grade or year passed at that level?
Honduras (2019)	(i) What is the highest level of education completed? (ii) What is your last grade or year of education passed? If currently enrolled...(iii) What is the education level at which you are currently studying? (iv) What is the current year or grade you are studying?
U.S.	What is the highest degree or level of school this person has COMPLETED?

Source: Household survey questionnaires

Note: The survey questions for El Salvador and the US were the same for 2000 and 2019. Likewise for Guatemala in 2000 and 2014.

born in the NCA countries increased during the period in question, migrants continued to be more educated than residents in 2019. Migrants were less likely to have only some primary school education (nine or fewer years of education) and were more likely to have a secondary education (10 to 15 years of education) in all three countries. College graduate rates (16 years or more of schooling) were similar in the two groups in all three countries and for both cohorts.

As of 2019, recent migrants from the region remained less likely to have nine or fewer years of education, more likely to have 10 to 15 years, and less likely to have 16 or more years of education in Honduras and El Salvador. Table 3.2 presents suggestive evidence that the least educated individuals are not the most likely to migrate from Northern Central America to the United States, in other words, evidence against the negative selection hypothesis.

Table 3.2

Comparison of US and Source Country Samples

a) 2000	El Salvador		Guatemala		Honduras	
	Recent Migrants	Residents	Recent Migrants	Residents	Recent Migrants	Residents
Age						
Mean	32.9	38.1	32.0	37.8	32.6	37.5
Median	30.0	36.0	30.0	36.0	31.0	35.0
Years of School (%)						
No School	14	18	14	36	8	18
1-4	8	23	10	26	4	25
5-8	26	20	30	20	32	34
9	11	10	6	3	7	4
10-11	6	3	5	3	5	3
12	23	13	23	6	27	11
13-15	8	7	9	3	10	2
16+	4	5	4	4	6	4
Labor Force Participation (%)	67	66	66	70	70	67
Hourly Wage						
Mean	\$ 14.24	\$ 3.83	\$ 14.16	\$ 4.57	\$ 13.01	\$ 3.82
Median	\$ 10.34	\$ 2.50	\$ 10.44	\$ 2.38	\$ 9.93	\$ 2.18
Observations						
Unweighted	7,395	31,951	5,405	14,856	4,084	14,784
Weighted	161,261	2,854,871	116,901	4,480,529	90,838	2,565,230
b. 2019	El Salvador		Guatemala (2014)		Honduras	
	Recent Migrants	Residents	Recent Migrants	Residents	Recent Migrants	Residents
Age						
Mean	35.3	39.3	33.5	37.6	34.0	38.9
Median	33.0	38.0	32.0	35.0	32.0	37.0
Years of School (%)						
No School	6.9	9.6	11.7	23.9	4.4	8.5
1-4	6.9	16.4	11.9	22.9	5.8	17.1
5-8	15.8	18.6	25.2	23.1	26.1	34.7
9	10.8	12.1	4.9	7.4	7.5	6.6
10-11	5.0	10.4	3.9	7.3	3.6	6.2
12	30.2	17.2	23.5	9.4	27.7	14.5
13-15	14.9	7.4	12.5	2.7	15.1	4.9

Table 3.2 Continued

b. 2019	El Salvador		Guatemala (2014)		Honduras	
	Recent Migrants	Residents	Recent Migrants	Residents	Recent Migrants	Residents
16+	9.6	8.4	6.4	3.4	9.7	7.6
Labor Force Participation (%)	76	68	77	68	71	68
Hourly Wage	\$11.95	\$3.74	\$12.13	\$3.33	\$ 11.46	\$ 3.01
Mean						
Median						
Observations						
Unweighted	\$10.15	\$2.89	\$9.66	\$ 2.15	\$ 9.68	\$ 2.00
Weighted	4,066	40,613	3,455	24,660	3,003	11,450

Source: Authors' tabulations using 2014 (Guatemala) and 2019 (El Salvador and Honduras) ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: Wages are reported in 2011 US\$ PPP. The samples were limited to individuals aged 21 to 65. Recent migrants are those who first emigrated less than 10 years before the survey year and were 18 or older at time of their arrival in the US. Only observations without imputed education information in the US data were used.

Building on Chiquiar and Hanson (2005), we denoted $f^j(w|x)$ as the wage density in country j conditional on characteristics x . D_i was an indicator equal to 1 if individual i was employed, while $h(x|j,k,D_{ij})$ was the distribution of observed characteristics among individuals in country j born in country k . Using this notation, we were able to write the observed wage density of Guatemalan residents and migrants respectively as:

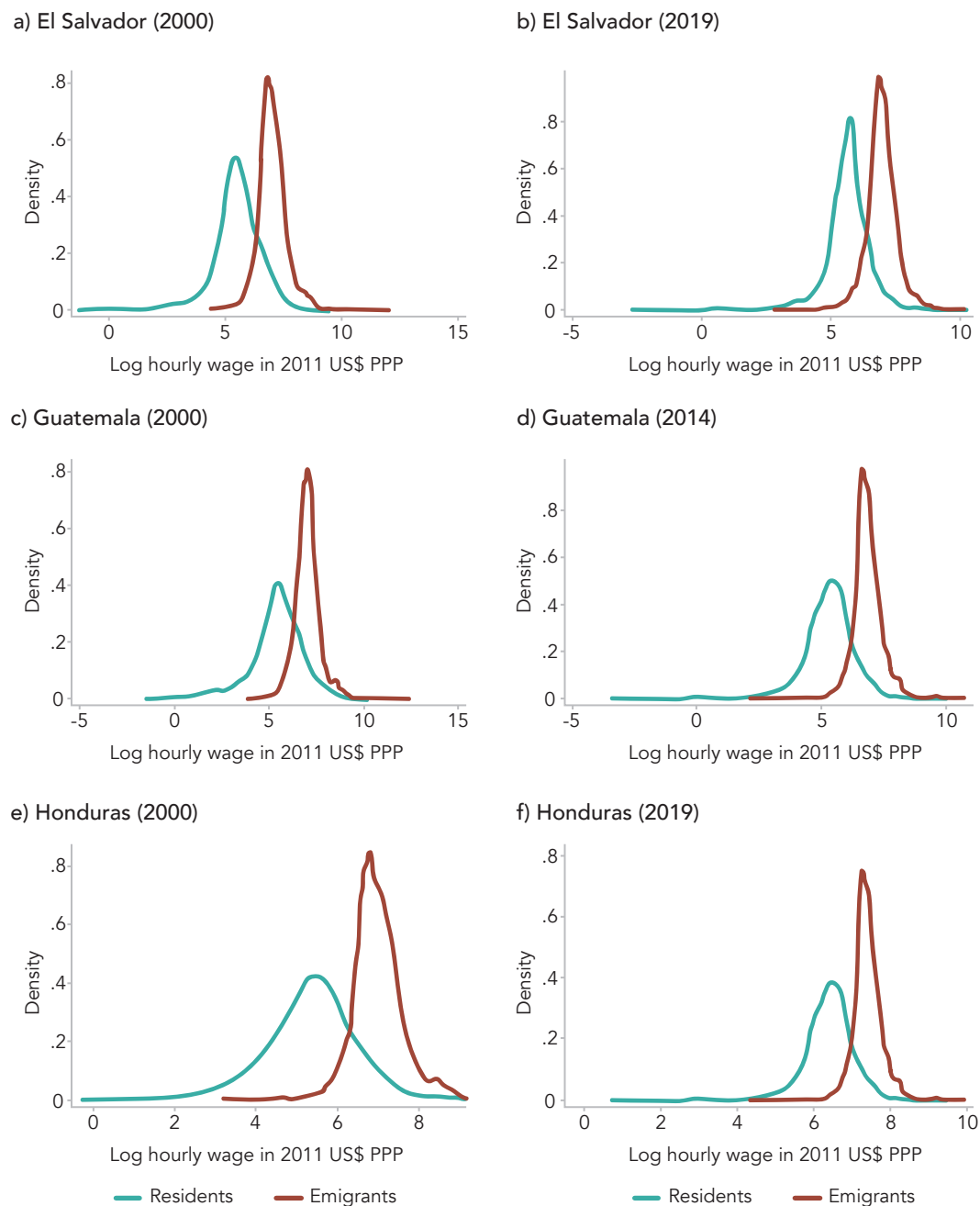
$$\text{Residents: } g(GTM|GTM) = \int f^{GTM}(w|x) h(x|j = GTM, k = GTM, D_i = 1) dx \quad (I)$$

$$\text{Migrants: } g(US|GTM) = \int f^{US}(w|x) h(x|j = US, k = GTM, D_i = 1) dx \quad (II)$$

These two wage densities are shown in Figure 3.2, which shows kernel density estimates for the wages of NCA migrants and residents. These estimates were higher for migrants in the US, even after adjusting for cost-of-living differences. This can be attributed not only to differences in returns to skills in the two labor markets but also potentially to differences in the distribution of skills in the migrant and resident populations. This would be the result of positive selection into migration. To test this hypothesis, we estimated the forgone local wages of migrants⁵⁵ by building a counterfactual wage distribution that, in effect, estimated what the distribution of wages would be for migrants if they were employed and paid at the rates that prevailed in their source countries. This was calculated by reweighting the resident distributions in Figure 3.2 to reflect the characteristics of the migrants in the migrant wage distribution.

55 Kaestener and Malamud (2014) found that, in the case of Mexico, estimating wages using observable characteristics, similar to the method that we used, replicated the pattern of negative selection found using pre-migration wages.

Figure 3.2 Wage Densities for Male Migrants and Residents by Country and Year



Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: The sample was limited to individuals aged 21 to 65 years old and migrants who had been in the US for 10 years or less and who reported receiving hourly wages greater than zero. Log hourly wages are in 2011 US\$ PPP. Only observations without imputed education information in the US data were used.

We estimated the forgone wages of migrants by constructing counterfactual weights that adjusted the wage distribution of residents (individuals who did not migrate) to account for differences in observable characteristics between migrant workers and resident workers. The counterfactual weight was designated as θ to adjust for differences in migrant and resident characteristics (θ^M) in both the source country and the destination country.

$$(I) \quad \theta^M = \frac{\Pr(i = US|x)}{\Pr(i = Resident|x)}$$

The second step we took was to estimate the probability that a local adult was in the United States, using the full sample of migrants and residents. For each country c and year t , we estimated the following logit regression for men and women (i):

$$(II) \quad \Pr(Migrant_{cti}) = \beta_0 + \beta_1 Years\ of\ Schooling_{cti} + \beta_2 Age_{it} + \beta_3 Age\ Sq_{cti} + \beta_4 Married_{cti} + \beta_5 Age * Years\ of\ Schooling_{cti} + u_{cti}$$

where $\Pr(Migrant_{cti})$ was the probability of being a migrant in country c in year t on a set of observed characteristics consisting of dummy variables for years of schooling, age, and age squared, a dummy for marital status and for the interaction of years of schooling and age, and data on marital status and years of schooling. For women, the regressions also included the number of children in the household and the interaction of this variable with the individual's level of schooling.

The product of the conditional probabilities and the fitted coefficients from regression (1) were applied to the sample of wage-earning residents to estimate counterfactual wage kernel densities for migrants in the United States.⁵⁶ The difference between the observed and counterfactual wage densities non-parametrically would summarize migrant selection in terms of local earnings.⁵⁷ A larger positive gap to the right of the wage distribution would be evidence of positive selection, in other words, that migrants were overrepresented among those with above-average skills and underrepresented among those with below-average skills. On the other hand, a larger positive gap at the lower end of the wage distribution would be evidence of negative selection.

Findings

Our results for the three countries suggest that there was positive selection into migration in 2000. As shown in Figures 3.3 and 3.4, the counterfactual wage density for migrants lies to the right of the observed wage density for residents. The results for men in El Salvador show

56 See Annex Table 3.1 for logit estimations of the probability of migration to the US by country, year, and gender.

57 Following the same methodology as Chiquiar and Hanson (2005), we based all estimates on the Gaussian kernel function, with implied bandwidths of 0.07 log wage units.

the least obvious difference between the densities for migrants and residents, with migrants seemingly more drawn from the center of the distribution. Interestingly, the results in all three countries showed a marked tendency for the wage densities for each gender to grow closer in the 2014/2019 cohort of migrants. This suggests that the degree to which migration from these three countries was positively selected has decreased over time. This is consistent with the hypothesis that growth in the networks of migrants already in the US has resulted in a reduction in the expected costs of migration (for example, reductions in search time to find a job). This reflects the findings presented in Chapter 2.

Although the wage densities became more similar between 2000 and 2019, some evidence of positive selection remained. The differences between the densities of migrants and residents remained negative for low wages and positive for upper-middle wages (Figure 3.5). Also, female migrants became less positively selected, which supports the hypothesis of a reduction in the costs of migration for women and/or for family reintegration. Similarly, for Guatemalan and Honduran men, the density difference was positive for some low wages and strongly positive for middle wages, which indicates a shift to intermediate selection with some evidence of negative selection that had not been evident a decade earlier.

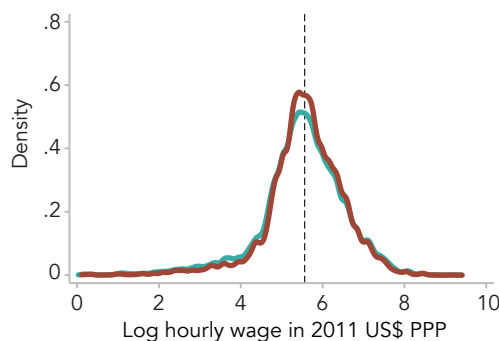
To assess whether these changes in selection into migration as measured using counterfactual wage distributions were statistically significant, we summarized wage distributions in terms of deciles. The share of the population in each decile was estimated for each country, year, and gender. For each decile, we tested whether the share of the migrants was statistically different from 0.10. Positive selection of migrants would result in population shares below 0.10 for low-income deciles and shares above 0.10 for high-income deciles and vice versa for negative selection. Intermediate selection would result in higher shares at the center of the distribution.

Table 3.3 corroborates the results that can be seen in Figure 3.5. Migrants were overrepresented among upper-middle wage workers in all three countries. This is particularly robust for Guatemalan migrants and Honduran women. For most countries and years, both female and male migrants were significantly underrepresented in the bottom deciles and overrepresented in the top deciles. The underrepresentation of the lowest deciles reflects the high cost of migration faced by the poorest in each of the three countries. Although the differences between actual and counterfactual wage densities appear small, most of them were statistically significant across wage deciles. As suggested by the densities, positive selection is particularly high among women in each of the three countries, and during both the earlier and later Honduran and Salvadoran migration waves.

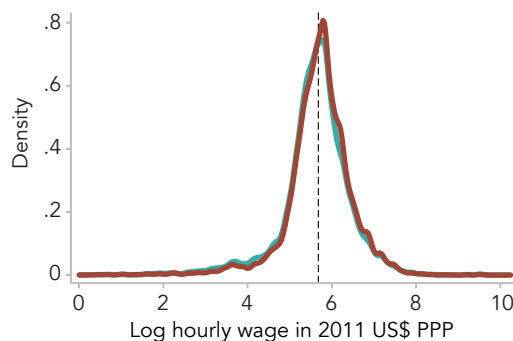
Across country and gender cohorts, the 2019 migrant cohorts in El Salvador and Honduras and the 2014 migrant cohort in Guatemala do not show higher shares of migrants in the lower wage deciles than the 2000 cohort. This suggests that, at the extremes of the income distribution, we do not see a significant shift away from positive selection in 2014/2019 relative to 2000.

Figure 3.3 Actual and Counterfactual Wage Densities of Men by Country and Year
(a) 2000, (b) 2019 (2014 for Guatemala)

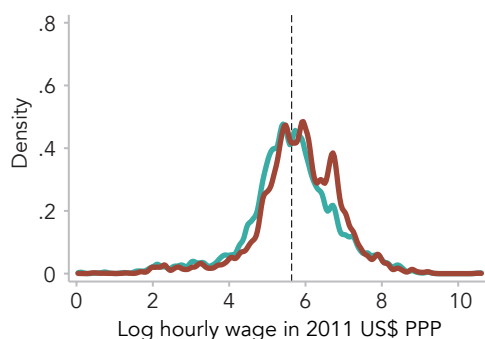
a) El Salvador (2000)



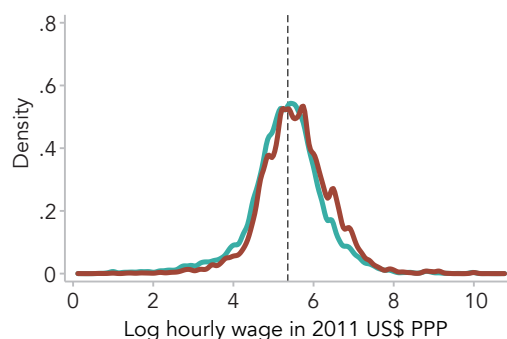
b) El Salvador (2019)



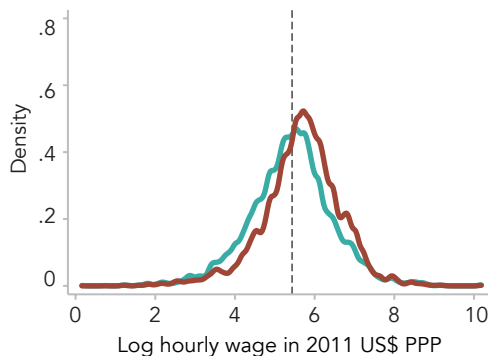
c) Guatemala (2000)



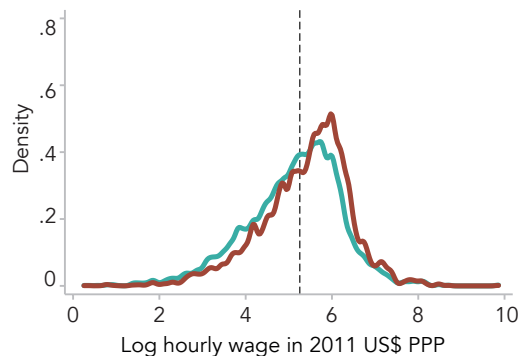
d) Guatemala (2014)



e) Honduras (2000)



f) Honduras (2019)



— HND Residents — Counterfactual:
HND Emigrants

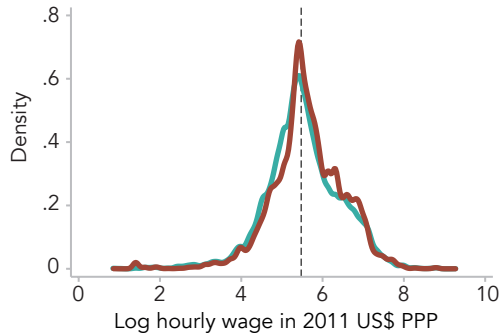
— HND Residents — Counterfactual:
HND Emigrants

Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

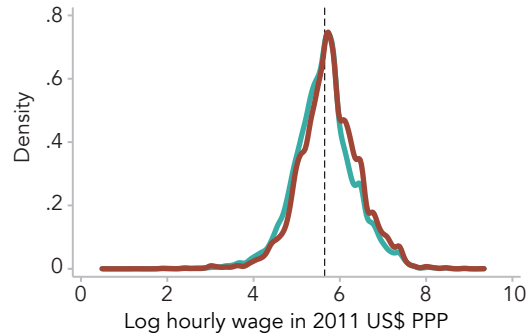
Note: The sample was limited to individuals aged 21 to 65 years old and migrants who had been in the US for 10 years or less and who reported receiving hourly wages greater than zero. Log hourly wages are in 2011 US\$ PPP. Only observations without imputed education information in the US data were used.

Figure 3.4 Actual and Counterfactual Wage Densities of Women by Country and Year
(a) 2000, (b) 2019 (2014 for Guatemala)

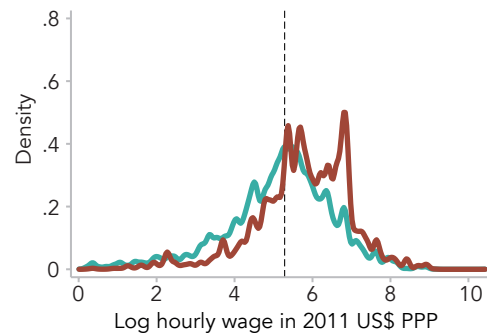
a) El Salvador (2000)



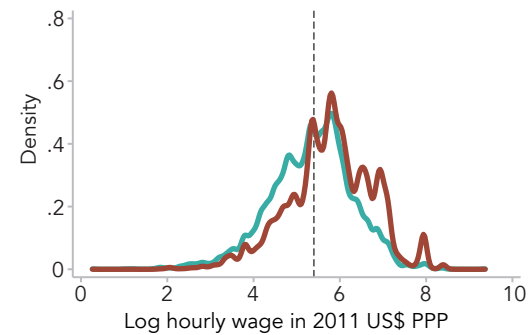
b) El Salvador (2019)



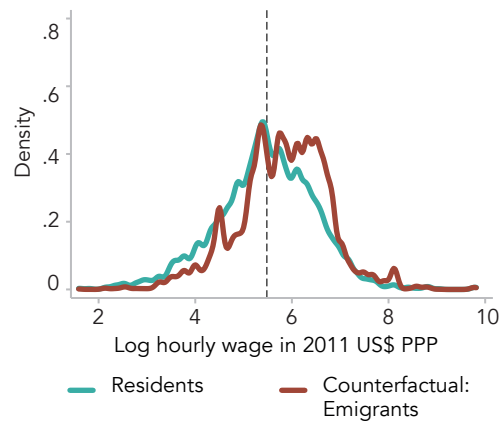
c) Guatemala (2000)



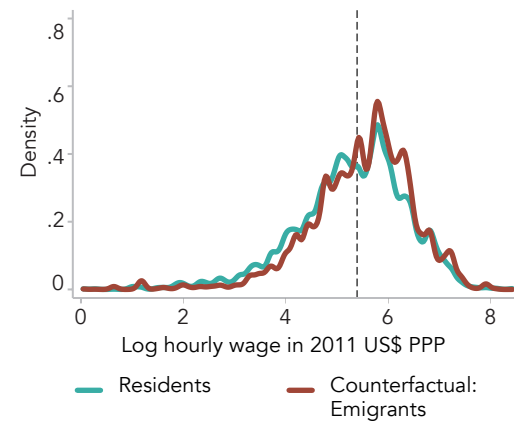
d) Guatemala (2014)



e) Honduras (2000)

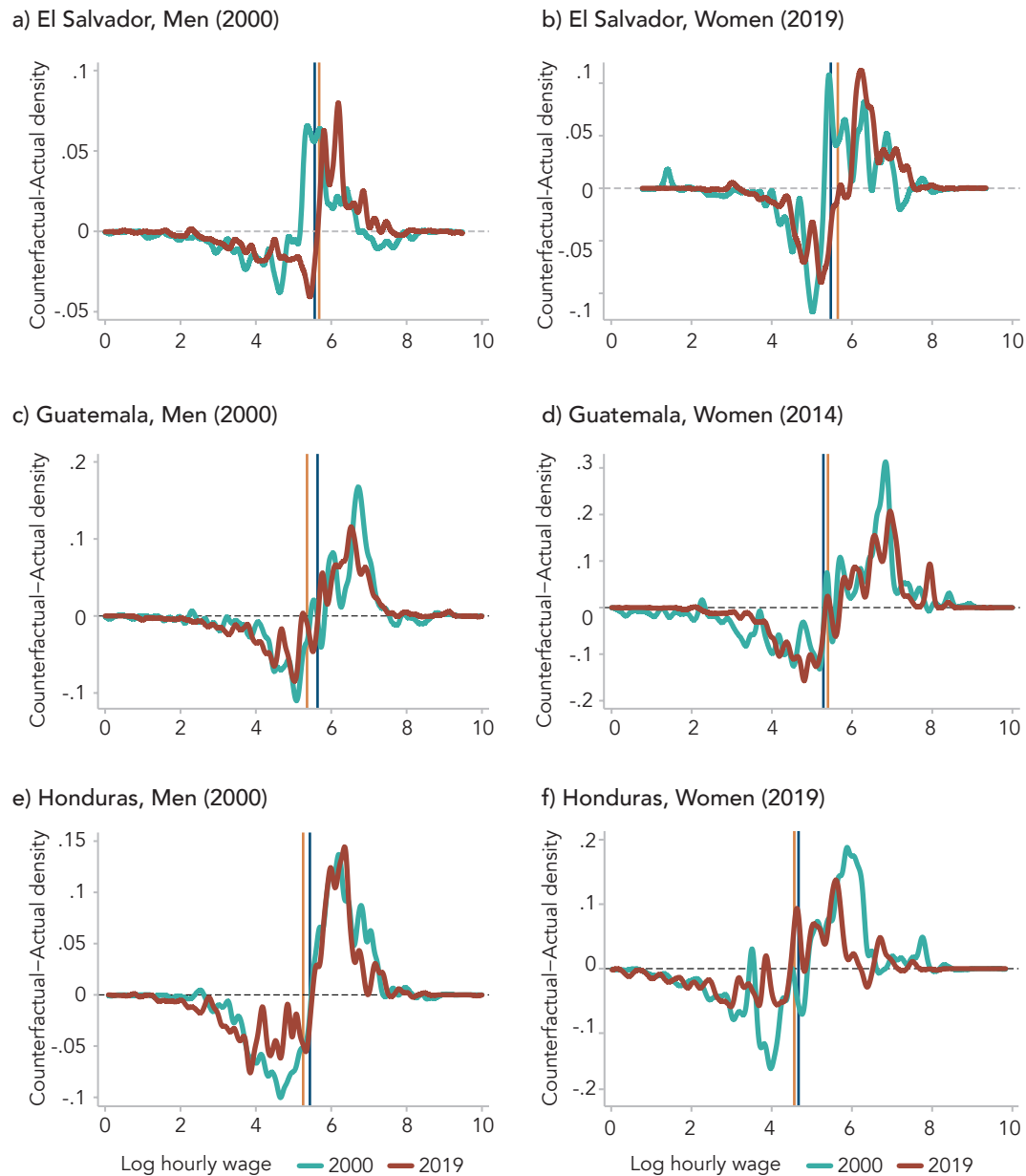


f) Honduras (2019)



Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank). Note: The sample was limited to individuals aged 21 to 65 years old and recent migrants (those who had been in the US for 10 years or less) with hourly wages greater than zero. Log hourly wages are in 2011 US\$ PPP. Actual and counterfactual wage densities are based on the Gaussian kernel function with implied bandwidths of 0.07 log wage units. Only non-imputed observations from the US data were used.

Figure 3.5 Difference between Migrant and Resident Wage Densities by Country and Gender, 2000 and 2019



Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: The sample was limited to individuals aged 21 to 65 years old and migrants who had been in the US for 10 years or less and who reported receiving hourly wages greater than zero. Log hourly wages are in 2011 US\$ PPP. Only observations without imputed education information in the US data were used. The vertical lines represent the median income by year.

Table 3.3.

Counterfactual Wage Deciles by Country, Gender, and Year

a. Counterfactual Wage Deciles (El Salvador)				
Decile	Males 2000	Males 2019	Females 2000	Females 2019
1	0.076*** [0.068, 0.085]	0.076*** [0.068, 0.084]	0.076*** [0.063, 0.091]	0.071*** [0.063, 0.079]
2	0.079*** [0.072, 0.088]	0.08*** [0.071, 0.089]	0.096 [0.083, 0.112]	0.11 [0.094, 0.128]
3	0.091 [0.083, 0.101]	0.093 [0.085, 0.101]	0.088 [0.076, 0.102]	0.086*** [0.074, 0.099]
4	0.104 [0.094, 0.115]	0.097 [0.089, 0.106]	0.095 [0.078, 0.115]	0.085*** [0.074, 0.097]
5	0.106 [0.096, 0.118]	0.1 [0.091, 0.110]	0.138*** [0.112, 0.168]	0.096 [0.084, 0.110]
6	0.112*** [0.102, 0.124]	0.105 [0.095, 0.115]	0.109 [0.089, 0.132]	0.106 [0.092, 0.122]
7	0.115*** [0.105, 0.127]	0.109 [0.098, 0.120]	0.107 [0.091, 0.126]	0.097 [0.084, 0.111]
8	0.117*** [0.107, 0.127]	0.119*** [0.108, 0.131]	0.088 [0.074, 0.104]	0.101 [0.086, 0.118]
9	0.111*** [0.101, 0.122]	0.118*** [0.105, 0.133]	0.106 [0.086, 0.130]	0.123*** [0.105, 0.145]
10	0.087*** [0.078, 0.097]	0.104 [0.093, 0.116]	0.098 [0.084, 0.113]	0.126*** [0.109, 0.144]
b. Counterfactual Wage Deciles (Guatemala)				
Decile	Males 2000	Males 2014	Females 2000	Females 2014
1	0.041*** [0.030, 0.056]	0.051*** [0.044, 0.059]	0.073 [0.052, 0.100]	0.064*** [0.052, 0.079]
2	0.043*** [0.032, 0.056]	0.071*** [0.061, 0.083]	0.074*** [0.055, 0.099]	0.07*** [0.056, 0.087]
3	0.072*** [0.055, 0.093]	0.094 [0.083, 0.106]	0.087 [0.058, 0.130]	0.064*** [0.050, 0.081]
4	0.08*** [0.065, 0.097]	0.092 [0.081, 0.103]	0.059*** [0.044, 0.079]	0.046*** [0.037, 0.057]
5	0.103 [0.084, 0.126]	0.109 [0.093, 0.127]	0.102 [0.070, 0.145]	0.088 [0.062, 0.124]

Table 3.3. Continued

b. Counterfactual Wage Deciles (Guatemala)				
Decile	Males 2000	Males 2014	Females 2000	Females 2014
6	0.107 [0.086, 0.131]	0.1 [0.086, 0.117]	0.101 [0.065, 0.154]	0.079 [0.062, 0.100]
7	0.122 [0.097, 0.152]	0.105 [0.089, 0.122]	0.09 [0.062, 0.129]	0.093 [0.070, 0.123]
8	0.128*** [0.105, 0.156]	0.106 [0.090, 0.123]	0.1 [0.073, 0.135]	0.118 [0.090, 0.152]
9	0.168*** [0.143, 0.196]	0.12*** [0.105, 0.137]	0.172*** [0.124, 0.232]	0.139*** [0.106, 0.180]
10	0.137*** [0.115, 0.163]	0.153*** [0.135, 0.174]	0.143*** [0.102, 0.196]	0.239*** [0.194, 0.290]
c. Counterfactual Wage Deciles (Honduras)				
Decile	Males 2000	Males 2019	Females 2000	Females 2019
1	0.053*** [0.046, 0.062]	0.067*** [0.057, 0.079]	0.049*** [0.035, 0.068]	0.052*** [0.041, 0.066]
2	0.066*** [0.057, 0.077]	0.076*** [0.060, 0.096]	0.07 [0.048, 0.101]	0.067*** [0.049, 0.091]
3	0.069*** [0.060, 0.081]	0.075*** [0.065, 0.087]	0.056*** [0.043, 0.072]	0.079 [0.062, 0.102]
4	0.087 [0.075, 0.101]	0.089 [0.075, 0.105]	0.076 [0.050, 0.114]	0.106 [0.085, 0.132]
5	0.085*** [0.073, 0.098]	0.088 [0.075, 0.105]	0.116 [0.090, 0.148]	0.094 [0.073, 0.121]
6	0.117*** [0.101, 0.134]	0.098 [0.081, 0.119]	0.077*** [0.061, 0.098]	0.106 [0.083, 0.133]
7	0.123*** [0.107, 0.140]	0.107 [0.092, 0.125]	0.12 [0.091, 0.155]	0.105 [0.086, 0.127]
8	0.14*** [0.123, 0.159]	0.131*** [0.111, 0.152]	0.113 [0.090, 0.142]	0.116 [0.096, 0.140]
9	0.122*** [0.106, 0.141]	0.156*** [0.127, 0.189]	0.183*** [0.149, 0.222]	0.142*** [0.116, 0.172]
10	0.138*** [0.122, 0.156]	0.112 [0.094, 0.133]	0.141*** [0.111, 0.177]	0.133*** [0.111, 0.159]

Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: The table reports the predicted distribution of emigrants by wage decile, with 95 percent confidence intervals reported in brackets. These were estimated based on the results reported in Annex Table 3.1. Statistical difference was estimated relative to 0.10 with *** indicating $p < 0.05$.

What is the economic impact of this outmigration in terms of forgone wages? The counterfactual wage distribution can be used to estimate the economic cost of migration in terms of forgone wages under the assumption of no labor market effects of out-migration or remittances. Specifically, we estimated forgone labor earnings for each country and cohort (designated by *j*) based on the labor earnings of residents and the counterfactual weights estimated above. Implicit in this exercise is a strong assumption that labor market wages would be the same in the absence of migration, which is unlikely given the large outflows of migrants and the large inflows of remittances. Nevertheless, the exercise gave us a general estimate of the cost of migration in terms of lost human capital.

The results from this exercise are presented in Table 3.4. The migrant cohorts included in this analysis represented between 3.6 percent (the 2014 cohort from Guatemala) and 10.4 percent (the 2000 cohort from El Salvador) of the local labor force of the source countries. Yet, as suggested by positive selection, their forgone earnings accounted for a larger share of total labor earnings, ranging from 3.0 percent to 7.6 percent. The 2000 cohorts from El Salvador and Honduras particularly stood out as representing outsized shares of labor earnings, a result which indicated greater positive selection in these cohorts. As a share of GDP, the forgone earnings from each cohort ranged from a low of 0.9 percent to 3.6 percent. This share fell between 2000 and 2014/2019 due to a combination of higher GDP in the NCA countries and of less positive selectivity into migration.

Table 3.4.

Migrants' Forgone Wages in 2000 and 2019 by Country

				Ten-year cohort's forgone local earnings as % of:		
	Arrival cohort	Ten-year cohort as % of local workers	Ten-year cohort as % of all migrants	Local labor earnings (2011 PPP US\$)	GDP, (PPP constant 2011 international \$)	Remittances (2011 PPP US\$)
Guatemala	2000	4.5%	29%	5.7%	1.7%	21.3%
	2014	3.6%	20%	3.0%	0.9%	9.6%
Honduras	2000	6.2%	37%	6.4%	3.6%	58.7%
	2019	3.8%	17%	3.3%	1.3%	9.3%
El Salvador	2000	10.4%	24%	7.6%	3.2%	23.8%
	2019	6.0%	11%	4.7%	1.7%	11.8%

Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and SEDLAC (CEDLAS and World Bank).

Note: The ten-year cohort was defined as all migrants of working age (21 to 65) from each country who migrated to the US as adults (aged 18 or older) and who arrived in the 10 years prior to the survey (either prior to 2000 or 2014/2019). The first column of results reports the migrant population as a share of the potential workforce (aged 21 to 65). The other columns report the total estimated monthly labor earnings of these migrants as a share of total local earnings, GDP, and remittances (each adjusted to 2011 US\$). Because of data limitations, we used 2002 data for the remittances share for the 2000 cohort for Guatemala.

Of course, in exchange for losing migrant human capital, these countries have received significant inflows of remittances. Our results suggest that the loss to the NCA countries of the earnings of recent cohorts of migrants represents only between 9.3 percent and 11.8 percent of the remittances that they received in 2014 in Guatemala and 2019 in El Salvador and Honduras, even as this group of migrants represented between 11 and 20 percent of all migrants. Since the migration stream to the US from Northern Central America is relatively recent, the forgone earnings of recent migrants as a share of remittances received was significantly higher in 2000 than in 2014/2019, by which time remittances had greatly increased. This was particularly the case in Honduras, where the forgone wages of those who left in the decade before 2000 represented over half of the amount received in remittances by the country in the year 2000.

Conclusion

In this chapter, we used survey data from the United States and from the countries of Northern Central America to compare the distribution of human capital between migrants and non-migrants. This was done by creating a counterfactual wage distribution of migrants based on their observable characteristics – in particular their age, education, marital status, and, for women, the presence of children in the household. Our analysis of this counterfactual found a process of positive selection into migration, in which individuals with characteristics associated with higher earnings were more likely to migrate than those with lower earnings. Positive selection is particularly pronounced for Guatemalan migrants, both men and women, and Honduran women. The results also clearly reflect that migration is not sourced primarily from the poorest – this suggests that access to migration opportunities or networks is lower for the poorest, who are typically in rural areas in each of these countries. We also found that positive selection into migration remained in 2019 compared with 2000, though perhaps to a lower extent as migration appears to have shifted somewhat towards the middle of the distributions.

The estimates presented in this chapter suggest that the cost of migration in terms of lost human capital is high in the countries of Northern Central America. Under the assumption that migrants would have earned what similar non-migrants earn, we found that the forgone earnings of migrants who left in the 10 years prior to 2019 accounted for 1.7 percent of GDP in El Salvador, 1.3 percent in Honduras, and 0.9 percent in Guatemala in 2014. However, these forgone earnings were recovered through remittances, which represented larger shares of the GDP of each country. Of course, the loss of human capital, particularly when there is positive selection into migration, can lead to lower productivity and lower growth potential. It is an open question as to whether remittances can fully compensate for these losses.

Two measurement caveats should be taken into account when analyzing these results. First, due to an undercounting of undocumented migrants in the data that we used, it is possible that the results are biased towards higher educational attainment, to older and younger migrants, and to women (which are the groups least likely to be undocumented migrants). The counts of undocumented migration were higher in the 2019 data, which suggests that the problem was

greater in 2019, but improvements in survey coverage and an increase in violence as a push factor for migration may have mitigated the bias. The second caveat is the lack of available information on the unobservable characteristics of migrants such as motivation. To the extent that the decision to migrate is positively correlated with unobservable characteristics, this suggests a possible underestimation of the counterfactual wage distribution.

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Annex 3.1

Table 3.1

Probability of Migration to the United States by Country, Gender, and Year

a. 2000	El Salvador		Guatemala (2014)		Honduras	
	Male	Female	Male	Female	Male	Female
Years of Schooling						
1-4	-1.389*** (0.0318)	-1.108*** (0.0501)	-0.763*** (0.0276)	-0.151** (0.0630)	-1.211*** (0.0533)	-0.472*** (0.111)
5-8	-0.482*** (0.0248)	-0.468*** (0.0395)	-0.270*** (0.0231)	1.212*** (0.0451)	0.00693 (0.0336)	0.782*** (0.0653)
9	-0.774*** (0.0274)	-0.0939** (0.0445)	-0.150*** (0.0319)	0.681*** (0.0646)	0.407*** (0.0482)	0.438*** (0.0812)
10-11	-0.448*** (0.0329)	-0.488*** (0.0525)	-0.616*** (0.0345)	0.304*** (0.0838)	0.950*** (0.0455)	0.746*** (0.0770)
12	-0.746*** (0.0248)	-0.176*** (0.0379)	0.633*** (0.0253)	1.335*** (0.0453)	1.136*** (0.0355)	1.368*** (0.0662)
13-15	-1.598*** (0.0319)	-0.690*** (0.0434)	-0.745*** (0.0371)	1.894*** (0.0562)	0.473*** (0.0439)	0.593*** (0.0727)
16+	-0.703*** (0.0421)	-1.345*** (0.0671)	-0.735*** (0.0470)	1.460*** (0.0682)	-0.0896 (0.0614)	1.572*** (0.0974)
Age	0.170*** (0.00611)	0.0595*** (0.00663)	0.178*** (0.00717)	0.202*** (0.00866)	0.103*** (0.00855)	0.140*** (0.00941)
Age Squared	-0.00193*** (7.34e-05)	-0.00124*** (7.33e-05)	-0.00242*** (9.25e-05)	-0.00219*** (9.87e-05)	-0.00145*** (0.000107)	-0.00221*** (0.000111)
Married	-0.453*** (0.0368)	0.744*** (0.0347)	-0.0152 (0.0411)	0.0530 (0.0471)	-0.739*** (0.0421)	0.169*** (0.0410)
1 Child		-1.007*** (0.0250)		-1.179*** (0.0304)		-1.015*** (0.0431)
2 Children		-1.684*** (0.0289)		-1.762*** (0.0342)		-1.678*** (0.0512)
3 Children		-2.150*** (0.0341)		-2.724*** (0.0448)		-3.331*** (0.0843)

Table 3.1 Continued

a. 2000	El Salvador		Guatemala		Honduras	
	Male	Female	Male	Female	Male	Female
4 Children		-2.867*** (0.0398)		-3.456*** (0.0397)		-3.504*** (0.0659)
Married*Years of schooling						
0	-0.503*** (0.0412)	-1.081*** (0.0400)	-1.737*** (0.0455)	-0.828*** (0.0527)	-0.342*** (0.0523)	-0.635*** (0.0543)
1-4	-0.459*** (0.0438)	-0.740*** (0.0422)	-1.749*** (0.0468)	-0.787*** (0.0574)	-0.858*** (0.0609)	-0.945*** (0.0682)
5-8	-0.597*** (0.0393)	-0.621*** (0.0379)	-1.768*** (0.0434)	-0.408*** (0.0508)	-0.649*** (0.0450)	-0.459*** (0.0449)
9	-0.498*** (0.0419)	-0.919*** (0.0417)	-1.216*** (0.0514)	0.175*** (0.0648)	-0.936*** (0.0551)	-0.530*** (0.0559)
10-11	-0.580*** (0.0481)	-0.272*** (0.0489)	-0.890*** (0.0546)	-0.939*** (0.0688)	-0.234*** (0.0608)	0.0945 (0.0621)
12	-0.235*** (0.0399)	-0.378*** (0.0380)	-1.155*** (0.0450)	-0.0407 (0.0515)	-0.0563 (0.0464)	-0.188*** (0.0452)
13-15	0.365*** (0.0447)	-0.267*** (0.0430)	-0.151*** (0.0500)	-0.517*** (0.0587)	0.490*** (0.0561)	0.582*** (0.0535)
Constant	-4.251*** (0.107)	-1.589*** (0.121)	-4.736*** (0.121)	-5.957*** (0.157)	-4.277*** (0.148)	-4.572*** (0.172)
Observations	1,360,458	1,599,722	2,133,641	2,398,041	1,200,754	1,374,646
Pseudo R-squared	0.0953	0.170	0.161	0.247	0.144	0.260
b. 2019	El Salvador		Guatemala		Honduras	
	Male	Female	Male	Female	Male	Female
Years of Schooling						
1-4	-0.539*** (0.0691)	0.389*** (0.133)	0.127*** (0.0388)	0.596*** (0.0620)	-1.052*** (0.0762)	-0.788*** (0.139)
5-8	-0.107* (0.0578)	1.839*** (0.114)	0.200*** (0.0345)	0.721*** (0.0546)	-0.360*** (0.0552)	-0.297*** (0.105)
9	-0.194*** (0.0596)	1.746*** (0.115)	-0.599*** (0.0433)	-1.464*** (0.101)	-0.618*** (0.0653)	0.0424 (0.112)

Table 3.1 Continued

b. 2019	El Salvador		Guatemala		Honduras	
	Male	Female	Male	Female	Male	Female
10-11	-0.863*** (0.0598)	0.750*** (0.118)	-1.252*** (0.0466)	-0.751*** (0.0846)	-0.736*** (0.0725)	-0.334*** (0.113)
12	0.285*** (0.0547)	2.448*** (0.111)	0.594*** (0.0349)	0.747*** (0.0559)	0.0818 (0.0551)	0.333*** (0.103)
13-15	-0.519*** (0.0581)	1.528*** (0.114)	0.187*** (0.0421)	1.109*** (0.0626)	-0.260*** (0.0590)	0.242** (0.105)
16+	-1.453*** (0.0787)	1.279*** (0.121)	-0.208*** (0.0570)	-2.363*** (0.118)	-1.157*** (0.0962)	-0.430*** (0.111)
Age	0.142*** (0.00728)	0.111*** (0.00704)	0.349*** (0.00630)	0.293*** (0.00868)	0.430*** (0.00986)	0.232*** (0.00850)
Age Squared	-0.00166*** (7.99e-05)	-0.00151*** (7.37e-05)	-0.00420*** (7.83e-05)	-0.00369*** (0.000101)	-0.00552*** (0.000123)	-0.00302*** (9.85e-05)
Married	0.329*** (0.0310)	0.240*** (0.0233)	-0.176*** (0.0334)	1.225*** (0.0402)	0.0108 (0.0407)	0.286*** (0.0263)
1 Child		-0.157*** (0.0324)		-1.589*** (0.0326)		-1.401*** (0.0668)
2 Children		-0.770*** (0.0395)		-1.987*** (0.0344)		-2.029*** (0.0700)
3 Children		-0.800*** (0.0471)		-2.966*** (0.0477)		-2.153*** (0.0794)
4 Children		-1.408*** (0.0658)		-4.118*** (0.0530)		-3.401*** (0.105)
Married*Years of schooling						
0	-0.519*** (0.0454)	-0.373*** (0.0349)	-1.964*** (0.0393)	-2.137*** (0.0476)	-0.760*** (0.0566)	-0.754*** (0.0565)
1-4	-1.549*** (0.0427)	-1.061*** (0.0371)	-2.110*** (0.0374)	-2.421*** (0.0459)	-1.752*** (0.0545)	-1.445*** (0.0489)
5-8	-1.684*** (0.0369)	-0.916*** (0.0300)	-1.438*** (0.0353)	-2.176*** (0.0436)	-1.472*** (0.0444)	-1.595*** (0.0319)

Table A3.1 Continued

b. 2019	El Salvador		Guatemala		Honduras	
	Male	Female	Male	Female	Male	Female
9	-1.880*** (0.0396)	-1.048*** (0.0332)	-1.314*** (0.0418)	-1.981*** (0.0600)	-0.946*** (0.0537)	-1.338*** (0.0418)
10-11	-1.175*** (0.0468)	-0.798*** (0.0420)	-0.979*** (0.0467)	-1.666*** (0.0594)	-2.248*** (0.0776)	-0.698*** (0.0519)
12	-1.071*** (0.0344)	-0.535*** (0.0273)	-1.180*** (0.0367)	-1.759*** (0.0446)	-0.727*** (0.0449)	-0.556*** (0.0309)
13-15	-0.0282 (0.0389)	0.321*** (0.0312)	-0.620*** (0.0425)	-1.581*** (0.0482)	0.395*** (0.0499)	-0.165*** (0.0353)
Constant	-5.207*** (0.139)	-5.674*** (0.169)	-9.085*** (0.112)	-7.726*** (0.160)	-10.31*** (0.176)	-6.185*** (0.178)
Observations	1,761,921	2,121,046	3,472,544	3,933,257	2,007,321	2,386,696
Pseudo R-squared	0.0825	0.131	0.136	0.231	0.109	0.153

Source: Authors' tabulations using 2014 and 2019 ACS data, 2000 US Census data, and official household surveys for each country, see footnote 47.

Note: This table shows logit estimation results by country and year in which the dependent variable was 1 if an individual lived in the United States and 0 if an individual lived in El Salvador, Guatemala, or Honduras. The sample was of country-born residents between the ages of 21 and 65 in the 2000 U.S. Census and in the 2014 and 2019 U.S. household survey, as well as the 2000 and 2014 household survey for Guatemala and the 2000 and 2019 household surveys for El Salvador and Honduras. In the U.S. data, we restricted the sample to recent migrants (those who arrived in the previous 10 years) and to individuals aged 18 or over at the time of their entry into the U.S. Regressors were dummy variables for years of schooling, age, age squared, marital status, and interactions among these variables. For women, regressions included the number of own children and the interaction of this variable with schooling. In addition to the interactions reported in the tables, the models also included controls for the interaction of Years of Schooling with 1) Age Group and with 2) Number of children. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4 Remittances in Northern Central America: Why do Migrants Remit?

Tanida Arayavechkit

Introduction

This chapter explores the reasons why migrants send remittances back to households, whether their own or others, from their destination countries, specifically the reasons that apply to migrants from the three Northern Central America (NCA) countries – El Salvador, Guatemala, and Honduras. Do they remit out of altruism for their family members, are they abiding by an implicit family contractual agreement to send money back home, or are they using remittances as a savings strategy for themselves? Different motives result in different patterns of remittance flows and have significant implications for the remittance-receiving households as well as, in some cases, for the macroeconomy of the recipient country. For example, do remittances enable households to insure themselves against local macroeconomic shocks? Do they reduce poverty or, instead, increase inequality? Not only do the motives of remitting migrants explain whether they respond to economic downturns in their home countries, but they also explain why better-off households sometimes receive larger amounts of remittances than the poor or vice versa.⁵⁸

The analysis in this chapter is based on the theoretical models of migrants and remittances that have been widely explored in the literature. These models are based on the various motives for remitting that migrants might have and provide key predictions that can be tested by making

58 Funkhouser (1995) found that differences in the level of remittances can mostly be explained by differences in the behavioral coefficients and in the self-selection bias of those who remit rather than by any observable characteristics. Funkhouser used data from the late 1980s from El Salvador and Nicaragua on both remittance-receiving households and migrants and a Tobit model with a two-stage Heckman selection to account for self-selection differences between households with migrants and households without migrants. The results showed that migrants who remitted were those with a lower unobserved ability to remit than that of those migrants who did not remit. This bias was larger in Nicaragua.

inferences from the available datasets. However, different motives can co-exist, which makes it difficult to single out any one motive for sending remittances. The lack of available data is another major limitation. Information on both migrants and remittance-receiving households is needed to provide the most accurate inferences, but in the case of the NCA countries, only information on remittance-receiving households was available. Thus, our goal has not been to exactly pinpoint the motives that drive remittances in each country but instead to characterize the possible motives that may co-exist. Some motives may be stronger than others, resulting in different patterns of remittances in each country. As theories provide predictions at both the macro and micro levels, our analysis is conducted within both a macroeconomic and a microeconomic framework.

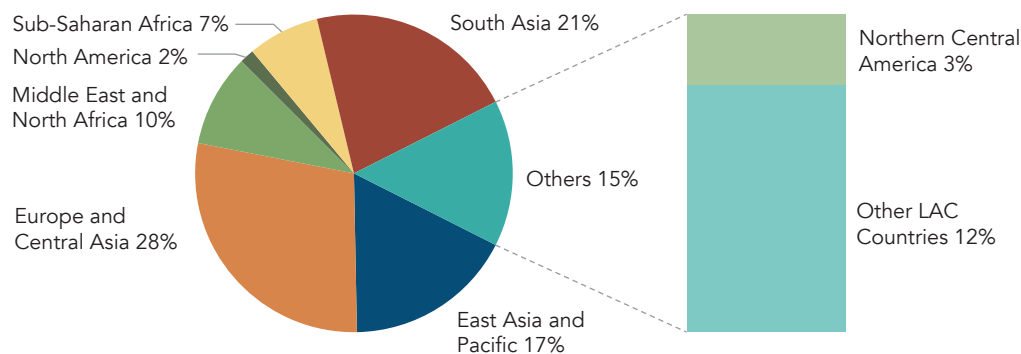
We conducted our macroeconomic analysis by exploring the cyclical of remittances, given that different motives predict different cyclical patterns of remittance flows. For the microeconomic analysis, we used household survey data to study how different household characteristics are associated with the likelihood of a household receiving remittances and the amount that they receive, given that different motives also predict different correlations between remittances and household characteristics.

Background

Migrants flow out. Remittances flow in. As of 2019, nearly 10 percent of the total population of the NCA countries had migrated abroad. In 2019, they remitted over \$21 billion back home, accounting for 17 percent of the NCA economy as measured by gross domestic product (GDP). Given this magnitude, remittances undoubtedly play a crucial role in shaping the economy of Northern Central America. In the form of personal transfers sent by migrants to their friends and families, remittances directly increase the income of remittance-receiving households. Whether the households use the money for consumption or investment, the first and direct effect of remittances is that they add aggregate demand to the economy. They may also affect the receiving countries in several other dimensions, including poverty, the labor market, and financial markets, which will be explored in Chapters 5 through 8. The large amounts of inflows also give the receiving countries an opportunity to accelerate their growth and development. Remittances play a larger role in the economy of Northern Central America than in the rest of the world. Also, in each of the NCA countries, remittance flows are significantly larger than other external financial flows such as exports or foreign direct investment.

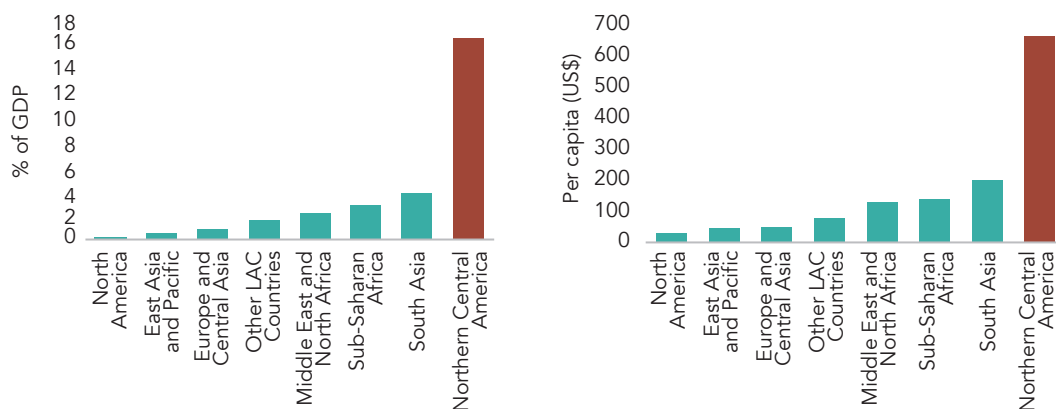
Remittances to Northern Central America exceeded \$21 billion in 2019, accounting for 3 percent of global remittances flows and constituting one-fifth of the total remittances received by all of the countries in Latin American and the Caribbean (Figure 4.1). The recorded amount of remittances received by the three countries also constituted nearly half of the amount received by all Sub-Saharan African countries and one-third of the amount received by the countries of the Middle East and North Africa. The actual amount of remittances, including unrecorded flows through formal and informal channels, is believed to be even larger.

Figure 4.1 Shares of Total Remittances by Region in 2019



Source: Annual remittances data, World Bank.

Figure 4.2 Remittances as a Percentage of GDP and Per Capita Remittances by Region, 2019

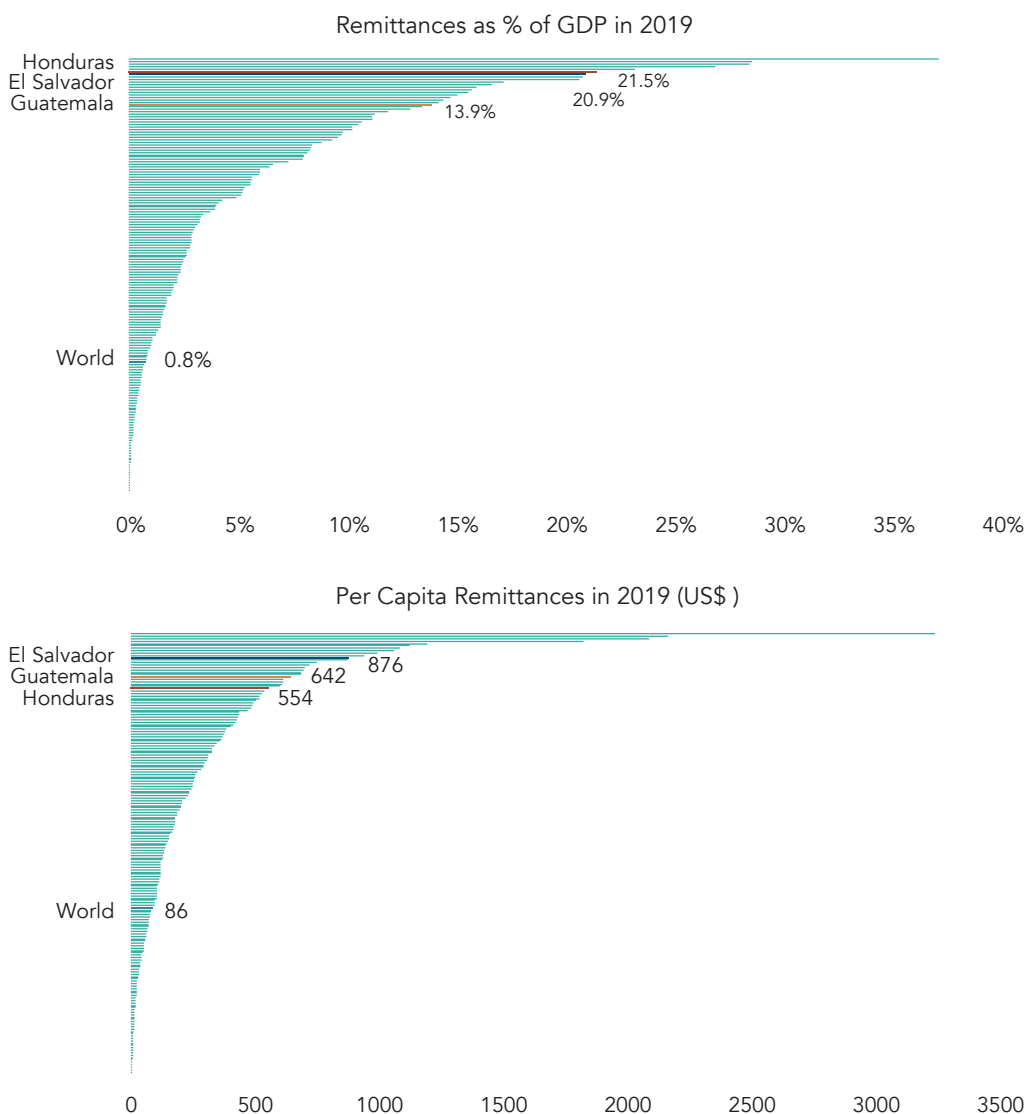


Source: World Bank's World Development Indicator and IMF's World Economic Outlook Database.

The magnitude of remittances in Northern Central America is more striking when the population and income levels of these three countries are considered. In 2019, remittances amounted to approximately 17 percent of the NCA economy as measured by GDP, a significantly higher percentage than the amounts received in other parts of the world, for example, 3.8 percent of GDP in South Asia and only 1.5 percent of GDP in the rest of Latin American and the Caribbean. The per capita level of remittances of \$662 per year in Northern Central America was high compared to its per capita GDP and much higher than regional averages for Sub-Saharan Africa (\$45) and Europe and Central Asia (\$202) (Figure 4.2).

Delving deeper into the numbers at the country level, remittances comprised 22 percent of GDP in Honduras, 21 percent in El Salvador, and 14 percent in Guatemala in 2019 compared to the world average of 0.8 percent (Figure 4.3). The three countries are among the top countries globally in terms of their reliance on remittances. Within the NCA region, annual per capita remittances are highest in El Salvador (\$876), followed by Guatemala (\$642), and Honduras (\$554). Even though Honduras has the lowest rate in Northern Central America, its level is still six times higher than the world average (\$86).

Figure 4.3 Remittances as a Percentage of GDP and Per Capita Remittances by Country

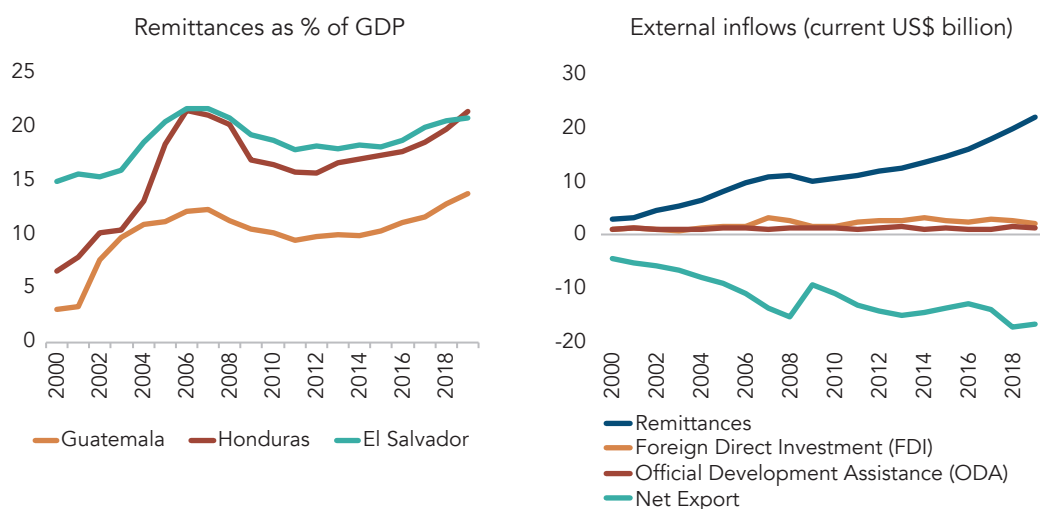


Source: World Bank's World Development Indicator and IMF's World Economic Outlook Database.

Remittance inflows into Northern Central America from migrants have increased substantially over the past two decades. Recorded remittances rose more than seven-fold between 2000 and 2019, from \$2.8 billion to an estimated of \$21.7 billion. This represents a remarkable average growth rate of 11.3 percent, or 8.1 percent per annum when measured in constant prices. Overall, remittance flows have maintained an upward trend except for a short downturn during the global financial crisis (Figure 4.4, right panel). As a percentage of GDP, remittances have increased more slowly: from 6.7 percent to 21.5 percent in Honduras, from 3.1 percent to 13.9 percent in Guatemala, and from 15.0 percent to 20.9 percent in El Salvador. Growth in remittances has been especially large in Honduras, in part because of its exponential growth in migration. In all three countries, but especially in Honduras, the financial crisis in 2008-09 decreased the contribution of remittances to GDP significantly (Figure 4.4, left panel).

Despite a weak recovery following the crisis, remittance flows have consistently dwarfed official development assistance (ODA) and foreign direct investment (FDI) as a source of capital inflows. In the past two decades, ODA to Northern Central America has remained roughly constant at around \$1 billion, while FDI gradually went up from \$0.8 billion in 2000 to almost \$1.9 billion in 2019. While the trade deficit of Northern Central America rose from \$4.5 billion in 2000 to \$16.7 billion in 2019 and FDI and ODA combined made up around \$3 billion in 2019, remittance flows have provided critical support to the current account balance in Northern Central America (Figure 4.4, right panel).

Figure 4.4 Trends in Remittances and Other External Inflows



Source: World Bank's World Development Indicator and IMF's World Economic Outlook Database.

This strong growth in remittances has been driven by an increase in the number of migrants, a change in how they send remittances from informal channels to formal channels, and the fact that migrants are earning higher wages and incomes abroad than before. The number of migrants from Northern Central America increased from 1.9 million in 2000 to 3.6 million in 2019.⁵⁹ In addition, because the average transaction cost of sending remittances has significantly declined, it is likely that more migrants have switched to using formal channels to send remittances home.⁶⁰ Finally, there is evidence that there is a positive selection into migration that may result in migrants earning higher wages than those who stay, as was discussed in Chapter 3.

Methodology

The literature suggests several potential motives that may lay behind the decision to remit. This chapter is based primarily on the theoretical framework proposed in Rapoport and Docquier (2006), which categorizes the motives into two broad groups – altruism and contractual agreements.

On the one hand, the hypothesis that migrants send remittances based on altruism assumes that migrants send remittances because they care about the well-being of their fellow household members in the receiving country. Strictly speaking, migrants obtain a positive utility from the well-being of the household members whom they have left behind, so this motive is not driven by any necessary reciprocity.

On the other hand, migrants may remit in response to a family contractual agreement that involves the household enabling the migrants to travel abroad so that they can remit money back home. In this case, remitting behavior is driven by incentives, bargaining power, and possible enforcement mechanisms such as entitlements to inheritance. This implicit contract is built on agreed expectations and may take different forms, most commonly either: (i) *exchange/investment* in which migrants send remittances in exchange for certain services from the receiving households such as taking care of their property or children or making investments on the migrants' behalf or (ii) *insurance* in which migrants send remittances to insure households against risks.

Clearly distinguishing between these motives is not straightforward as they cannot be observed directly from the data. In order to test the hypotheses regarding remitting behavior, it is necessary to rely on the predictions of different theoretical models by making inferences from the available data. The economic theoretical models underlying these hypotheses provide

59 UN International Migration Stock <https://www.un.org/development/desa/pd/content/international-migrant-stock>

60 Between 2011 and 2019, the average cost of sending \$200 to El Salvador, Guatemala, and Honduras declined from 4.7 to 3.6 percent, from 5.5 to 4.0 percent, and from 5.1 to 3.6 percent respectively according to World Bank, Remittance Prices Worldwide, available at remittanceprices.worldbank.org.

testable predictions both at the macro and micro levels. While both the macro and micro approaches have merits and limitations, combining macro and micro evidence can make it easier to determine whether remittances are motivated by altruism or contractual agreements. This double investigation can also yield insights into related factors, including the pattern and the direction of remittance flows at both the aggregate and household levels.

Macroeconomic Approach: Cyclicalities of Remittances

Individuals remitting for reasons of altruism or contractual agreements can be expected to be affected differently by economic conditions in both the sending and receiving countries. Table 4.1 summarizes the cyclical patterns of remittances if they are driven by these two different motives.

- First, under the altruistic view, migrants obtain positive utility from the wellbeing or consumption level of the family that they have left behind. Because of this, under the hypothesis of altruism, migrants would be expected to remit more during an economic downturn in the receiving country to support their family members who may face negative income shocks due to a contraction of economic activity or unemployment.⁶¹ In these circumstances, remittances can be expected to be counter-cyclical to the receiving country's GDP.
- Second, when remittances are driven by contractual arrangements in the form of investment motives, migrants are likely to allocate their savings optimally between possible portfolio choices in the sending and receiving countries.⁶² In this case, remittances can be expected to be pro-cyclical with the receiving country's GDP.
- Third, because it is more expensive to buy necessary services during an economic expansion, exchange motives imply that remittances can be expected to be pro-cyclical with the GDP of the receiving country.
- Lastly, a contractual agreement in the form of insurance suggests that remittances would be counter-cyclical to the receiving country's GDP because, in this situation, migrants are remitting to insure family members against risks that are more prevalent during an economic downturn.

The effect on remittances of economic conditions in a sending country can mostly be explained by the income effect of migrants. An economic expansion increases migrants' income, causing them to remit more money back home. This implies that remittances are pro-cyclical with the sending country's GDP.

⁶¹ Rapoport and Docquier (2006) and Niimi et al (2010)

⁶² Lartey, (2016).

Table 4.1

Motives and Macro Evidence

Hypothesis	Altruism	Contractual Arrangement	
		Exchange/Investment	Insurance
Receiving Country	Counter-cyclical	Pro-cyclical	Counter-cyclical
Sending Country	Pro-cyclical	Pro-cyclical	Pro-cyclical

The existing literature has yielded mixed findings about cyclicity. Sayan (2006) examined the relationship between remittances and the receiving country's GDP using cross-correlations in 12 developing countries – Bangladesh, India, Côte d'Ivoire, Lesotho, Pakistan, Senegal, Algeria, the Dominican Republic, Jamaica, Jordan, Morocco, and Turkey. The author observed no relationship in eight of the countries, a counter-cyclical pattern in two countries, and a pro-cyclical pattern in the remaining two countries. Vargas-Silva (2008) applied the vector autoregression analysis (VAR) approach to Mexican data and found that remittances responded more to US economic conditions and that Mexican economic conditions did not seem to have any significant effect. Gupta (2005) observed that the US business cycle had a significant and positive effect on remittances to India but that India's GDP had an insignificant and counter-cyclical effect on remittances. Similarly, Borja (2013) found a counter-cyclical relationship between remittances and the receiving country's GDP in El Salvador and the Dominican Republic, although the US economy seemed to play a larger role than either.

Building on these studies, in our own research, we first measured cyclicity as a co-movement between deviations from the trends in real remittances and in real GDP between 2000 and 2019 in each NCA country. Then, we used VAR analysis to examine how remitting behavior is affected by GDP shocks in the receiving country and in the sending country. Because VAR analysis addresses issues of endogeneity and collinearity, it provided us with a way to disentangle the co-movement in remittances and in the GDP of the receiving country that can be attributed to the synchronized business cycles of the NCA countries and the U.S., which is the main destination country for their migrants and is also their main trading partner. Our aim was not only to identify the motives behind remitting behavior in Northern Central America but also to discover whether remittances act as a shock absorber to stabilize economic fluctuations or amplify economic fluctuations in the receiving countries.

Cross-correlations

To see how remittances co-move with business cycles, we used the Hodrick-Prescott filter to obtain the cyclical component of real remittances, the real GDP of receiving countries, and the

real GDP of the top sending countries.⁶³ All of the countries in Northern Central America receive most of their remittances from the U.S. (92 percent for El Salvador, 92 percent for Guatemala, and 88 percent for Honduras in 2017).⁶⁴ The second largest source of remittances varies between the three countries, but, in each case, they contribute a significantly lower amount of remittances – Canada to El Salvador (3 percent of remittances), Mexico to Guatemala (3 percent of remittances), and Spain to Honduras (5 percent of remittances). Therefore, we omitted them from Figure 4.5. Interestingly, we found that remittances in all of the NCA countries were pro-cyclical with each country's business cycle, although before 2008, remittances often appeared to lead GDP (Figure 4.5). It can be seen in the figure that remittances to Northern Central America also co-moved with the business cycles in the U.S., the top sending country.

As is standard in the business cycle literature, we calculated the cyclical components as stationary with zero means, making it possible for us to calculate the cross-correlations between the cyclical components of remittances and GDP to identify the cyclical patterns of remittances. Table 4.2 presents cross-correlations between the cyclical components of remittances, of the GDP of the receiving countries, and the GDP of the top two sending countries. It shows remittances for a contemporaneous period and two periods of leads and lags, with the two highest correlation coefficients highlighted in bold. Consistent with Figure 4.5, it shows that remittances were pro-cyclical with the GDP of both the receiving and sending countries, except in the case of remittances from Mexico to Guatemala. In particular, remittances led and/or were synchronized with the GDP of all three receiving countries, while they were strongly synchronized with and lagged behind the GDP of the U.S.

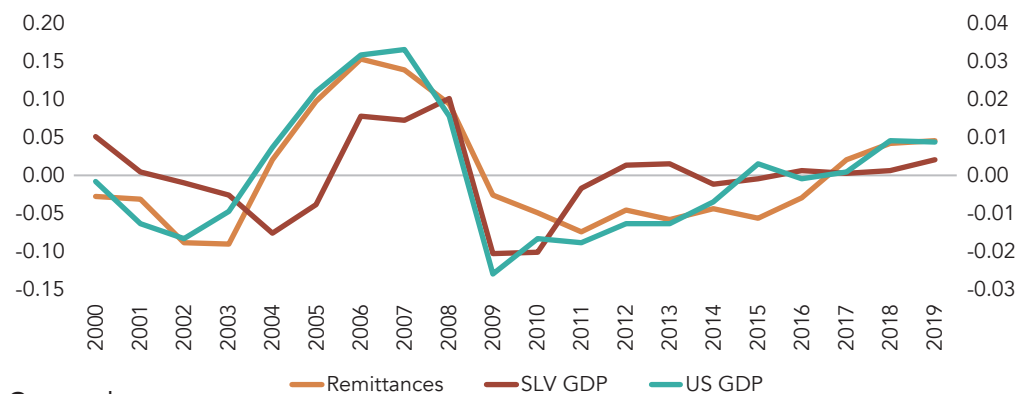
It is obvious from the analysis that migrants remitted more when they earned more. However, they did not increase their transfers during economic downturns in the receiving countries, and there may have been two possible reasons for this. First, the finding that migrants remitted more during economic expansions in the receiving countries may mean that motives of exchange and investment tended to prevail over altruism. Second, because the business cycles in the U.S. and the receiving countries appeared to be synchronized through other links such as exports and FDI, it is possible that insurance or altruistic motives existed but were outweighed by the effect of how much income the migrant made at any given time. In either case, remittances did not act as an economic stabilizer in Northern Central America. In fact, since remittances led output in the receiving countries, remittances may have been another spillover channel from the U.S. economy to the NCA economies.

63 The Hodrick-Prescott (HP) filter is used in real business cycle theory to remove the cyclical component of a time series from raw data. The cyclical component is obtained by subtracting the HP trend from the log data and normalizing this difference by dividing it by the trend value.

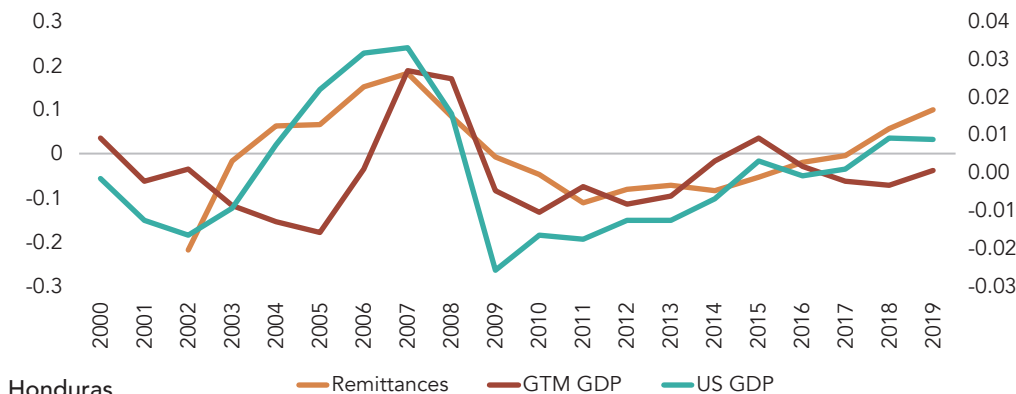
64 Data from the Migration Policy Institute. <https://www.migrationpolicy.org/programs/data-hub/charts/bilateral-remittance-flows>

Figure 4.5 Cyclicality in Remittances and GDP

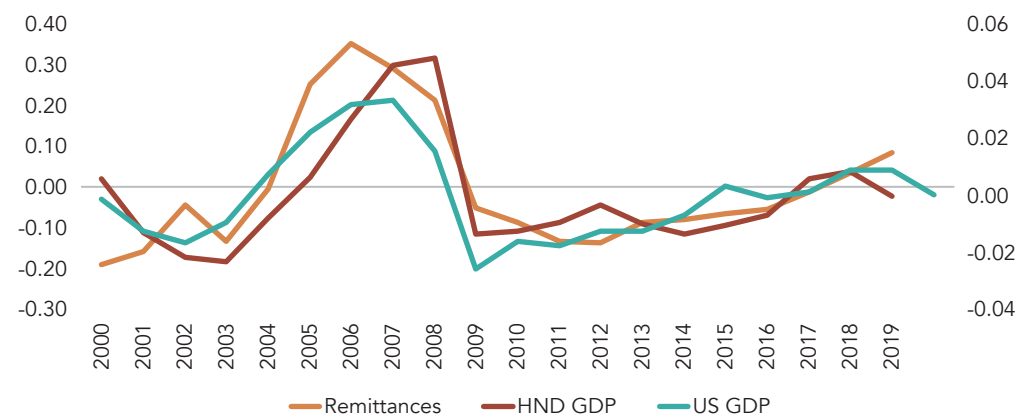
El Salvador



Guatemala



Honduras



Source: Own calculation from World Development Indicators, World Bank
 Note: Deviations from trend in logarithm: remittances (left axis) and GDP (right axis).

Table 4.2

Correlation between Remittances and the Business Cycle (2000-2019)

	Period	El Salvador			Guatemala			Honduras		
		GDP	US GDP	Canada GDP	GDP	US GDP	Mexico GDP	GDP	US GDP	Spain GDP
Remittances	t-2	0.14	0.06	0.42	0.39	0.04	-0.19	0.58*	0.16	0.67*
	t-1	0.48*	0.57*	0.72*	0.53*	0.56*	0.26	0.80*	0.60*	0.81*
	T	0.50*	0.91*	0.75*	0.33	0.84*	0.47	0.78*	0.87*	0.78*
	t+1	0.18	0.83*	0.42	0.05	0.76*	0.38	0.45	0.81*	0.52*
	t+2	-0.15	0.48*	-0.06	-0.31	0.45	0.09	0.01	0.49*	0.17

Source: Own tabulations based on GDP data.

Note: * Significant at the 5 percent level.

Box 4.1

Business Cycle Synchronization between the U.S. and Northern Central America

Strong international financial and trade links between the U.S. and the NCA countries partly explain the synchronization of business cycles and co-movements between two countries. Economic expansion in one country creates higher demand for export goods and investment in the other country, leading to economic expansion. Trade and capital flows are typical transmission channels for business cycles from one country to another, and remittances have become a growing financial link between countries, especially between Northern Central America and the U.S.

During the past decade, deeper trade integration between Northern Central America and the U.S. following the CAFTA-DR trade agreement in 2004 may have led to a higher degree of business cycle synchronization. Financial links are weak as FDI only accounts for 2 percent of GDP in El Salvador and Guatemala and 5 percent of GDP in Honduras. The table below reports the bilateral correlation between the cyclical component of the GDP of the NCA countries and that of the U.S. and its lagged value. The degree of business cycle synchronization with the U.S. seems to be strong in Honduras. Trade is the main transmission channel in Honduras, where exports account for 40 percent of GDP. Among the three countries, Guatemala has the lowest

Box 4.1 Continued

ratio of exports to GDP and the lowest ratio of exports to the U.S. to total exports. Guatemala also has a lower level of remittances as a share of GDP than the other two countries, which might explain why Guatemala's business cycle is less synchronized with that of the U.S. than those of the other two countries.

Synchronization of Business Cycles

	El Salvador	Guatemala	Honduras
Pairwise Correlation			
US GDP	0.59*	0.42	0.80*
US GDP (t-1)	0.59*	0.66*	0.83*
Share of exports to the US (2019)	0.42	0.32	0.36
Share of exports to GDP (2019)	0.30	0.18	0.40
Share of remittances from the US (2017)	0.92	0.92	0.88
Share of remittances to GDP (2019)	0.21	0.14	0.22

Source: Own tabulations based on 2000-2019 GDP data. Bilateral trade data from World Integrated Trade Solution. Bilateral remittances data from the Migration Policy Institute.

Note: *Significant at the 5 percent level.

Vector Autoregression Analysis

The synchronization of the business cycles of the NCA and U.S. economies made it difficult to draw a conclusion from our cross-correlations. Economic conditions in the U.S. may have affected both remittances and the NCA economies at the same time as remittances were affecting the receiving economy. Therefore, we took our research a stage further and applied the VAR method to seasonally adjusted quarterly data in order to address these issues, particularly to disentangle the effect that the GDP of the U.S. and the GDP of the receiving country had on remittances.⁶⁵ To this end, we adopted the following VAR model:

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + \varepsilon_t, \quad (1)$$

65 The VAR model treats all variables as endogenous, in other words, they influence each other equally. The model is structured such that each variable is a linear function of past lags of itself and past lags of the other variables. The VAR model is primarily used for forecasting and allows the test for Granger causality.

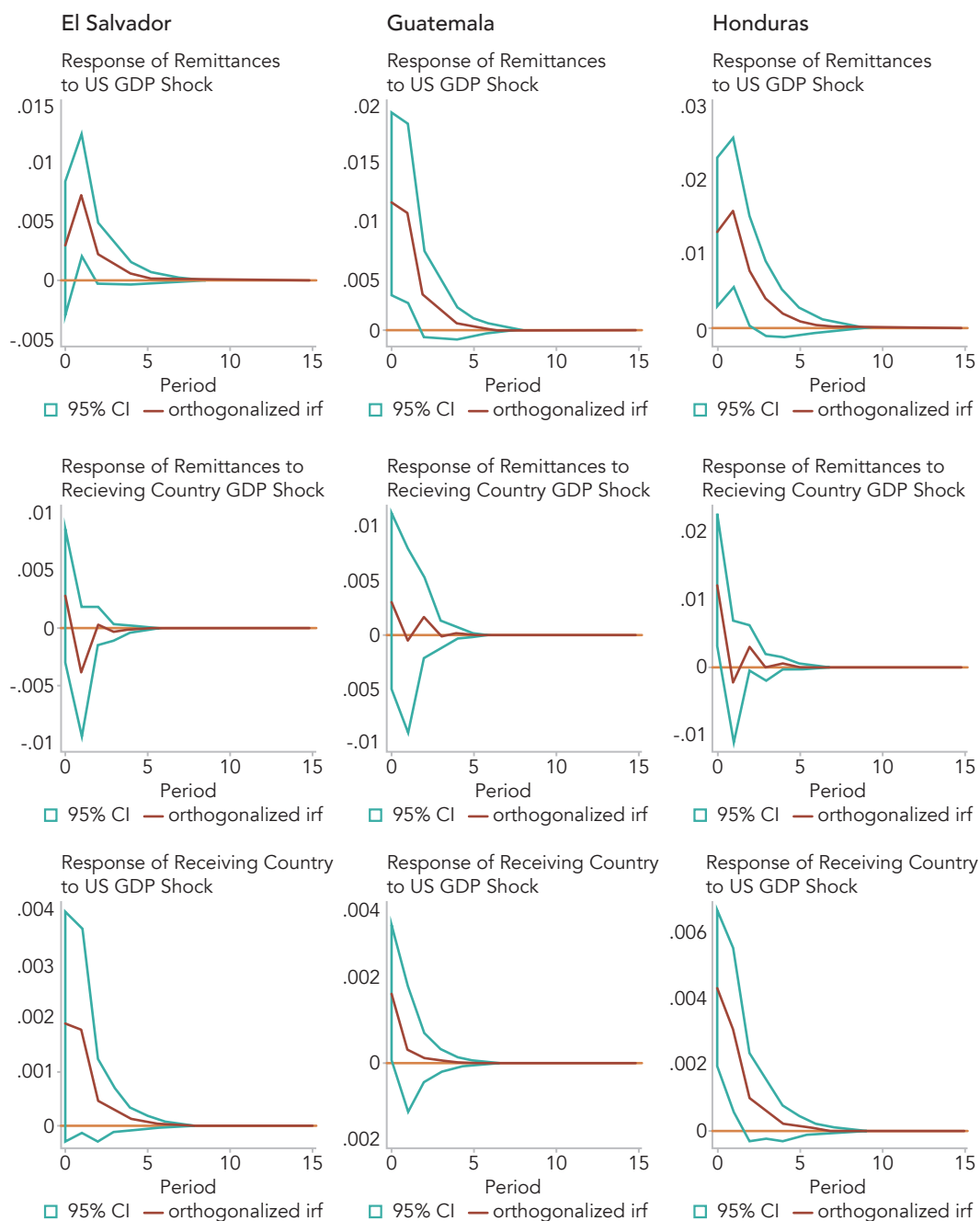
where was a vector of endogenous variables at a constant price detrended by log differencing, including the GDP of the U.S., the GDP of the receiving country, and remittances.⁶⁶ Because of differing data availability in the three NCA countries, the data series for each country spanned different time periods – from 1991 (Q1) to 2019 (Q4) for El Salvador, from 2003 (Q1) to 2019 (Q4) for Guatemala, and from 2004 (Q1) to 2019 (Q4) for Honduras.

Figure 4.6 shows the orthogonalized impulse responses to a one standard deviation positive shock to GDP. In other words, it models how remittances reacted over 15 quarters in response to a one standard deviation increase in the GDP either of the receiving country or of the sending country. Remittances reacted positively to a shock to the U.S. GDP, implying an income effect in the sending country, although the effect appears to have been weak for El Salvador (top panel). The degree of business cycle synchronization with the U.S. seems to have been strongest in Honduras. An increase in the U.S. GDP led to a contemporaneous increase in the GDP of Honduras but not of El Salvador and Guatemala (bottom panel). With orthogonalized impulse responses, this instantaneous impact could not only have been attributable to changes in remittances. Remittances responded differently to a GDP shock in the receiving country. In El Salvador and Guatemala, remittances were not affected by a shock to the income of the receiving country, whereas in Honduras, remittances rose when Honduran GDP increased.

Remittances undoubtedly have a positive relationship with the U.S. economy. In all three NCA countries, the exchange and investment motives seemed to prevail, and they appeared to be strongest in Honduras. Although our results suggest that the remitting behavior of migrants from Northern Central America was driven by exchange and investment motives, there is a possibility that the altruistic and insurance motives also existed but were outweighed by the other two motives. In the next section, we discuss how incentives that might not be observable from the macro perspective can be examined using micro-level data.

⁶⁶ We chose the optimal lag based on Akaike's information criterion (AIC). The optimal specification is VAR(1). The sequence of endogenous variables implies that a contemporaneous effect is allowed from the U.S. economy to the receiving economy and from both to remittances.

Figure 4.6 Orthogonalized Impulse Responses from the VAR Analysis



Microeconomic Approach: Observing Remittance-receiving Households

In the next phase of our research, we studied the motives involved in sending remittances from a microeconomic perspective, using data from latest household surveys in the three NCA countries: the 2019 Multi-purpose Household Survey (*Encuesta de Hogares de Propósitos Múltiples*) for El Salvador; the 2014 National Survey of Living Conditions (*Encuesta Nacional de Condiciones de Vida*) for Guatemala; and the 2019 Multi-purpose Household Survey (*Encuesta de Hogares de Propósitos Múltiples*) for Honduras. One compelling feature of the microeconomic approach is that each theoretical model of remitting behavior produces a number of key predictions that can be tested. Because no data were available on the migrants who send remittances, our analysis focused only on the model predictions regarding the characteristics of the remittance-receiving households. Although it was difficult to empirically distinguish between different motives as they may coexist and sometimes give the same prediction, we gained some important insights from observing the characteristics of remittance-receiving households. One significant caveat to using this approach is that we were unable to adjust for the income of migrants. Therefore, to the extent that lower-income households in the country of origin were associated with lower-income migrants in the country of destination, the probability of receiving remittances and their magnitude may have been negatively biased for low-income households and, thus, may not have fully reflected the motives behind remitting.

The altruistic model, in which migrants obtain a positive utility from the wellbeing of the members of the households to which they remit, predicts that the probability of receiving remittances and the amount received both increase with the income risks faced by and the economic needs of remittance-receiving households as proxied by their pre-remittance income and the number of their dependents.⁶⁷ Moreover, strong ties between migrants and households can increase the probability of receiving remittances. We believe that the indicators related to elderly-headed households and female-headed households captured the possibility that migrants were sending remittances to their parents and wives respectively.⁶⁸

The hypothesis of contractual agreements can be characterized according to different sub-motives. The exchange model predicts that remittances increase with the number of child dependents and take the form of service payments for childcare and child-related expenses. The hypothesis predicts that the amount remitted is proportional to the remittance-receiving household's pre-remittance income as a result of the household's bargaining power.⁶⁹ Thus, unlike altruism, the exchange motive may result in a positive correlation between pre-remittance income and the amount of remittances received.⁷⁰ The insurance model predicts

67 Rapoport and Docquier (2006).

68 de Brauw et al (2013).

69 This relationship follows from the participation constraint of the recipient household. Under the assumption of logarithm utility function, the minimum remittance transfer is a linear and increasing function of the household's pre-remittance income.

70 Rapoport and Docquier (2006).

that remittances increase with the income risks faced by both migrants and households. As a mutually advantageous way to diversify risk, households send migrants abroad to compensate for their lack of access to other insurance options, while migrants send substantial remittances back to their households to ensure that they will receive transfers back from the households when they face negative income shocks in their destination country. Table 4.3 summarizes the predicted sensitivity of remittances to different characteristics of remittance-receiving households for each underlying motive.⁷¹

Table 4.3

Predicted Relationship between Household Characteristics and Remittances

Characteristics of recipient households	Altruism		Contractual Arrangement			
			Exchange		Insurance	
	Probability	Size	Probability	Size	Probability	Size
Pre-remittance income	-	-	-	+/-	-	-
Child ratio	+	n/a	+	+	nda	nda
Elderly head	+	Nda	nda	nda	nda	nda
Female head	+	Nda	nda	nda	nda	nda
Income risks	nda	Nda	nda	nda	+	+

Notes: n/a: No prediction. nda: No direct effect.

Many empirical studies have studied remitting motives, but there is no consensus on which motives generally drive remitting behavior. This is partly due to the fact that migrants from different countries are usually driven by different motives. Moreover, it is not easy to distinguish one motive from the others as they sometimes have similar empirical predictions. The empirical literature at the microeconomic level has used household survey data to study the characteristics of migrants and of remittance-receiving households and how they are associated with migrants' remitting behavior, particularly the likelihood of remitting and the likely magnitude of remittances. In their pioneering work, Lucas and Stark (1985) argued that altruism alone was not sufficient to explain the motivations to remit to Botswana. Cox et al (1998) found that the amount of remittances received by households in Peru increased with the household's pre-remittance income, which contradicts a key prediction of altruism but is consistent with the exchange motives. Meanwhile, Aggarwal and Horowitz (2002) found evidence for Guyana that supported altruistic motives, while Anwar and Mughal (2012) showed that altruistic motives were stronger than other motives in Pakistan. De la Briere et al (2002) found the co-existence of insurance and exchange/investment motives in the Dominican Republic, where insurance motives tended to be found among female migrants.

⁷¹ See Annex 1 for the theoretical framework.

We used two empirical models to distinguish the different motives behind remitting behavior: (i) a logistic model to predict the probability of receiving remittances and (ii) a linear model that identifies the determinants of the amount of remittances sent. Specifically,

$$P(\text{Remittance – receiving Household}_i = 1|X_i) = \exp(\beta_0 + \beta_1 X_i + \varepsilon_i), \quad (2)$$

and

$$\ln(\text{Remittance amount}) = \beta_0 + \beta_1 X_i + \varepsilon_i, \quad (3)$$

where X_i included the predicting characteristics and other control variables. The predicting characteristics were the log of pre-remittance income, child ratio, elderly household head, female head, and income risks proxied by types of employment. Other controls included wealth, the number of household members, the number of migrants, adults' average number of years of education, urban area, and a regional fixed effect.⁷² Wealth and adults' average number of years of education have various implications. Wealth can be a result of cumulative flows of remittances in the past or can act as an enforcement device in the form of inheritance that supports a contractual agreement. Adults' average number of years of education can be a proxy for the potential labor income of remittance-receiving households or can be an indicator of migrants' human capital.

The conventional approach in the literature models remittances (Equation 2 and 3) separately from migration. A weakness of this approach is that it assumes that migration and remittances are uncorrelated. Because remittances can be the result of a mutual agreement between the migrant and the remittance-receiving household, the migration process generates a non-random sample of individuals for observing remittances. Therefore, it is preferable to treat migration as a selection mechanism in a model of remitting behavior. Garip (2012) used this approach to study the determinants of remitting behavior in internal migration in Thailand. For this type of analysis, data are needed on the characteristics of both migrants and remittance-receiving households.

However, we opted to take the conventional approach and model remittances separately from migration for two reasons. First, the selection model assumes that the decision to migrate and to remit is made jointly by the migrants and their households of origin and that remittances are received only if the individual chooses to migrate. However, there is a large discrepancy between households who report having migrants abroad and remittance-receiving households. Figure 4.7 shows that, in the household survey data, a significant number of households reported receiving remittances but also reported that they had no household member

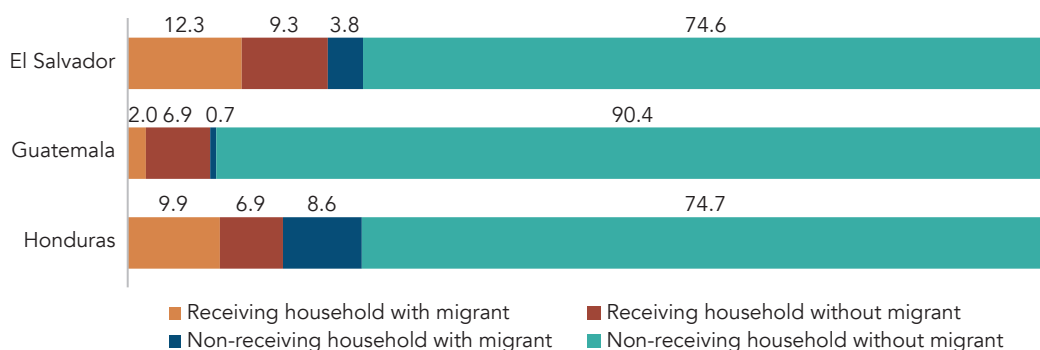
72 We constructed the wealth index using principal component analysis including the number of rooms in the house per adult, the quality of the housing materials, and access to water, electricity, sanitation, a phone, the internet, a refrigerator, a washing machine, a television, a computer, and a vehicle.

living abroad. This was particularly the case in Guatemala where most remittance-receiving households reported that they had no household member living abroad (7 percent out of 9 percent). Therefore, this goes against the assumption on which the selection model is based, which is that all remittance-receiving households have members who are migrants. The second reason why we chose to take the conventional approach was because having information on the characteristics of migrants is necessary to make a good selection prediction. However, the household survey data in Northern Central America only cover the characteristics of remittance-receiving households but not the characteristics of migrants. With this data limitation, we decided to adopt the simple approach with caveats. Nevertheless, to complement the analysis on remittances, we also used the following logistic model to observe the characteristics of households who were more likely to report having at least one member living abroad:

$$P(\text{Having Migrants}_i = 1|X_i) = \exp(\beta_0 + \beta_1 X_i + \varepsilon_i), \quad (4)$$

where X_i included the same predicting and control variables as in (2) and (3) except for the number of migrants.

Figure 4.7 Percentage of NCA Households by Migrant and Remittance Status



Source: SEDLAC database (CEDLAS and the World Bank) and the 2019 EHPM for El Salvador, the 2014 ENCV for Guatemala, and the 2019 EHPM for Honduras.

Table 4.4 presents our estimation results. Altruism can be singled out from other remitting motives by looking at the specific prediction on pre-remittance income. Under altruism, pre-remittance income should be negatively correlated with the probability of receiving remittances and of receiving large amounts of remittances. In all three countries, households with low pre-remittance income were more likely to have migrants and receive remittances than households with high pre-remittance income. However, only in El Salvador was the amount of remittances negatively correlated with pre-remittance income. The coefficients of pre-remittance income suggest that, while altruistic motives may have co-existed with contractual motives in El

Salvador, they did not appear to be a significant driver in the case of remittances in Guatemala and Honduras.⁷³

Our results seem to support the prediction of exchange motives in Guatemala. In other words, the amount of remittances sent increased with the number of services provided by the remittance-receiving households and with their opportunity costs. In particular, households with more children tended to receive remittances, and an increase in the number of children per household increased the amount of remittances. The fact that households with an elderly head (who, in many cases, may be the parent of the migrant) and households with a female head (who, in many cases, may be the spouse of the migrant) were more likely to receive remittances all three countries suggests that we cannot completely rule out altruistic motives in Northern Central America.

With respect to the correlation between receiving remittances and income risks, households in which the head was a wage worker were less likely to send migrants or receive remittances. In El Salvador and Guatemala, they also received a lower amount of remittances than other groups. This is not surprising as these households face tend to less income uncertainty. Households with a self-employed head received slightly fewer remittances than households with an unemployed head in El Salvador and Guatemala. Interestingly, in El Salvador and Honduras, households with heads who were employed were as likely to receive remittances as those whose heads were unemployed. Also, in all three countries, the amount of remittances that employer-headed households received was as high as the amount sent to unemployed-headed households. One explanation may be that these households were mostly headed by farmers or employers in agriculture who face risks that are particularly high and uninsured. It may also suggest that remittances were used to fund small businesses.

Wealthy households were more likely to have migrants and receive remittances than poorer households. The amount of remittances also increased as wealth increases. There are two possible explanations for this. First, households may have accumulated wealth from previous persistent flows of remittances, meaning that they were wealthy as a result of receiving remittances. Second, migrants may send increasing amounts of remittances to ensure their entitlement to their inheritance when they return home. Remittance-receiving households may have used the migrant's inheritance as a way to enforce the contractual agreement. In this case, their wealth was the reason why they were receiving large amounts of remittances. It is not clear which of these factors may have driven this positive correlation.

73 According to the USAID Field Report No. 19: Assessment of Remittances in Honduras: The Role of Remittances Along the *Corredor Seco*, the focus group discussion suggested that decisions on the use of household income are made based on an agreement between the migrant and the receiver. Usually, remittances are used to cover basic household needs. In special cases, a percentage goes toward housing and buying land or farms for cultivating coffee.

The relationship between the average number of years of education of adult household members and the likelihood of that household receiving remittances has an inverted-U shape. The likelihood starts decreasing when, on average, household members have obtained a primary education. The average year of education proxies the earnings potential of remittance-receiving households. It can also be a good proxy for the migrant's education level. Migrants from well-educated households tend to be well-educated themselves and vice versa. The average number of years of education may have also acted as a control variable for migrants' earnings ability. Migrants are more likely to remit when they have higher earnings potential and are less likely to remit when their households of origin have high earnings potential. This is true under the altruistic hypothesis. It is a convincing theory that an inverted U-shaped relationship between the average numbers of years of education of adult members and the likelihood of receiving remittances was simply the result of two opposing forces (see Figure 4.8). The fact that the probability of sending migrants was not positively correlated with the average number of years of education suggests that this result was driven not by the ability to send migrants abroad or the selection problem but rather by the decision taken by those who had already migrated to remit.

Thus, the pattern of remittance flows to households with different pre-remittance income levels suggests that migrants seemed to remit partly for altruistic reasons in El Salvador. In Guatemala, migrants remitted to households with higher numbers of children, and the amount also increased with the number of services required to take care of children as is predicted by the exchange motives. Nevertheless, we cannot rule out altruistic motives in Guatemala and Honduras as remittances tended to flow to households headed by females or elderly members, who were highly likely to be the spouse or the parent of migrants. This fits with the story of partial household migration whereby the spouse or the child with the highest earning potential migrates to an area where higher wages are paid and remits back to the household. The insurance motive seems to have prevailed in all three countries, according to which remittances flow to households whose main source of income is very uncertain.

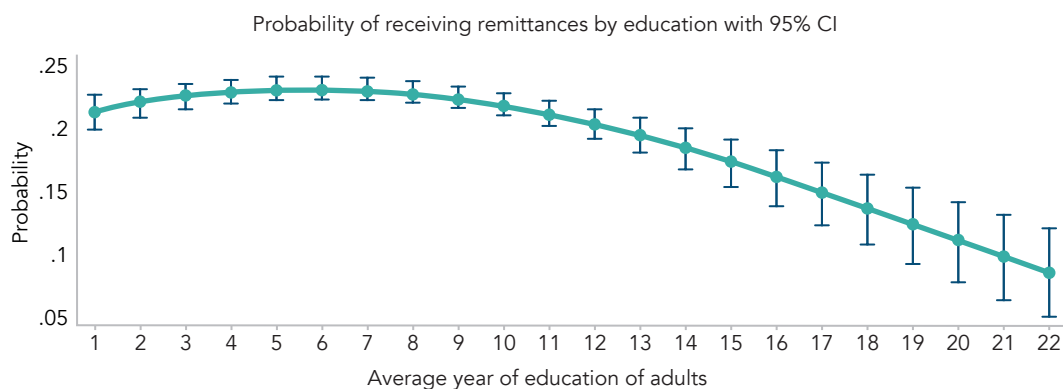
Table 4.4

Remittances, Migration, and Recipient Households

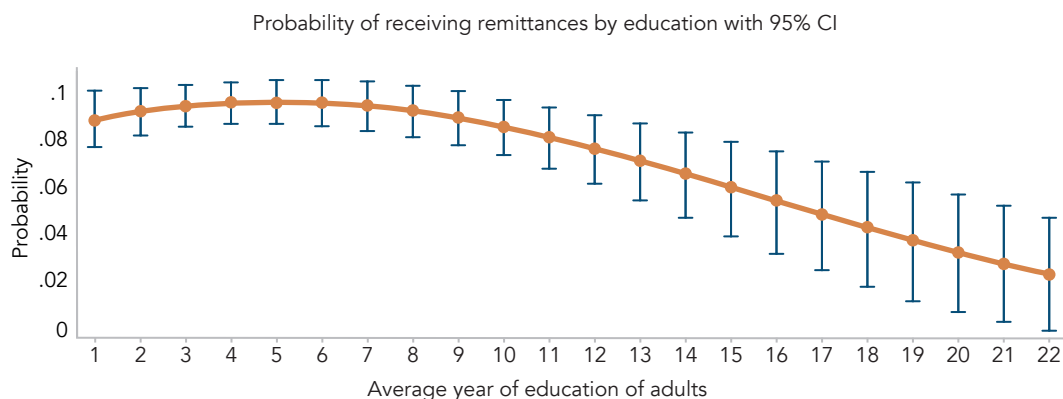
	Remittances						Migration	
	El Salvador		Guatemala		Honduras		El Salvador	Honduras
	Logit	OLS	Logit	OLS	Logit	OLS	Logit	Logit
Income and Wealth								
Log (Pre-remittance Income)	-1.092*** (0.0581)	-0.178*** (0.0182)	-0.748*** (0.0855)	-0.0507 (0.0319)	-0.219*** (0.0765)	-0.0398 (0.0499)	-0.764*** (0.0472)	-0.472*** (0.110)
Dependency								
Child Ratio (<=16 years old)	0.0479 (0.340)	0.364** (0.160)	1.672*** (0.472)	0.853*** (0.295)	3.146*** (0.569)	-0.109 (0.388)	0.137 (0.369)	4.034*** (0.906)
Elderly Head (=>60 years old)	0.0768 (0.0766)	0.00365 (0.0328)	0.386*** (0.140)	-0.0364 (0.0841)	0.354** (0.143)	-0.0627 (0.0888)	0.561*** (0.0750)	0.343 (0.235)
Female Head	0.318*** (0.0727)	0.0352 (0.0347)	0.751*** (0.116)	0.0768 (0.0891)	0.401*** (0.118)	0.173** (0.0859)	0.497*** (0.0681)	1.191*** (0.171)
Income Risks (Base: Head is unemployed or has no salary)								
Head is Employer	0.00298 (0.153)	-0.160 (0.114)	-0.564** (0.264)	-0.0215 (0.180)	-0.0325 (0.195)	0.0546 (0.143)	0.250* (0.134)	-0.178 (0.401)
Head is Salary Worker	-0.304*** (0.0966)	-0.285*** (0.0476)	-0.439*** (0.156)	-0.322*** (0.105)	-0.306* (0.168)	-0.117 (0.128)	-0.598*** (0.100)	-0.870*** (0.274)
Head is Self-employed	-0.301*** (0.0834)	-0.187*** (0.0360)	-0.193 (0.135)	-0.188** (0.0859)	-0.0579 (0.155)	-0.143 (0.0982)	-0.294*** (0.0782)	-0.106 (0.194)
Other Controls								
Wealth Index	0.569*** (0.0333)	0.214*** (0.0164)	0.719*** (0.0547)	0.322*** (0.0406)	0.291*** (0.0658)	0.301*** (0.0476)	0.776*** (0.0292)	0.618*** (0.0544)
Average Years of Education (Working Adult >20 years old)	0.0963*** (0.0244)	-0.00307 (0.0117)	0.0697* (0.0416)	0.00173 (0.0269)	0.109** (0.0513)	-0.00892 (0.0322)	-0.0198 (0.0237)	0.0250 (0.0646)
Average Years of Education -^2 (Working Adult >20 years old)	-0.00808*** (0.00165)	0.00142 (0.000875)	-0.00692** (0.00290)	0.000654 (0.00192)	-0.00739** (0.00305)	0.00240 (0.00199)	-0.00110 (0.00163)	-0.0118** (0.00506)
Number of Observations	21,221	5,135	11,455	1,100	5,367	793	21,221	11,455
R-sq/ pseudo R-sq	0.3764	0.239	0.2349	0.229	0.264	0.200	0.2124	0.2257

Notes: Standard errors in parenthesis. Significance level * p<0.10, **p<0.05, ***p<0.01. Other controls included the number of household members, the number of migrants, a regional fixed effect, and a dummy for urban areas.

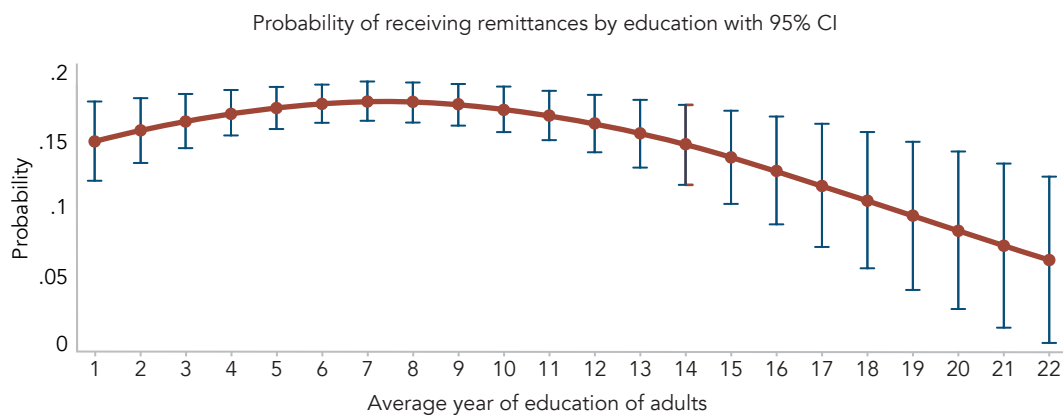
Figure 4.8 Probability of Receiving Remittances by Adults' Average Number of Years of Education



Guatemala



Honduras



Note: The average predicted probability conditional on adults' average number of years of education.

Findings

To summarize our findings at the macroeconomic level, we found that, in all three countries, especially Honduras, exchange and investment motives seemed to be a stronger force than altruistic motives in driving the remitting behavior of migrants from Northern Central America. In El Salvador and Guatemala, remittances were not statistically affected by a shock to the income of the receiving country. In Honduras, remittances rose when Honduran GDP increased. However, there is a possibility that the altruistic and insurance motives also existed but were outweighed by the other two motives.

To investigate any different incentives that might not have been observable from the macro perspective, we studied the motives behind sending remittances from a microeconomic perspective, using data from household surveys in the three NCA countries. Our results seem to support the prediction of altruistic motives in El Salvador and exchange motives in Guatemala. In El Salvador the amount of remittances decreased with households' pre-remittance income, while in Guatemala, the amount of remittances increased with the number of services provided by the remittance-receiving households and with their opportunity costs. Lastly, the insurance motive seemed to prevail in all three countries, in that remittances flowed to households whose main source of income was very uncertain.

Conclusion

So why do migrants remit? The macro and the micro evidence suggests that, while altruistic motives may drive remittance flows in El Salvador, it is the exchange or investment motives that prevail in Guatemala and Honduras. Our VAR analysis showed that remittance inflows increased when there had been a positive shock to the Honduran GDP. The microeconomic analysis showed that the poor in El Salvador received more remittance transfers than poor households in Guatemala and Honduras. The microeconomic analysis further supported the existence of the insurance motive, as households with high income uncertainty tend to receive remittances in larger amounts than other households in all NCA countries. However, we did not observe any manifestation of the insurance motive at the macroeconomic level where remittances were pro-cyclical in all three countries. This was mainly due to the synchronization of the business cycles in Northern Central America and in the U.S., the main country from which remittances are sent to the region. In other words, households may be insuring against local shocks by enabling their members to migrate the U.S., but they are not insuring against macro-level shocks in the receiving country. In fact, remittances are one way in which shocks from the United States are transmitted to Northern Central America.

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Annex 4.1

Theory

Rapoport and Docquier (2006) presented a simple theoretical model to explain migrants' decisions to remit. They considered two decision units: one migrant (m) and one recipient household (h), which can consist of one or more individuals. Utility was denoted by U , pre-remittance income by I , consumption by C , and T was the amount of remittances from m to h .

Altruistic Motives

An altruistic migrant derives utility from his or her own consumption and the utility of a remittance-receiving household. The utility function of an altruistic migrant is:

$$U^m(C^m, C^h) = (1 - \gamma^m)u(I^m - T) + \gamma^m u(I^h + T),$$

where $u(c) = \ln(c)$ is a logarithm-form felicity function characterizing the utility of each individual of consuming c at any given point in time and γ^m denotes the migrant's degree of altruism.⁷⁴ The maximization problem gives the optimal remittance transfer:

$$T^* = \max\{\gamma^m I^m - (1 - \gamma^m)I^h, 0\}$$

That is, the amount of an altruistic transfer and the likelihood that it is greater than 0 increase with the migrant's income and degree of altruism and decrease with the remittance-receiving household's pre-remittance income. The testable predictions of altruistic motives are: (i) households with less income are more likely to receive remittances and (ii) remittances cannot increase with the remittance-receiving household's pre-remittance income.

Exchange Motives

Remittances can be used by migrants to buy different services from remittance-receiving households such as taking care of their assets, children, or elderly parents at home. Such motivations are generally the sign of a temporary migration and that the migrant intends to return. When serving the purpose of buying services, the amount of remittances must lie between the market price for such services and the opportunity cost of the remittance-receiving household. A non-altruistic migrant buys a fixed quantity of service X . The utility function of both the migrant and the remittance-receiving household depends not only on consumption but also on the quantity of service $u(C, X)$, where the migrant's utility increases with X and the remittance-receiving household's utility decreases with X .

74 The logarithmic felicity function is imposed here for simplicity. The predictions in this annex are robust to any increasing and concave felicity function.

Assume that the surplus is appropriated by the migrant who transfers the minimal compensation required for the service to be provided. The remittance-receiving household would accept remittances and provide the service if:

$$u(I^h + T, X) \geq u(I^h, 0).$$

The maximization problem subject to the participation constraint gives the optimal remittance transfer that satisfies the following condition:

$$\frac{\partial T^*}{\partial X} = - \frac{\frac{\partial u(I^h + T, X)}{\partial X}}{\frac{\partial u(I^h + T, X)}{\partial C^h}} > 0; \quad \frac{\partial T^*}{\partial I^h} = \frac{\frac{\partial u(I^h + T, X)}{\partial C^h} - \frac{\partial u(I^h, 0)}{\partial C^h}}{\frac{\partial u(I^h + T, X)}{\partial C^h}} < 0;$$

The amount of remittances increases with the quantity of services provided, and if consumption and services enter the utility function independently, the amount of remittances increases with the remittance-receiving household's pre-remittance income. For example, if the utility function takes an additive logarithm form $u(C^h, X) = \ln(C^h) + \ln(a - X)$, the optimal amount of remittances transferred is $T^* = \frac{X}{a - X} I^h$, strictly increasing in I^h . In contrast with the altruistic model, an increase in the remittance-receiving household's pre-remittance income may raise the amount transferred, and a negative correlation between the amount of remittances transferred and the likelihood of receiving remittances could be the sign of exchange motives.

Insurance Motives

Suppose that a household with two members lives through two periods. Each member receives a certain wage I_0 in the first period and a random wage of $\bar{I}_1$ in a good state with probability p and in a bad state with probability $1 - p$ in the second period. Each member's expected utility is:

$$E[U] = u(I_0) + pu(\bar{I}_1) + (1 - p)u(\underline{I}_1).$$

Migration allows the two family members to earn a certain wage in the second period I_m but incurs a fixed migration cost of c . Assume that $2I_0 > c > I_0$, so no individual member is able to finance the cost of migration alone. Migration requires a family agreement to share migration costs that specifies the amount to be remitted in the bad state and in good state. The expected utility of the migrant and the remittance-receiving household member can be characterized by:

$$E[U^m] = u(I_0 - \theta c) + pu(I_m - \bar{T}) + (1 - p)u(I_m - \underline{T}),$$

$$E[U^h] = u(I_0 - (1 - \theta)c) + pu(\bar{I}_1 + \bar{T}) + (1 - p)u(\underline{I}_1 + \underline{T})$$

respectively, where θ is migration cost sharing, $\bar{T}$ is a remittance transfer in the good state, and $\underline{T}$ is a remittance transfer in the bad state. All are chosen optimally by two household members through a bargaining process. That is, θ , $\bar{T}$ and $\underline{T}$ are chosen to maximize:

$$E[U^m] + \lambda(E[U^h] - E[U]),$$

where λ is the bargaining power of the household member who stays. By assuming a logarithm felicity function, the maximization problem yields:

$$\bar{T}^* = \frac{\lambda I_m - \bar{I}_1}{\lambda + 1} \text{ and } \underline{T}^* = \frac{\lambda I_m - \underline{I}_1}{\lambda + 1}.$$

Insurance motives predict that remittances decrease with pre-remittance income. This prediction is similar to that of altruistic motives. Assume further equal bargaining power between two household members ($\lambda=1$) and a migration wage being a certain amount of an expected wage ($I_m = p\bar{I}_1 + (1-p)\underline{I}_1$), $\bar{T}^* = \frac{(1-p)(\underline{I}_1 - \bar{I}_1)}{2}$ and $\underline{T}^* = \frac{p(\bar{I}_1 - \underline{I}_1)}{2}$. Remittance transfers only occur during the bad state, and the amount increases with the riskiness of the remittance-receiving household's income.

5 Remittances and their Effects on Poverty and Inequality

Kinnon Scott and Jorge Soler-Lopez

Introduction

The sheer magnitude of remittance flows to the three countries in Northern Central America (NCA) would suggest that they must play a significant role in reducing poverty. However, the links between migration, remittances, and poverty and inequality are complex, making it difficult to determine the effects *a priori*. Migration and remittances affect poverty through the loss of workers and their labor from the household, whether they worked in the home or were employed outside the home. The loss of their earnings is a direct cost to the household, while the loss of their time spent on household activities transfers the burden onto others in the household or increases the household's monetary costs, for example, if they need to pay for childcare. However, while the household loses the migrant's income and labor, it no longer must expend resources to meet that individual's needs, for example, for food or clothing. Sometimes the net effect can be positive, for example, if unemployed individuals migrate, or negative if productive workers leave. Given the positive selection into migration as discussed in Chapter 3, the outflow of workers from the NCA region reduces the skills and experience of the remaining pool of workers. Depending on the distribution of the migration and on subsequent remittance flows, this could result in an increase in poverty in these countries.

Remittances, of course, can compensate for the income losses associated with migration. To the extent that the remittances sent to a receiving household are greater than the migrant's original income minus his or her consumption, then the household in the country of origin will be better off. If these households are poor households, then the flow of remittances may lower the headcount rate of poverty or even the poverty gap. The effects of remittances can be seen

at the extensive margin (the overall share of receiving households among the population) and the intensive margin (how much each household receives). Both margins determine the extent to which remittances change households' income and poverty. The impact of remittances on poverty varies from country to country, and, even within any given country, it will vary over time.

In this chapter, we explore the evolution of the relationships between migration, remittances, and poverty and inequality in the NCA countries. We start by describing what is known so far about this relationship using data from each country's household survey – the EHPM (*Encuesta de Hogares de Propósitos Múltiples*) for El Salvador, the ENCOVI (*Encuesta Nacional de Condiciones de Vida*) for Guatemala, and the EHPM (*Encuesta Permanente de Hogares de Propósitos Múltiples*) for Honduras. To account for endogeneity concerns, we then generate two counterfactual scenarios for four different points in time spanning 20 years to estimate the impact of remittances on poverty.⁷⁵ The strong growth in remittances sent to the NCA region up until the global financial crisis of 2008 suggest that they played an important role in terms of reducing poverty. However, it is not clear how the subsequent drop in remittances after the global financial crisis affected poverty levels. On the one hand, if remittances to poorer households continued to be sent at the same rate while richer households bore the brunt of the reduction, then the effect of remittances on poverty might have stayed the same as before the crisis. If, on the other hand, the migrants from poorer households, those with the lowest skills, were particularly hard hit by the contraction of the developed economies, then the reduction in remittances may have had a serious negative impact on household welfare in the NCA countries. Also, from 2014 to 2019, the Latin America and the Caribbean (LAC) region experienced its lowest economic growth for 70 years.⁷⁶ However, it was also a period when there was a significant reduction in poverty in one of the NCA countries, El Salvador. We track how the role played by remittances in reducing poverty has evolved in El Salvador and in the other two NCA countries where poverty levels have changed little in 20 years.⁷⁷

Background

There is growing evidence of the important role played by remittances in reducing poverty and inequality. Previous research has shown a positive correlation between remittances and poverty reduction⁷⁸ as well as a small narrowing of inequality.⁷⁹ In the LAC context, most research has

75 Because Guatemala has not carried out a household survey since 2014, much of the analysis for that country ends in 2014. Wherever possible, we have used extrapolations and data from the 2018 Population and Housing Census to provide insights into what may have happened since 2014.

76 ECLAC (2020)

77 Remittances can also affect poverty through macroeconomic channels such as the exchange rate and the balance of payments. High levels of remittances can cause the local currency to appreciate, which can make exports less competitive in ways that are reminiscent of Dutch Disease or the Resource Boom model (Amuedo-Dorantes and Pozo, 2004). This in turn can translate into lower salaries and less foreign investment, and these negative effects on incomes and employment can increase poverty and, possibly, inequality. However, this chapter focuses on the household-level effects of remittances.

78 Adams and Page, (2005), Yang and Martinez (2006), Gupta et al (2007), Gubert et al (2010), UNCTAD (2011), Vacaflares (2018), and Ekanayake and Moslares (2020).

79 Barham and Boucher (1998).

agreed that remittances are an important driver of poverty reduction, with the magnitude of the reduction being proportional to the country's level of remittances and migration. For the NCA countries, migration and remittances are topics of critical importance as poverty continues to affect a large share of the population, remittance flows are substantial, and there were significant changes in migration and remittances patterns during the 2008 global financial crisis (see Chapter 2).⁸⁰

There is a body of research that has concentrated on quantifying the effect of remittances in poverty and inequality using micro and macroeconomic methods. Acosta et al (2008) analyzed the effect of remittances in several Latin American countries using a mix of macro data and household surveys from the early 2000s. They found that remittances generally have a positive effect in terms of reducing poverty but that this effect tends to be small. The authors found that remittances were associated with lower poverty levels in all three NCA countries (in 2000 in Guatemala and El Salvador and in 2002 in Honduras), which, along with Mexico, had the largest reductions in poverty among the 10 countries being studied. In fact, the impact on overall poverty was greatest in those countries where remittances as a share of GDP were highest. Even in countries where remittances were received mainly by households in the middle or upper tail of the income distribution, the authors found a link between poverty reduction and remittances when the remittances were large enough.

Using pooled data at the country level, Vacaflares (2018) showed that the findings of Acosta et al (2008) held true for 13 countries in Latin America between 2000 and 2013. The authors' results indicated that remittances had decreased extreme and total poverty. They also found that remittances had reduced inequality according to several measures including the Gini coefficient and the relative income of the lowest earners. Ekanayake and Moslares (2020) used a similar macroeconomic approach for a total of 21 Latin American countries between 1980 and 2018. They also controlled for several country-wide variables such as institutional quality. As with the previous studies, their results indicated that remittances had reduced extreme poverty defined as living under the \$1.90 international poverty line (IPL).

These important studies based on macroeconomic data shed light on the importance of remittances for reducing poverty in recent years. However, all recent literature using microeconomic data has either focused on other regions of the world or has only focused on individual countries. To partially fill this gap, we used the latest available microeconomic data to explore the relationship between migration, remittances, and poverty and equity in the NCA region. This research contributes to the literature in two ways. First, we have been able to look not just at how migration, remittances, and monetary poverty are linked at a given time but also at how this link changes over time and in the face of shocks in the host countries. By carrying out the study in three, somewhat similar, countries, we were able to show how

⁸⁰ The more recent changes brought about by the COVID-19 pandemic are discussed in Chapter 9 as the comparable household survey data used in this chapter do not cover that period.

heterogeneous the effects on poverty can be. Second, our research extended the Acosta et al (2008) methodology by looking at how the impact of remittances on poverty differs when household composition is taken into account.

We start this discussion by describing the evolution of the trends using surveys covering the past two decades in the three NCA countries. Second, we generate two counterfactual scenarios to estimate the impact of remittances on poverty and inequality and summarize how this relationship has evolved over time. Finally, we offer some concluding remarks based on these results and discuss possible areas for future research in the area.

Poverty and Inequality in Northern Central America: Lagging Behind the Rest of Latin America and the Caribbean

Poverty

The incidence of poverty in the NCA region is greater than in the rest of LAC. In 2019, of the 33 million people who lived in the three NCA countries, 13.4 million were classified as living in poverty, or more specifically, living below the upper-middle-income poverty line (UMIC-PL) of \$5.50 2011 PPP (see Box 5.1 for the details of the poverty measures used in this chapter). This represents about 40 percent of the NCA population, compared to about 22 percent for the whole LAC region. Based on the international poverty line (IPL, \$1.90 in 2011 PPP),⁸¹ about 2.7 million people in NCA were living in extreme poverty, or about 8 percent of its population. This compares to 4.4 percent in LAC.

The first years of the new century in LAC were characterized by high levels of economic growth (see Chapter 4) and substantial reductions in poverty (Figure 5.1, Panel A). Using the \$5.50 line, roughly 60 million people were lifted out of poverty in the first decade. By 2010, more people were part of the middle class than were poor, a complete reversal from 2000, when there were about three people living in poverty for every two in the middle class. Although, the poverty situation largely stagnated during the 2010s, there have been some gains in poverty reduction in the past years. However, poverty reductions were small in Northern Central America in comparison with reductions in LAC and were largely driven by the developments in El Salvador.

81 The IPL is the poverty threshold for the first Sustainable Development Goal ("End poverty in all its forms everywhere") and the first of the World Bank's twin goals ("Eradicating extreme poverty by 2030").

Box 5.1

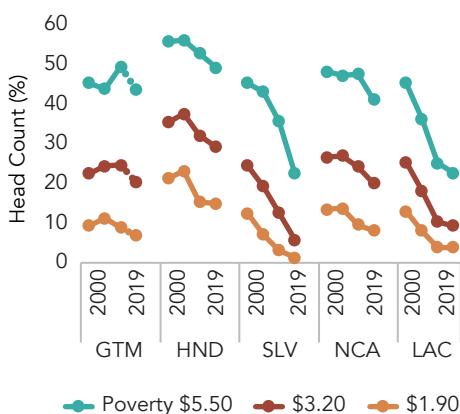
Poverty Definitions and International Comparisons

In this chapter, we have assessed poverty using an *aggregate income* approach. Income from diverse sources, including remittances, was aggregated at the household level and then divided to get a per capita income measure. To ensure the comparability of incomes and poverty rates across the three countries and to enable comparisons with Latin America in general, we used the harmonized data from SEDLAC, which is a joint project of the World Bank and CEDLAC at the University of La Plata to harmonize household survey data sets for Latin America to enable comparable poverty analyses. Once we had obtained per capita income, we compared its value to a poverty line. Individuals who had an income lower than the poverty line were classified as poor. The most well-known poverty line – the international poverty line (IPL) of US\$1.90 a day (in 2011 PPP), which is the updated version of the original “dollar-a-day” poverty line – which is used to define poverty for the Sustainable Development Goals and the first of the World Bank’s twin goals, the eradication of extreme poverty by 2030 (the second goal being to promote shared prosperity by increasing of the incomes of the population in the bottom 40 percent of the income distribution). (See Ravallion et al, 1991 for how the international poverty line is constructed.) However, most of the countries in Latin America and the Caribbean belong to the upper-middle-income group, and for many of them, the poverty headcount when using the IPL is less than 5 percent. For middle-income countries, for which the IPL might not reflect the extent of poverty, the World Bank introduced new poverty lines (see Jolliffe and Prydz, 2016 for the theoretical underpinnings of these new lines). The value of the lower-middle-income country poverty line (LMIC-PL) is US\$3.20 per person per day, while the upper middle-income country poverty line (UMIC-PL) is US\$5.50. Given that the three countries in Northern Central America are classified as lower-middle-income, the US\$3.20 line was the most appropriate to use for comparison. However, throughout this document, we have also made use of the \$1.90 and \$5.50 lines when necessary.

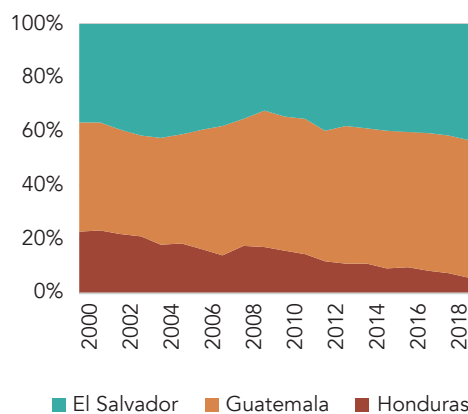
The *aggregate income* approach and the poverty lines used by the World Bank are not universal: Each of the countries studied in this chapter has its own national methodology to measure monetary poverty. Honduras and El Salvador use an aggregate of household income. On the other hand, Guatemala uses aggregate consumption, which is the sum of all of the goods and services that a household consumes over a period of time. Moreover, national poverty lines, which are defined according to country-wide patterns of consumption, are different for each country and are set for both rural and urban areas and sometimes are defined for extreme and total poverty levels. In Guatemala, the national extreme poverty line is set according to household composition and the implicit value in 2014 was closer to the LMIC-PL line. Under this line, the country had an extreme poverty rate of 23.4 percent. Honduras revamped its national poverty line in 2017, and it now lies between the IPL and the LMIC-PL, with Honduras having an extreme poverty rate of 19.4 percent in 2019. For El Salvador, the extreme poverty rate was similar to that of Honduras, but the poverty rate was smaller at 4.5 percent.

Figure 5.1 Changes in Poverty, 2000-2019

a) Poverty Rates in the Past Two Decades



b) Composition of the Population Living in Poverty (under \$3.20 2011 PPP) by Country



Source: SEDLAC (CEDLAS and World Bank).

Note: All poverty lines are in 2011 PPP terms. Guatemala 2019 numbers are interpolated since the last survey was done in 2014. NCA = Northern Central America, LAC = Latin America and The Caribbean, as defined by World Bank regions.

In fact, the panorama of poverty in the NCA region is very heterogenous, with Honduras and Guatemala exhibiting slow or stagnant poverty reduction, and El Salvador achieving strong gains in all poverty classifications. At the upper-middle-income country poverty line (UMIC-PL) of US\$5.50, close to half of the population in Honduras and Guatemala were classified as poor in 2019, compared to only 20 percent in LAC and 22 percent in El Salvador. At the LMIC-PL of US\$3.2, the gaps were even wider. Honduras still had the highest poverty levels in the NCA region, with an extreme poverty rate of 15 percent. In 2014, Guatemala's extreme poverty rate was 8.8 percent, almost the same level as in 2000. Guatemala has not fielded a survey since 2014, but its growth rates indicate a possible, albeit small, decrease in poverty between 2014 and 2019. In 2000, El Salvador accounted for about a quarter of the NCA population and a similar LMIC-PL poverty rate of 23 percent (Figure 5.1, panel b). By 2019, however, El Salvador accounted for 20 percent of the total NCA population but a mere 5.6 percent of its poor. Honduras' the population share has risen from 27 to 30 percent in the past two decades while its share of the NCA's poor population has risen from 36 to 43 percent. Guatemala, with 16.6 million people in 2019, has consistently accounted for not only half of the total NCA population but also half of all of its poor.

Inequality

Inequality in the NCA region also decreased between 2000 and 2019. The Gini coefficient declined from 0.54 to 0.46, a 15 percent decrease, compared with a 10 percent decrease for

LAC (Figure 5.2). The patterns in inequality reduction in the NCA region are very different from those of LAC. While inequality in LAC decreased mostly between 2000 and 2006, there was barely any change in the NCA countries during that period. However, the roles were reversed in the 2006 to 2014 period, when the NCA region reduced inequality at an average annual rate of -1.4 percent, compared to -0.5 for LAC. Between 2014 and 2019, there was a slowdown in terms of gains in inequality in both the NCA and the LAC regions.

Different rates of income growth across the income distribution underlay the different patterns of both poverty reduction and inequality. The growth incidence curves (GIC) in Figure 5.3 show how growth was pro-poor in El Salvador, with those in the lower end of the income distribution experiencing strong growth. The overall increase in incomes per capita was 4 percent. This is reflected in decreasing poverty rates at all levels. In contrast, in Honduras, despite a reduction in inequality and slightly pro-poor growth (1 percent for the bottom 40 percent of the population), overall growth was 0.6 percent, and the incomes of those in the lowest and highest deciles of income were mostly stationary. Guatemala's GIC refers to the 2006 to 2014 period and shows a decrease in the incomes of those in the upper 75 percent of the income distribution.

Thus, the country level story on inequality is similar to the poverty one. Most of the observed decrease in inequality was driven by the reduction in El Salvador. During the entire two-decade period (2000 to 2019), the country experienced a reduction in the Gini coefficient of almost a quarter. Honduras and Guatemala also experienced declines, though they were not as pronounced.

Figure 5.2 Evolution of Inequality, Gini Coefficients

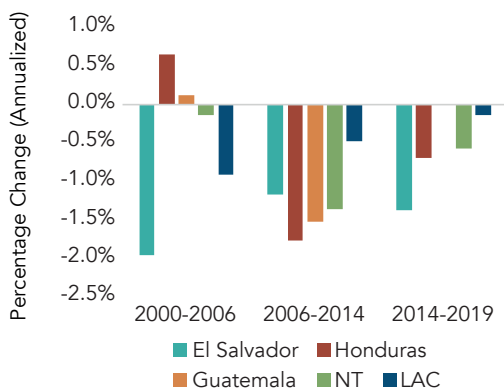
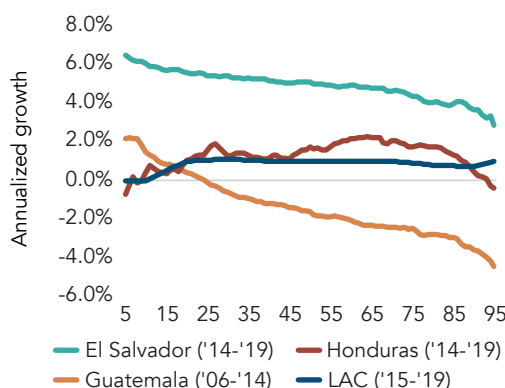


Figure 5.3 Growth Incidence Curves in Last Years of Available Data



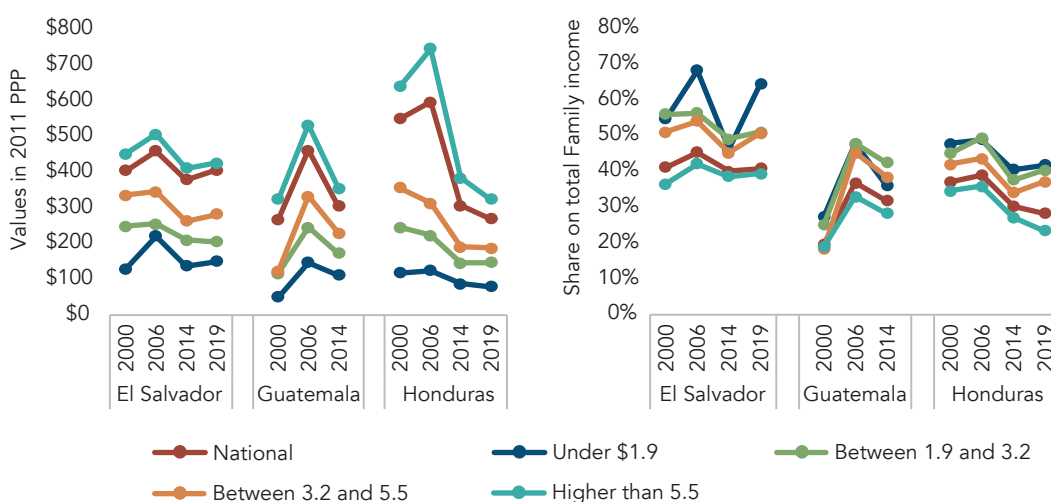
Source: Harmonized Household Surveys from SEDLAC (CEDLAS) and World Bank.

Note: These are anonymous growth incidence curves, i.e., drawn from repeated cross sections and not panel data. The data for El Salvador and Honduras cover 2014-2019, Guatemala covers 2006-2014, and LAC covers 2015-2019.

Remittances

Remittances represent between 14 and 22 percent of GDP in the three NCA countries, but they represent a smaller share of per capita incomes at the household level,⁸² ranging from 0.6 percent in Guatemala to 2.2 percent in El Salvador. These numbers are low in comparison to the contribution of remittances to GDP, but when we looked only at those households that received remittances, they represented 30 to 40 percent of household income on average (Figure 5.4). The average amount of remittances sent (in dollars, 2011 PPP) varied greatly between years and countries. Remittances in El Salvador, as a share of household income, were substantially higher than in Honduras and Guatemala (41 percent in 2019 for El Salvador compared to 29 percent in Honduras and 32 percent in Guatemala in 2014). In both Honduras and Guatemala, there was a reduction in the average remittance amounts received by households between the beginning of the century and the last year of data, even if there was an increase right before the financial crisis. In Honduras, the average yearly remittance fell from about \$307 in 2014 to \$270 in 2019. These reductions were reflected in the fall of remittances' share of household income in recent years, which was down to about 30 percent in the most recent survey years in each country.

Figure 5.4 Remittances in PPP Values and as Share of Total Household Income, by Poverty Status

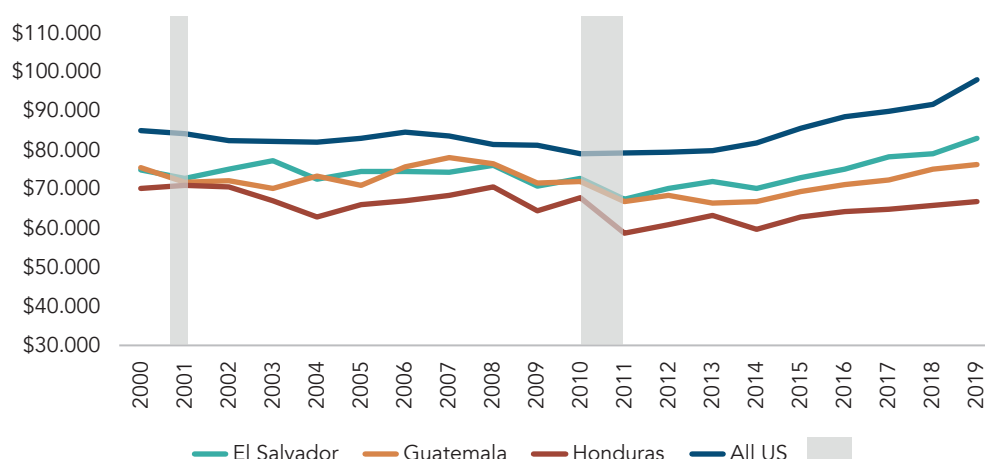


Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EHPM for Honduras. The calculations were made for those households that received remittances

82 World Bank (2021).

These changes in reported remittances reflect changes in the incomes of NCA migrant households in the United States over the same period (Figure 5.5). The 2008 global financial crisis hit migrant households hard, causing average household income to decline substantially in 2009 and again in 2011. The income levels of El Salvadoran migrant households had recovered by 2016 (in real terms), while Guatemalan migrant households did not recover until 2018. In Honduras, the average income of migrant households remained well below 2000 levels in 2019.

Figure 5.5 Household Income of Migrants in the United States by Country of Origin



Source: Authors' calculations based on American Community Survey (ACS) data. All numbers are expressed in 2019 dollars. NBER data is from the NBER Business cycle dating.

The extent to which remittances affect poverty depends on which households receive them and on how much they receive. As expected, those households that have sent a migrant to another country are more likely to receive remittances than those that have not. The correlation is not perfect as not all migrants remit, and some non-migrant-sending households benefit from the generosity of family and friends who migrate from other households. Also, the characteristics of migrant-sending households affect the distribution of remittances. Previous research has indicated that the percentage of households reporting having a migrant member increases with income and wealth. This reflects the fact that migration is costly, thus making it harder for the poorest households to send a member to another country.⁸³ In 2019, 15 percent of households in El Salvador reported having sent a migrant abroad (Annex Table 5.1), but the differences between income quintiles were considerable, with only 10 percent of households in the lowest income quintile reporting having sent a migrant, while the share in the top quintile

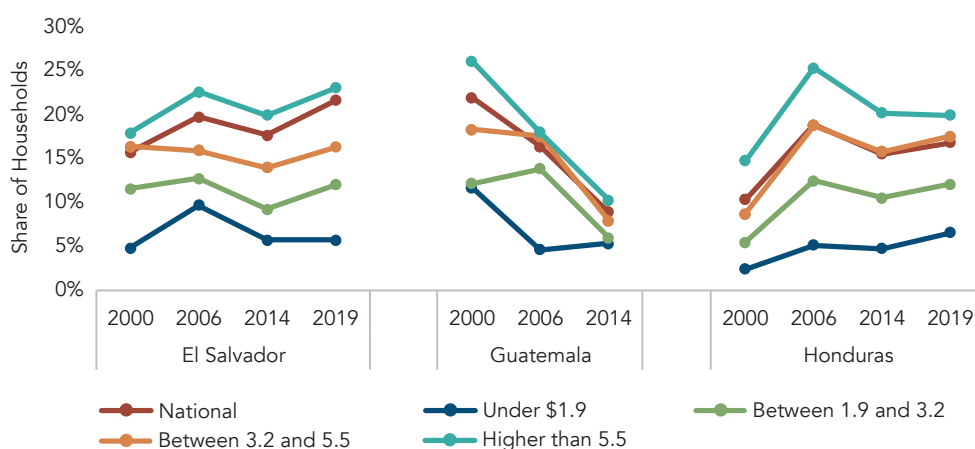
83 Stark et al (1986).

was closer to 20 percent. In Honduras and Guatemala, while the incidence of migration was lower than in El Salvador, the same pattern of poorer households being less likely to send migrants was evident.

As would be expected, the distribution of remittances is not homogeneous across all households but instead increases with household income. In most cases, the households that reported receiving remittances tended to be concentrated in the third, fourth, and fifth quintiles of the income distribution. In terms of poverty, twice as many non-poor households reported receiving remittances as those in extreme poverty (Figure 5.6). This followed the same pattern that has been seen in most countries in Latin America⁸⁴ and underlines what was found in Chapter 3 about positive selection into migration.

Figures 5.4 and 5.6 show the intensive and extensive margins of remittances in overall income respectively. Figure 5.6 shows the extensive margin or the share of households receiving remittances by poverty status. In 2019, Honduras and El Salvador had the highest proportion of households receiving remittances and had similar distributions between different poverty levels. Guatemala, on the other hand, had a smaller share of remittance-receiving households. In terms of poverty, about 5 to 7 percent of all poor households (using the IPL) received remittances in the three countries, a very small number compared to national averages ranging from 9 to 22 percent.

Figure 5.6 Share of Households Receiving Remittances by Poverty Status



Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EHPM for Honduras. The calculations were made for those households that received remittances.

84 Acosta et al (2008) and Torres-Zorrilla (2008). This pattern does not always hold true across countries. In Sri Lanka, Peru, and Mexico, a higher share of remittance-receiving households was found in the lowest income quintiles (Prabal and Ratha, 2012 and Acosta et al, 2008).

The intensive margin of remittances tells us the other side of the story, which is the amount actually received by those households. In El Salvador, households considered to be poor according to the IPL received an average of \$150 (2011 PPP) per year in 2019, while, in Honduras, they received just \$80. Guatemala was in the middle with about \$112. The results are similar when using higher poverty lines with Salvadoran households receiving more than their Honduran and Guatemalan counterparts. Salvadoran households have historically received a higher percentage of their income in the form of remittances than the other two countries (Figure 5.4, Panel B).

Methodology

In assessing the relationship between remittances and poverty, we had to make several assumptions. Given the limitations of the existing data (for example, the available data are cross-sectional and incomplete), it was not possible to create a full, dynamic model of the poverty-remittance relationship. Therefore, we approached the problem in two ways. In our first scenario, we compared actual, observed poverty levels with the levels that would have existed if remittance income had not been available to households. This was based on the unlikely assumption that pre-remittance income is independent from remittance income, in other words, that households make no adjustments to their income when they receive remittances. This assumption is most likely not true, but the scenario provided us with an upper bound estimate of the difference in poverty rates associated with migration. In our second scenario for what pre-remittance income would have been in the absence of migration, we predicted the income of remittance-receiving households as it would have been had no one migrated from that household. To do this, we had to make several assumptions about the household's composition and about the number of migrants that it had sent. Implicit in this scenario was the assumption that the household decision to send a migrant is not random but is motivated by individual and household characteristics, some of which are observable and others of which are not.

The key indicators of welfare that we assessed were the standard monetary poverty and inequality measures. We calculated the changes in poverty measured as the head count ratio (or the percentage of the population with per capita household income below a given poverty line). Then we used the Gini coefficient to measure changes in inequality.

Household Income without Remittances

To estimate the effects of remittances on poverty in the NCA countries, we created counterfactual economies from which migration did not take place and compared them to the actual economies of the countries in Northern Central America. We took a simple approach to the migrant and remittance flows and assumed that all remittance-receiving households had sent a migrant. In the first counterfactual scenario, we subtracted remittance income from total household income. For clarity, we refer to the observed distribution of per capita household

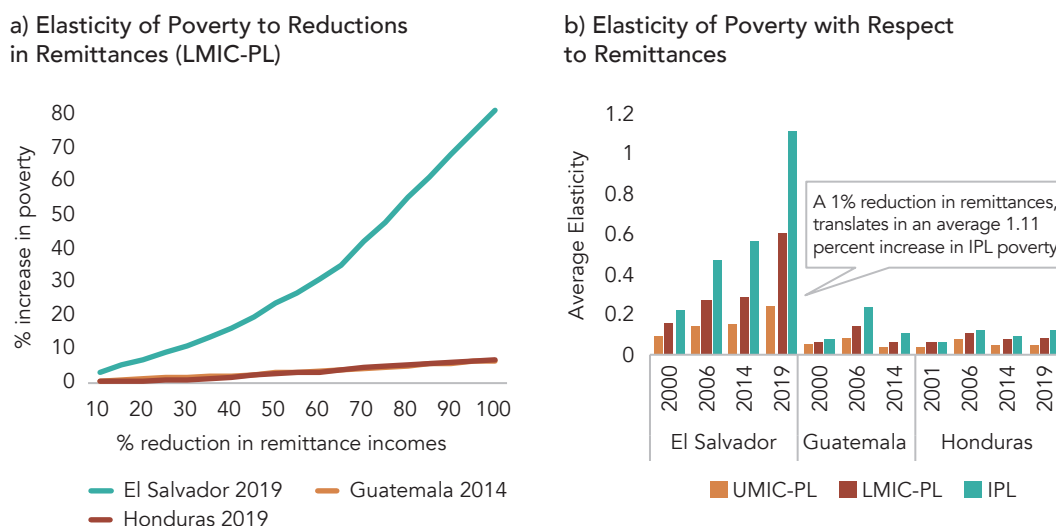
income as the “actual income” and this simple counterfactual as “income minus remittances.” This is a simple, or naïve, counterfactual that only considers a first-order income effect, as if remittances suddenly vanish and the households make no adjustments in their labor supply, composition, or receipt of other non-labor income. It is also important to note that, in this exercise, we assumed a uniform reduction in remittance income, meaning that every receiving household experienced the same percentage reduction in remittances. Although this is unlikely, the exercise was still a helpful tool to explore the level of exposure of each country to remittance income.

We started by identifying the effects of a gradual reduction in remittance income on total household income. In Figure 10A, the X-axis is the reduction (in percentage change) of the income from remittances, while the Y is the percentage change in the poverty ratio or headcount. This can be thought of as the elasticity of poverty with respect to a reduction in remittance income. It would be equivalent to:

$$E(R) = \frac{W(Y^A)}{W(Y)} - 1$$

Where W represents the poverty rate associated with the income distribution in question, Y^A . This income distribution is simply total income minus the remittance reduction, that is $Y^A = Y - R * Y^r$. One extreme case is when where all remittances are removed from household income, while when $R = 0$, E is in the original case.

Figure 5.7 Elasticity of Poverty with Respect to Remittances



Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EPHPM for Honduras.

Note: The figure shows the change in poverty of subtracting remittances from total household income.

The elasticity of poverty to remittance incomes varied depending on which poverty line, country, and year was analyzed, as shown in Figure 5.7, panels A and B. First, we found that the IPL was the poverty line with the highest elasticity. This is the line with the lowest value and thus the one that captures the effect on the poorest households, suggesting that remittances are more necessary to households at the lower end of the distribution. For example, in El Salvador, a reduction of remittances of 50 percent translated into an increase in poverty of about 24 percent in 2019. The other two countries had increases of a smaller magnitude, yet the effect was most significant when using the IPL.

How Households Adjust to the Lack of Remittances

In our second scenario for what pre-remittance income would have been in the absence of migration, we imputed the per capita household income of remittance-receiving households using information from the non-receiving families and then corrected for possible endogeneity. We called this scenario the “imputed income” counterfactual. Given that household characteristics vary, decisions to migrate and remit are not made randomly. Moreover, after migration and remittance decisions have been made, households adjust how they allocate their time between labor, education, home activities, and leisure. We incorporated this into the model of aggregate income as follows. Consider the expected income of a household:

$$\mathbb{E}(Y_h) = \mathbb{E}Y_h^{nr} + \mathbb{E}I_h^r Y_h^r$$

Where Y_h^{nr} and Y_h^r refer to non-remittance and remittance income, and I_h^r is 1 when a household receives remittances and 0 otherwise. For households that do not receive any remittances, the above equation becomes:

$$\mathbb{E}(Y_h | I_h^r = 0) = \mathbb{E}(Y_h^{nr} | I_h^r = 0) \neq \mathbb{E}(Y_h^{nr})$$

Where the last step indicates that total household income without remittances is not independent of the remittances indicator. Accounting for this endogeneity, we followed the methodology used by Acosta et al (2008) and estimated a model of household income as the following reduced form equation:

$$Y_h^{nr} = \beta X_h + \gamma H_h + \mu_h \quad (I)$$

Where Y_h^{nr} represents household total income without remittances, X_i is a vector of household characteristics, H_i is a set of characteristics of the household head, and μ_h represents random shocks and unobserved heterogeneity. As noted before, an estimation of Equation I using least squares and assuming a normal, zero-mean error term would lead to biased estimates. Instead, Equation I needs to address the latent correlation between being a remittance-receiving household and income. Therefore, we corrected the bias by using a Heckman selection model. Consider that households may be remittance-receiving if:

$$I^r = \begin{cases} 0, & \text{if } M^r > 0 \\ 1, & \text{otherwise} \end{cases}$$

Where:

$$M_h^r = \beta_1 X_h + \gamma_1 H_h + \omega Z_h + v_h \quad (\text{II})$$

We included additional variables Z in this selection equation that affect the selection into being a remittance-receiving household but do not affect the household's income function. Therefore, for the non-receiving households, we would have:

$$\begin{aligned} \mathbb{E}(Y_h^{nr} | I_h^r = 0) &= \mathbb{E}(\beta X_h + \gamma H_h + \mu_h | I_h^r = 0) \\ &= \beta X_h + \gamma H_h + \mathbb{E}(\mu_h | \beta_1 X_h + \gamma_1 H_h + \omega Z_h > -v_h) \end{aligned}$$

And assume that:

$$\mu_h, v_h \sim \mathcal{N} \left(0, \begin{bmatrix} \sigma_1 & \rho \\ \rho & 1 \end{bmatrix} \right)$$

Leading to:

$$\mathbb{E}(Y_h^{nr} | I_h^r = 0) = \beta X_h + \gamma H_h + \sigma_1 \rho \lambda (\beta_1 X_h + \gamma_1 H_h + \omega Z_h).$$

This result is equivalent to a “penalized” income production equation, as follows:

$$Y_h^{nr} = \beta_2 X_h + \gamma_2 H_h + \theta \hat{\lambda}_h + \epsilon_h \quad (\text{III})$$

Equation III gave us an unbiased estimator of the household income of non-remittance-receiving households. We used this to estimate what the household income of present-day remittance-receiving households would have been if no one had migrated or remitted. To account for the effects of converting migrants back to household members in the household of origin, we had to change the demographic composition of the household. In Rodriguez (1998) and Acosta et al (2008), the authors assumed that one adult male had migrated and would need to be “re-integrated” into the household to estimate household income in the absence of migration. We were able to expand on this by adding additional characteristics of the would-be migrants. We assumed that remittance-receiving households would share the number of migrants reported by all migrant-sending households.

We added both the labor force participation rate and the unemployment rate of the population into the equation. Following Acosta et al (2008), we assumed that the other characteristics that affect the household's potential to generate income (such as education, labor force

Table 5.1
Number of Imputed Migrants

Country	Survey year	Years applied	Number of receiving households	Male migrant stock	Female migrant stock	Male migrants per household	Female migrants per household
El Salvador	2000	2000	225 899	219 380	354 188	0.97	0.60
El Salvador	2006	2006	340 384	396 527	243 664	1.16	0.72
El Salvador	2014	2014	304 962	252 716	169 389	0.83	0.56
El Salvador	2019	2019	419 337	329 437	247 198	0.79	0.59
Guatemala	2014	2000-2014	297 517	186 496	55 706	0.62	0.18
Honduras	2008	2000-2006	280 113	273 656	137 003	0.98	0.49
Honduras	2014	2014-2019	299 901	222 185	149 603	0.74	0.50

Source: Authors' calculations based on household surveys from each country plus the 2018 Guatemala census.
Notes: For the imputed number of migrants, we used the total number of declared migrants (from one to six migrants per household) divided by the number of receiving households. For El Salvador 2000, we used the 2006 ratio of female and male migrants, since in that year there was no such divided question. Since the surveys for Honduras 2000, 2006, and 2019 did not include a question on the number of migrants, we used the closest survey with such information. The Guatemala survey did not ask the question in a comparable form in any of the years, so we used the 2018 census information.

participation, and unemployment rates) are the average of the other adults in the household (see Table 5.2 for the details). For the average age of the migrants, we used data from the US American Community Survey (ACS) for the past 10 years for migrants in the 18 to 65 age range. Moreover, we assumed that the re-integrated migrants would have an age structure similar to the one in most recent data. Table 5.1 summarizes the results of these "re-integrated" migrants.

Estimating the equation with this information and the mentioned assumption gave us an approximation of household income free of selection bias that we then used to impute total household income in those households that reported receiving remittances.

Findings

Overall, we found that remittance-receiving households and non-receiving households differed in terms of several key characteristics (Table 5.2). The receiving households tended to be older than non-receiving households as measured by the age of the head of household and by the average age of the household members, except for Honduras in 2019. As might be expected, due to the nature of migrants, receiving households tended to have a smaller share of household members of working age (26 to 65 years old) and a lower ratio of men to women. The households also differed significantly in the characteristics of their head of household, with the heads of household in remittance-receiving households being older, more likely to be female, less likely to work in a formal job, and having fewer years of education.

Table 5.2.

Comparison of Dependent Variables by Year (Households that do and do not receive remittances)

Remittance-receiving households compared to other households	El Salvador		Guatemala		Honduras	
	2000	2019	2000	2014	2000	2019
Household Variables						
Average age in household	>>>	>>>	>>>	>>>	>	<<
Total members	.	<<<	<<<	<<<	>>>	>>>
Urban dwelling	<<<	<<<	>>>	<<<	>>>	>>>
Household Composition						
Infant 0-5	<<<	<<<	<<<	<<<	<<<	>>>
Child 6-16	>>>	<<<	.	>>>	>>>	.
Young adult 17-25 ratio	.	<	.	.	.	>>>
Adult 26-65	<<<	<<<	<<<	<<<	<<<	<<<
Male/female ratio	<<<	<<<	<<<	<<<	<<<	<<<
Employed members share	<<<	<<<	.	<<<	<<<	<<<
Household Head Variables						
Age (of head)	>>>	>>>	>>>	>>>	>>>	>>>
Female head	>>>	>>>	>>>	>>>	>>>	>>>
Head works in formal job	<<<	<<<	<<<	<<<	<<<	<<<
Married	<<<	<<<	<<<	<<<	<<<	<<<
Years of education	<<<	<<<	<<<	<<<	.	<
Highest Level of Education in Household						
Less than primary	.	>>>	<<	<<	<<<	<<<
Primary to Incomplete Secondary	.	<<<	.	.	>>>	.
Completed secondary or Incomplete Tertiary	>>	<<<	>>	>>>	>>>	>>>
Tertiary or more	<<<	<<<	.	<<<	.	.

Source: Authors' calculations based on household surveys from each country plus the 2018 Guatemala census.

Notes: The symbols indicated the comparison between those households that received remittances versus those that did not. For example, a > means that a remittance-receiving household had a higher value than a non-receiving household. The number of symbols indicates the statistical significance of the difference, using a t-test comparison. Three symbols indicate $p < 0.01$, two $p < 0.05$ and two $p < 0.1$. A dot (.) indicates that the difference is not significant, $p > .1$.

Other characteristics of the households varied greatly between the three countries. For example, in El Salvador, remittance-receiving households were more likely to be rural than their non-remittance receiving counterparts. In contrast, in Honduras, remittance-receiving households were more likely to be urban.

Results of the Regressions

The estimates of the income and selection equations (equations I and II) were found by solving for the unknown parameters simultaneously using Maximum Likelihood estimation. The estimates for the three countries can be found in Annex Table 5.2. The first column of each year in the table indicates the regression of the “total household income” equation (in logarithms) with the corrections made for possible endogeneity, while the second column of each year shows the results of the selection model.

We started by observing what determines remittances.⁸⁵ As expected, dependency rates were a factor, as households with children and older adults representing a larger share of all household members being more likely to receive remittances. On the other hand, households with more adults of working age and with a higher male-female ratio tended to be less likely to receive remittances, as were those with a higher percentage of adults who worked. As will be discussed in Chapter 7, the receipt of remittances can cause some household members to decide not to participate in the labor force. The age of the household head was mostly not significant, but older households (higher average age of all members) was associated with receiving remittances. Being a married household head led to a lower probability of receiving remittances in most countries.

In general, the education variables – a higher average number of years of schooling and a higher level of schooling completed in the household – were significant and led to a higher probability of receiving remittances. This was as expected. Bollard et al (2011) have shown that more educated migrants remit more. However, in the NCA countries, in most cases, the effect was smaller for tertiary education than for secondary (or even negative).

The two additional variables added to the main surveys from external sources were the homicide rate in the department or municipality where the household was located and the regional migration rate, again from the area where the household was located.⁸⁶ The homicide rate tended to be significant, except for most years in El Salvador. It was associated with receiving remittances, which suggests an altruistic motive – remittances are sent to households

85 In the equation, the dependent variable is the condition of being a non-receiving household. Thus, negative coefficients imply a higher probability of being a remittance-receiving household.

86 The crime rate was constructed as the total number of homicides in an area over the total population. The migration rate was defined as the percentage of households that declare having at least one migrant member. We constructed the variables at the cantonal, municipal, departmental, and regional level using different sources. See Annex Table 5.3 for further information on the source and geographical scope of each of them.

living in areas with higher crime rates, where income disturbances are more likely.⁸⁷ These results contradict recent studies on the topic that have found a self-interested motive to be more likely. In studies in Colombia and Mexico, higher crime tended to reduce the amount of remittances and the number of remittance-receiving households.⁸⁸

The network effect of migration, captured by the regional migration rate, had a positive effect on being a remittance-receiving household for all countries. This was expected, as households in areas where migration is high have a higher chance of being themselves a household with a migrant and, thus, a household that receives remittances. Our underlying assumption here was that the migration rate variable affects the probability of receiving remittances but not the family's income (corresponding to Z in equation II).

The income equation coefficients were consistent with our expectations. Age tends to reflect experience, which had a positive effect on income generation. Age squared was negative and accounted for decreasing returns of experience. Having a household head employed in the formal sector, having a greater number of working adults relative to total household size, and more years of education all had the expected positive signs. Location dummies for regions and rural/urban areas tended to be significant, which isolated regional fixed effects.

As for the model specification, the coefficient on the correlation of the errors between the selection and income equations (ρ) was significant for 2014 and 2019 in Honduras, for Guatemala in 2014, and for El Salvador in 2006. The effect was large and significant for the first two countries, less so for El Salvador. In fact, for Honduras and Guatemala, the coefficient of the Inverse Mills ratio (λ) was negative, indicating that unobserved factors that make remittances more likely were associated with higher income. This represents a change as, in the earlier years (2000 and 2006), the results indicated that there was no structural selection of remittances. In other words, in those two years, after accounting for observable characteristics, the income distribution of the households that were receiving remittances was similar to that of the households that were not receiving remittances. For El Salvador, however, the lack of selection on unobservables was fairly consistent from 2000 to 2019.⁸⁹

Results of the Simulations

We compared the poverty rates produced under the two counterfactual scenarios to the poverty rate corresponding to households' actual incomes. The results are summarized in Figure 5.8 and the full details can be found in Annex Table 5.4.

⁸⁷ Borja (2012).

⁸⁸ Meseguer et al (2017) and Vargas-Silva (2009).

⁸⁹ In the cases where the coefficient on the correlation of errors is insignificant, the results of a Heckman model are similar to those of an Ordinary Least Squares regression.

The results of the first scenario, *income minus remittances*, show the upper bound effect of the role played by remittances in reducing poverty. If remittances suddenly disappeared from household income, El Salvador would see a staggering three-fold increase in extreme poverty (at the \$1.90 IPL rate) from 1.3 percent to 4.2 percent. This is the biggest change and far exceeds the effect that would be seen in Honduras in 2019 and Guatemala in 2014, though the change in extreme poverty in those two countries would be a noteworthy 15 percent. There were clear differences in the dynamics of poverty over the years between El Salvador, on the one hand, and Honduras and Guatemala, on the other. While the positive impact of remittances on poverty in Honduras and Guatemala has lessened, it has increased in El Salvador. This holds true regardless of what poverty line is used. The change for Honduras and Guatemala came after 2006, suggesting that the global financial crisis of 2008 may have played a role in shifting the distribution of remittances in the two countries.

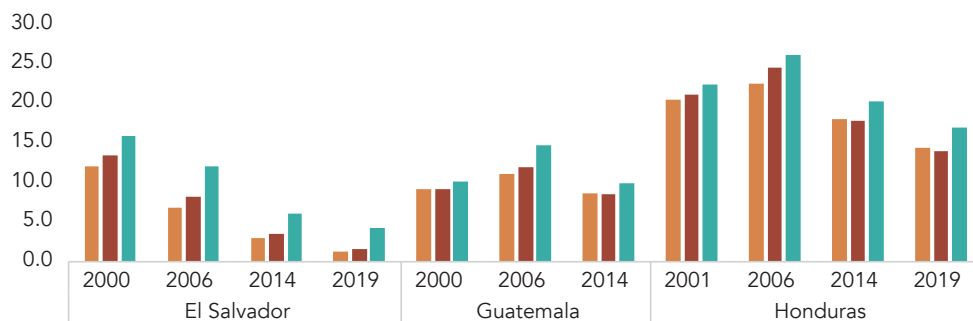
In the second scenario that explored what households' pre-remittance income would have been in the absence of migration, we found that the effects of remittances on poverty were heterogenous across countries and time periods. As with the first scenario, remittances had only a limited effect in terms of reducing poverty in Honduras and Guatemala, and in more recent years the effect was negative, that is, poverty under the imputed income scenario was lower than at the baseline levels. This is indicative of the declining share of remittances in household income in recent years and reflects the fact that households that receive remittances are different from those that did not

The contrast with El Salvador is sharp. When the \$3.20 poverty line is used, the poverty rate in Honduras and Guatemala would have remained the same by the last year of available data (2019 for Honduras and 2014 for Guatemala), while in El Salvador, it would have been 33 percent higher in the absence of migration and remittances. At the UMIC-PL poverty line of \$5.50, the change would also have been negligible in Honduras and Guatemala (3 to 4 percent increase but El Salvador would still have had a substantial increase at 26 percent. Again, this highlights the greater decline in the share of remittance income in total household income in Honduras and Guatemala than in El Salvador.

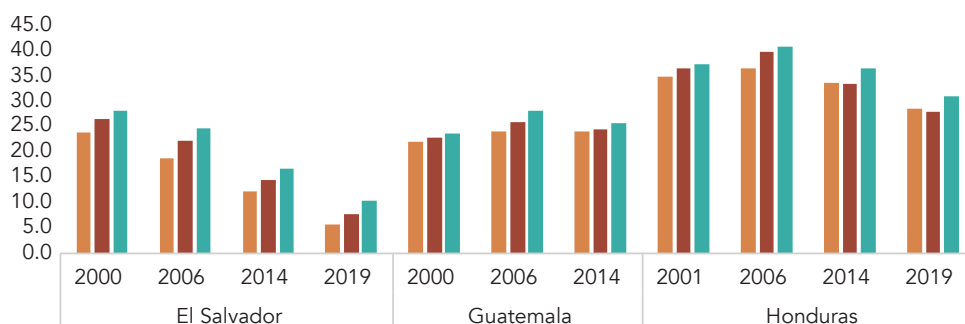
In the most recent years in Guatemala and Honduras, it is not at all clear that migration was a positive strategy for reducing poverty for those in the very poorest households. Guatemala's extreme poverty rate in 2104 would have been lower in the absence of migration. The same is true for Honduras in both 2014 and 2019. This may reflect some differences in the migration patterns of Honduras and Guatemala compared with those of El Salvador. The more recent large-scale migration of Guatemalans and Hondurans and their less established networks in the destination countries mean that it may still be inordinately costly for the very poor in those two countries to migrate. Many Guatemalans migrate to Mexico, which is feasible because of its proximity, but the southern states of Mexico that border on Guatemala are some of the poorest areas in the country, with wages that are lower than in other destination countries.

Figure 5.8 Alternative Scenarios Regarding Poverty and Remittances

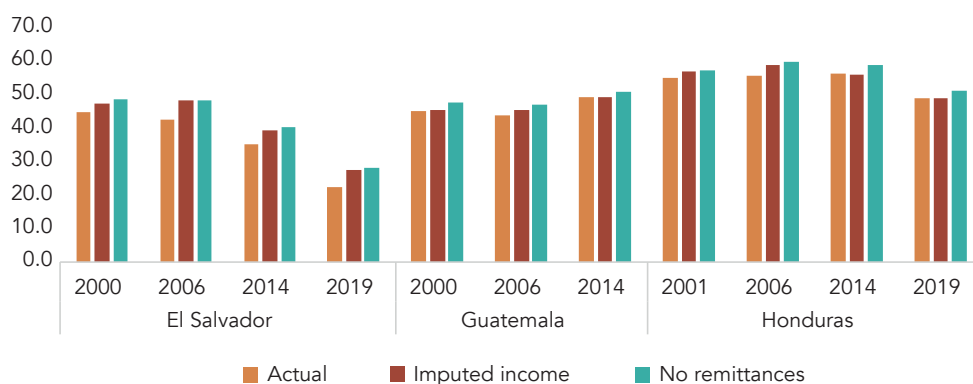
Poverty Rates based on Simulations (using IPL of US\$1.9, 2011 PPP)



Poverty Rates Based on Simulations (Using LMIC poverty line of US\$3.2)



Poverty Rates Based on Simulations (using UMIC poverty line of US\$5.5 in 2011 PPP)



Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EHPM for Honduras.

Notes: The three scenarios are: (i) observed poverty rates (actual total household income including remittances); (ii) poverty rates if remittances were subtracted from total household income; and (iii) imputed income where remittance earnings are subtracted and the earnings that the migrant would have earned if she or he had not migrated are added to the household income. Poverty rates were calculated based on per capita household income. For comparability, all income figures are in 2011 PPP terms.

This may suggest that factors other than economic ones, such as escaping crime and violence and/or a desire for family reunification, may be prompting migration from the Guatemala and Honduras.⁹⁰

As might be expected from our analysis, remittances had only a limited effect on inequality in the three countries. The changes in the Ginis were relatively small, with El Salvador experiencing only a 6 percent increase in inequality under the first scenarios (income minus remittances) and only a 1 percent increase in inequality under scenario two (imputed income scenario). These small changes are in line with most of the previous research.

Robustness Checks

We expanded our analysis with a series of robustness checks. In scenario two, in which we “re-integrated” migrants into their households, we estimated the characteristics of the migrants based on the gender, employment, and age characteristics of the migrant pool according to recent data on current migrants from both host and home countries. To assess the robustness of our findings, we first redid all of our calculations by simply adding one migrant per household following the model used by Acosta et al (2008). This changed our calculation in terms of poverty and inequality only slightly, so the results remained as before. Then we considered the average number of migrants per migrant-reporting household (as opposed to remittance-receiving household), which gave a higher number of migrants in each household but did not change our results.

Second, we took household demographics into account by looking not at per capita income but per adult equivalent income. The per capita income measure is based on the assumption that each individual requires the same amount of resources. In reality, there are economies of scale in households: a one-person household needs one refrigerator, while a five-person household does not need five refrigerators to have the same level of welfare. By the same token, different members of the household have different needs. Children, for example, eat less than adults, their clothing is less expensive, and they engage in less costly leisure activities. As a result, poverty analyses that use per capita income can overestimate the overall poverty rate. Given that households receiving remittances tend to have more children than non-receiving households, we decided to assess the impact of removing remittances or imputing remittance-free income using per adult equivalent income instead of per capita income. In the absence of any specific formula for establishing an empirical adult equivalence scale for the three NCA countries, we assigned each adult in the household a weight of 1 and each child under the age of 16 a weight of 0.5 before dividing total income by household size.⁹¹

90 See Chapter 2 for a discussion of these other push and pull factors affecting migration. There is evidence that family reunification is an increasingly salient motive for migration from the three countries, however, which does not explain the differences observed here between El Salvador and the other two countries.

91 The Organization of Economic Cooperation and Development (OECD) uses two equivalence scales. The first, the “modified OECD” scale assigns a weight of 1 to the first adult, 0.5 to additional adults, and 0.3 to

We found that remittances had a much larger impact on poverty once the lower demands of children had been taken into account (Annex Table 5.5). Overall poverty in the last year for which we had data for each country was lower, as could be expected as total household income was now being divided by fewer people. Because the poor tend to have more children, the difference between per capita and per adult equivalent can be expected to be greater for poor households than for the non-poor. The effect of remittances became more pronounced El Salvador, for example. Using the IPL, the poverty rate increased by 28 percent using adult equivalent income, while it had increased by only 21 percent when using per capita income. Using the UMIC-PL, the poverty rate increased by 36 percent based on adult equivalent income, while it had increased by only 23 percent using per capita income.

The impact of this change in calculation in Honduras and Guatemala was not as large, as their results on the basis of adult equivalent income and those on the basis of per capita income were essentially the same. Thus, the same conclusion holds, which is that remittances are not as necessary to poor households in Honduras and Guatemala as they are in El Salvador. Only for the IPL, in Guatemala, was there any change. On the basis of adult equivalent income, there would be an increase of 1 percent in poverty, while on the basis of per capita income, the change would be -2 percent. However, these changes were largely not significant.

The fact that remittances and migration affect household formation needs to be taken into account. In our analysis, we have assumed that the demographic composition of migrant-sending households is static, other than the departure of the migrant(s) themselves. However, the composition of the households that we observed may have changed from its composition when the decision to migrate was made. Imagine the simplest case where a nuclear family makes the decision to send the husband abroad. The migrant's wife and children might remain as a household unit or they might join with another household (that of the woman's parents for example). In this case, household formation is endogenous to migration: the households to which we are imputing income are not, in fact, the same households that would have existed in the absence of migration. As different types of households have different poverty rates, ignoring this endogeneity could lead to under- or over-estimation of the poverty impact.

Unfortunately, we cannot provide direct evidence of this, as the household composition prior to migration is unobserved. The data that we have suggest that this is a relevant issue. The household that results from the case cited above - in which a wife decides to move in with her parents - is, indeed, over-represented among migrant-sending households. These would be households in which there are children, but their parents are not the household head (case 1 in Table 5.3). As these multi-family households typically have much higher poverty rates,

each child (based on Haaganars et al, 1994 and as adopted by Eurostat). An alternative is the square root scale, which divides household income by the square root of household size (OECD, 2010) and which is used by the Luxembourg Income Study. In the absence of analytical work to establish the proper equivalences in Northern Central America, we used 0.5 simply to demonstrate the point that household composition matters in poverty calculations.

if migrants originally came from such households, then the differences in poverty that we have found remain applicable, but if they came from a household comprised of a nuclear family – the type of household with lower poverty rates – the overall poverty impact would be underestimated. The second type of household that is over-represented among remittance-receiving households are those categorized as “partner not present but own children in household”. If the migrant had stayed (not migrated), and if the migrant was the partner of the household head, the household would have been a nuclear family, which overall has a lower poverty rate than that of households where the partner is not present. Thus, the impact of remittances on poverty could be overstated. Without being able to account for the potential differences in household composition prior to migration, there is no way to untangle this effect.

Table 5.3

Typology of Remittance-Receiving Households (%)

	El Salvador			Guatemala		Honduras		
	2006	2014	2019	2006	2014	2006	2014	2019
National share of households receiving remittances	20	18	22	16	9	19	16	17
1. Children with relatives, head of household not their parents	38	38	37	33	21	32	27	33
2. Nuclear family (parents and own children)	20	17	22	21	12	20	15	15
3. Extended family (parents, own children, and other adults)	8	8	11	8	4	9	7	9
4. Traditional household without young children	18	16	24	14	8	15	15	12
5. Partner not present (own children in household)	33	31	33	34	20	39	28	27
6. Single, no children	30	27	28	25	8	19	24	24
7. Other types of households	27	22	26	23	11	24	21	22

Source: Authors' calculations based on the EHPM for El Salvador, ENCOVI for Guatemala, and the EHPM for Honduras.

Conclusions

The analysis in this chapter shows that the relationships between migration, remittances and poverty levels vary both across countries and across time. Overall, the evidence points to households' migration decisions leading to a reduction in poverty, especially when household demographics are taken into account. However, this effect was not as strong in more recent years in Honduras and Guatemala. In part, this reflects the observed reduction in both the absolute amounts of remittances sent to Honduras and Guatemala over time and, in part, the reduced share of these remittances in total household income. The 2008 global financial crisis seems to have had a notable effect as remittances fell sharply in all three countries between 2006 and 2014. Only in El Salvador was there a strong recovery after 2014, and only in El Salvador did remittances retain their value, actually increasing their impact in terms of reducing poverty.

There are also structural differences in Honduras and Guatemala relative to El Salvador in terms of migration and poverty. On the one hand, our regression results showed that, in recent years, income and remittance patterns in Honduras and Guatemala are indicative of selection into migration, which means that households receiving remittances in those two countries were more likely to be structurally richer than those who were not receiving remittances. For this reason, while remittances raised the income of the receiving households, they did not reduce the national poverty rate. On the other hand, El Salvador, unlike its neighbors, had substantial and pro-poor economic growth over the same period, with a subsequent reduction in poverty. Interestingly, despite this strong improvement in welfare, remittances not only continued to flow into El Salvador but also grew in volume. This appears to support the findings in Chapter 4 that altruism was a key motive for sending remittances to El Salvador. Alternatively, it may simply reflect unique features of migration from El Salvador, such as the larger size of the El Salvadoran diaspora compared with those of the other two countries and the longer time during which there have been significant amounts of migration from El Salvador. Honduras and Guatemala have more recent migration patterns. Additionally, ACS data show that the incomes of households of Salvadoran origin in the United States have been historically higher than those of Hondurans and Guatemalan migrant households there. Moreover, the incomes of Honduran migrant households in the United States declined by 5 percent (in real terms) over the two decades. In 2019, Salvadoran migrant households in the U.S. earned about 24 percent more than Honduran ones on average (see Figure 5.5).⁹²

For governments, the implications are two-fold. First, while remittances can protect individual households from poverty, external shocks can affect both the level and the distribution of remittances and thus their nationwide poverty effect. The 2008 global financial crisis seems to have had a lasting impact on remittances in the NCA countries. The more recent global shocks wrought by the COVID-19 pandemic have affected the dynamics of remittances, with

92 These differences probably also help to explain the different levels of remittances received in each country.

an initial reduction and a subsequent increase. We are yet to see if this increase is distributed equally, or if it is concentrated amongst higher income household. In order to adopt the right public social assistance policies, policymakers will need to have a better understanding of remittances flows. This is needed not only to ensure that social safety nets will remain adequate given fluctuations in remittances but also to ensure that public programs do not crowd out the remittances themselves, leading to net welfare losses.⁹³ Therefore, there is a clear need for better and more frequent data on the distribution of the flows of migration and remittances. Additional research is also needed to assess the general equilibrium effects of migration and remittances and how the counterfactual situation of no migration would affect local labor markets and potentially change equilibrium wages. Finally, comparing data collected over time may shed some light on the dynamics of remittances and the labor choices made by the members of remittance-receiving households in the countries of origin.

93 Nikolov and Bonci (2020) reviewed the literature and showed that public spending can crowd out remittances if potential crowding out is not taken into account in the program design. Ambrosious (2019) found that state governments in Mexico diverted public spending away from municipalities with higher remittances flows.

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Annex 5.1

Table 5.1

Percentage of Households Reporting Migrants and Remittances by Wealth in Northern Central America

		Quintile					National
		1	2	3	4	5	
El Salvador (2019)	Migrants	10.1%	13.2%	13.9%	16.2%	20.3%	15.3%
	Remittances	15.0%	19.0%	21.7%	23.7%	25.8%	21.6%
Honduras (2019)	Migrants	6.8%	10.5%	12.8%	15.2%	17.2%	13.0%
	Remittances	7.3%	13.9%	19.3%	21.4%	19.9%	16.8%
Guatemala (2018 Census)	Migrants	3.5%	5.9%	7.0%	7.8%	5.6%	6.0%
	Remittances	3.5%	6.6%	9.3%	12.4%	11.0%	8.5%

Source: Authors' calculations based on the EHPM for El Salvador (2019), Census data for Guatemala (2018), and the EHPM (2019) for Honduras.

Note: Quintiles are based on total household income for El Salvador and Honduras. Information on income was not available in the 2018 Guatemalan census, so we calculated the quintiles by creating a wealth index using principal component analysis with the following household goods and services: radio, stove, TV, cable, fridge, water tank, washing machine, PC, internet access, hot water, motorcycle, car, kitchen facilities, and in-house drinking water.

Table 5.2

Regression Results

Panel A: El Salvador								
2000			2006		2014		2019	
Equation:	Income	Selection	Income	Selection	Income	Selection	Income	Selection
Household Head:								
Age	0.017***	-0.0029	0.015***	-0.0096	0.012***	-0.015***	0.011***	-0.015***
Married	0.12***	0.40***	0.13***	0.50***	0.086***	0.45***	0.11***	0.33***
Formal Job	0.33***	0.092**	0.22***	0.22***	0.24***	0.16***	0.28***	0.14***
Household Variables:								
Average Age	-0.0042**	-0.016***	-0.0015	-0.013***	-0.0014	-0.011***	-0.00055	-0.0052*
Urban	0.26***	-0.010	0.092***	0.030	0.050***	0.075**	0.039***	0.092***
Average Years of Education Adults	0.085***	-0.0075	0.068***	-0.0090	0.059***	-0.0014	0.057***	0.0092
Total Members	0.13***	-0.015	0.10***	-0.011	0.14***	0.0052	0.16***	0.0097

Table 5.2 Continued

Panel A: El Salvador								
	2000		2006		2014		2019	
Equation:	Income	Selection	Income	Selection	Income	Selection	Income	Selection
Household ratios:								
Infant 0-5	-0.30*	-0.85***	-0.18	-0.67**	-0.42***	-0.70***	-0.28***	0.055
Members aged 6-16	-0.16	-1.11***	0.043	-1.04***	-0.092	-1.02***	-0.085	-0.26
Members aged 17-25	0.020	-0.95***	0.024	-0.97***	-0.075	-0.91***	-0.038	-0.57***
Adult 25-65	0.013	-0.35***	0.040	-0.37***	-0.035	-0.26***	-0.037	-0.16*
Male/Female Ratio	-0.16***	0.21***	-0.12***	0.17***	-0.060***	0.19***	-0.095***	0.20***
Share of Employed Members	0.94***	0.97***	0.58***	1.14***	0.57***	0.81***	0.72***	0.92***
Highest Education:								
Primary to Incomplete Secondary	0.10***	-0.11**	0.015	-0.14***	0.029*	-0.11**	0.023	-0.13***
Completed Secondary or Incomplete Tertiary	0.23***	-0.17**	0.12***	-0.22***	0.16***	-0.16***	0.12***	-0.15***
Tertiary or More	0.57***	0.078	0.41***	-0.032	0.51***	-0.045	0.43***	-0.040
Other Variables:								
Homicide Rate	0.68**	0.76	0.50***	-0.22	-0.012	0.019	-0.12	1.55***
Migrant Rate		-3.62***		-1.26***		-2.48***		-2.56***
Model Statistics:								
Obs.	15886		16178		21126		21330	
Rho	0.031		0.14		0.024		0.095	
Sigma	0.72		0.60		0.53		0.49	
Lambda	0.022		0.081**		0.013		0.046	

Table 5.2 Continued

Panel B: Guatemala						
	2000		2006		2014	
Equation:	Income	Selection	Income	Selection	Income	Selection
Household Head:						
Age	0.015**	-0.0019	0.017***	-0.019**	0.015***	-0.010
Married	0.17***	0.32***	0.12***	-0.00089	0.081***	0.083
Formal Job	0.34***	0.091*	0.42***	0.43***	0.30***	0.37***
Household Variables:						
Average Age	-0.0033	-0.028***	-0.011***	-0.019***	-0.0069***	-0.0095*
Urban	0.19***	-0.23***	0.20***	0.21**	0.13***	0.23**
Average Years of Education Adults	0.093***	-0.0016	0.082***	-0.033***	0.072***	-0.023*
Total Members	0.12***	0.029**	0.11***	0.062***	0.11***	0.053***
Household ratios:						
Infant 0-5	-0.33	-1.58***	-0.53***	-1.91***	-0.49***	-0.92**
Members aged 6-16	0.037	-1.79***	-0.26*	-2.30***	-0.25*	-1.31***
Members aged 17-25	0.22	-1.22***	-0.018	-1.47***	-0.17*	-1.13***
Adult 25-65	0.21	-0.10	0.17**	-0.49***	0.049	-0.55***
Male/Female Ratio	0.056	0.60***	-0.066*	0.59***	-0.013	0.43***
Share of Employed Members	0.59***	0.39***	0.71***	0.61***	0.61***	0.72***
Highest Education:						
Primary to Incomplete Secondary	0.12***	-0.10	0.17***	-0.12**	0.059**	-0.100
Completed Secondary or Incomplete Tertiary	0.26***	-0.21*	0.37***	-0.24***	0.27***	-0.19*
Tertiary or More	0.38***	-0.21	0.62***	-0.040	0.56***	0.076
Other Variables:						
Homicide Rates	3.12***	-1.74	3.58***	-1.60**	2.92***	-5.46***
Migrant Rates		-9.47***		-9.11***		-3.19***
Model statistics						
Obs.	7235		13673		11503	
Rho	0.029		0.096		-0.41	
Sigma	0.73		0.66		0.60	
Lambda	0.021		0.064		-0.25***	

Table 5.2 Continued

Panel C: Honduras								
2000		2006		2014		2019		
Equation:	Income	Selection	Income	Selection	Income	Selection	Income	Selection
Household Head:								
Age	0.020***	0.0018	0.025***	-0.0047	0.0087***	0.0013	0.012**	-0.022**
Married	0.14***	0.20***	0.17***	0.16***	0.045***	0.15***	0.080**	0.016
Formal Job	0.33***	0.13*	0.26***	0.10***	0.28***	0.057*	0.28***	0.085
Household Variables:								
Average Age	-0.0016	-0.0050	-0.0094***	-0.013***	-0.0029*	-0.0056*	-0.017***	0.022***
Urban	0.27***	-0.14*	0.36***	-0.064*	0.23***	-0.20***	0.31***	-0.29***
Average Years of Education Adults	0.086***	-0.018	0.090***	-0.039***	0.075***	-0.018***	0.058***	0.0049
Total Members	0.12***	-0.0035	0.10***	0.0010	0.14***	-0.018**	0.13***	0.024
Household ratios:								
Infant 0-5	-0.40*	-0.37	-0.72***	-1.01***	-0.45***	-0.22	-0.63**	0.19
Members aged 6-16	-0.30	-0.65	-0.53***	-1.09***	-0.22*	-0.49**	-0.59***	0.35
Members aged 17-25	-0.00093	-0.48	-0.19*	-0.76***	0.064	-0.55***	-0.18	-0.077
Adult 25-65	-0.025	-0.26	-0.032	-0.23*	-0.0038	-0.0086	0.014	0.13
Male/Female Ratio	0.046	0.21*	-0.088**	0.35***	-0.012	0.23***	0.043	0.27**
Share of Employed Members	0.91***	0.90***	0.87***	0.69***	0.66***	0.45***	0.67***	0.39***
Highest Education:								
Primary to Incomplete Secondary	0.16***	-0.30***	0.18***	-0.23***	0.14***	-0.17***	0.20***	-0.11
Completed Secondary or Incomplete Tertiary	0.44***	-0.36**	0.40***	-0.24***	0.33***	-0.28***	0.49***	-0.26*
Tertiary or More	0.72***	-0.13	0.75***	0.29**	0.65***	-0.091	0.81***	-0.26

Table 5.2 Continued

Panel C: Honduras								
Equation:	2000		2006		2014		2019	
	Income	Selection	Income	Selection	Income	Selection	Income	Selection
Other Variables:								
Homicide Rates x1000	2.75***	-3.93*	8.58***	-4.23***	1.46***	-2.17***	3.36***	-2.39*
Migrant Rates		-16.4***		-10.5***		-4.30***		-5.75***
Model Statistics								
Obs.	6909		20393		22883		5390	
Rho	-0.0088		0.14		-0.82		-0.88	
Sigma	0.73		0.80		0.80		0.76	
Lambda	-0.0065		0.11		-0.66***		-0.67***	

Source: Authors' calculations based on household surveys from each country.

Notes: Each combination of country and year has two columns; one corresponds to the income equation and the other to the selection equations of a Heckman model. The income equation uses a logarithmic scale, which is then transformed back into levels using a smearing retransformation. The selection equation is a dummy of not receiving remittances. Rho indicates the correlation of the errors between the income and the selection equation. Sigma corresponds to the standard deviation of the errors in the income equation, while lambda is the Inverse Mills ratio, which is the multiplication of sigma and rho. Both equations are solved simultaneously using maximum likelihood. Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5.3

Migration and Murder Rates Used in the Models

Survey		Homicide Rate		Migrant rate (census)	
Country	Year	Administrative Level	Year of data	Level of merging	Year of data
El Salvador	2000	Municipality	2001***	Municipality	1992
El Salvador	2006	Municipality	2009 ◊◊	Canton	2007
El Salvador	2014	Municipality	2013 ◊◊	Canton	2007
El Salvador	2019	Municipality	2013 ◊◊	Canton	2007
Guatemala	2000	Region	2002*	Region	2002
Guatemala	2006	Department	2009*	Department	2002
Guatemala	2014	Department	2014◊	Municipality	2018
Honduras	2000	Department	2005**	Department	2001
Honduras	2006	Department	2005**	Municipality	2013
Honduras	2014	Municipality	2014 ◊◊◊	Municipality	2013
Honduras	2019	Municipality	2017 ◊◊◊	Municipality	2013

Source: Homicide rates are from the * Observatorio de la Violencia – Dialogos, ** Observatorio de la Violencia – DEGIC, *** Corte Suprema - Instituto de Medicina Legal - Unidad de Estadísticas, ◊ Instituto Nacional de Estadística de Guatemala, ◊◊ Policia Nacional - El Salvador, ◊◊◊ Policia Nacional – Honduras. Migrant rates were calculated from census data, either using microdata from the NSO (Guatemala 2018 Census); IPUMS data (El Salvador 1992 and 2007, Guatemala 2002, and Honduras 2001 census); or the Redatam website of the NSO (Honduras 2013 census).

Note: The administrative level indicates the geographical level at which the rates were added to the main surveys. The lowest level of disaggregation is the canton, followed by the municipality, department and region. Technical specifications and lack of regional variables drive the choice of merging. In some cases merging is not perfect, so the national rates are instead.

Table 5.4

Poverty Results under the Different Simulations

	LMIC Poverty \$3.20			LMIC Poverty \$5.50			Gini		
	Income minus Remittances	Imputed Income	Imputed Income minus Remittances	Income minus Remittances	Imputed Income	Imputed Income minus Remittances	Income minus Remittances	Imputed Income	Imputed Income minus Remittances
2000									
Counterfactual	15.9	13.6	28.1	48.1	47.6	0.53	0.53	0.53	0.53
Actual	12.2		24.0	44.6			0.51		
Change	30%	11%	17%	8%	7%	4%	4%	2%	2%
2006									
Counterfactual	12.0	8.2	24.8	48.1	48.2	0.48	0.48	0.46	0.46
Actual	6.9		18.8	42.4			0.46		
Change	74%	18%	32%	13%	14%	6%	6%	1%	1%
2014									
Counterfactual	6.0	3.6	16.7	40.1	39.2	0.436	0.436	0.419	0.419
Actual	3.0		12.2	34.9			0.416		
Change	104%	21%	37%	15%	12%	5%	5%	1%	1%
2019									
Counterfactual	4.2	1.5	10.3	28.1	27.6	0.41	0.41	0.39	0.39
Actual	1.3		5.7	22.3			0.39		
Change	237%	21%	81%	26%	24%	6%	6%	1%	1%

El Salvador

Table 5.4 Continued

		LMIC Poverty \$3.20			LMIC Poverty \$3.20			UMIC Poverty \$5.50			Gini	
		Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Income minus Remittances	Imputed Income
2000	Counterfactual	10.2	9.1	23.6	22.6	47.3	45.2	0.55	0.55	0.55	0.55	0.55
	Actual	9.2		22.1		44.8				0.54		
	Change	10%	-2%	7%	2%	5%	1%	1%	1%	1%	1%	1%
2006	Counterfactual	14.7	12.4	28.1	26.1	46.8	45.5	0.56	0.56	0.56	0.56	0.56
	Actual	11.1		24.2		43.4		0.55		0.55		
	Change	33%	12%	16%	8%	8%	5%	3%	3%	3%	3%	3%
2014	Counterfactual	9.9	8.5	25.8	24.3	50.4	49.3	0.49	0.49	0.49	0.49	0.48
	Actual	8.7		24.2		48.8		0.48		0.48		
	Change	14%	-2%	6%	0%	3%	1%	1%	1%	1%	1%	0%
2000	Counterfactual	22.4	21.0	37.3	36.2	57.0	56.0	0.56	0.56	0.56	0.56	0.56
	Actual	20.6		35.0		54.6		0.55		0.55		
	Change	9%	2%	7%	3%	4%	3%	1%	1%	1%	1%	1%
2006	Counterfactual	26.1	24.5	41.0	39.8	59.4	58.3	0.58	0.58	0.58	0.58	0.58
	Actual	22.5		36.6		55.2		0.58		0.58		
	Change	16%	8%	12%	9%	8%	6%	2%	2%	2%	2%	2%
2014	Counterfactual	20.3	17.9	36.5	33.8	58.3	56.0	0.52	0.52	0.52	0.52	0.52
	Actual	18.2		33.9		56.1		0.51		0.51		
	Change	12%	-2%	8%	0%	4%	0%	1%	1%	1%	1%	2%
2019	Counterfactual	16.9	14.0	31.1	28.4	50.7	48.6	0.49	0.49	0.49	0.49	0.50
	Actual	14.6		28.7		48.7		0.48		0.48		
	Change	16%	-4%	8%	-1%	4%	0%	2%	2%	2%	2%	4%

Source: Authors calculation using household data.

Note: Each cell corresponds to a unique combination of country, year, poverty rate, and calculation. For example, the first cell (15.9) corresponds to the IPL poverty rate calculated under the first counterfactual ("Income minus remittances") for El Salvador in 2000. The row below (12.2) corresponds to the actual poverty rate, while the following row corresponds to the change between the two (12.2 to 15.9). Poverty numbers can be slightly different from those reported in PovCalNet due to differences between survey versions.

Guatemala

Honduras

Table 5.5

Results of the Simulations Using Adult Equivalents

El Salvador											
IPL Poverty - \$1.90			LMIC Poverty \$3.20			UMIC Poverty \$5.50			Gini		
	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	Income minus Remittances	Imputed Income	
2000	Counterfactual	11.1	9.2	20.6	18.9	38.0	37.5	0.51	0.51	0.51	
	Actual	8.0			16.3			33.6			0.49
	Change	39%	15%	27%	16%	13%	11%	4%	3%	3%	
2006	Counterfactual	7.5	4.2	16.7	14.3	36.8	36.8	0.46	0.46	0.44	
	Actual	3.1			10.8			30.1			0.43
	Change	145%	37%	54%	32%	22%	22%	6%	3%	3%	
2014	Counterfactual	3.9	1.7	10.8	8.6	29.3	28.5	0.415	0.415	0.402	
	Actual	1.3			6.8			24.0			0.394
	Change	209%	33%	59%	26%	22%	19%	5%	2%	2%	
2019	Counterfactual	3.0	0.7	7.3	4.5	20.0	19.2	0.39	0.39	0.38	
	Actual	0.6			3.1			0.37			0.39
	Change	435%	28%	137%	46%	41%	36%	7%	3%	3%	

El Salvador

Table 5.5 Continued

	LMIC Poverty \$3.20			LMIC Poverty \$5.50			Gini
	Income minus Remittances	Imputed Income	Income minus Remittances	Income minus Remittances	Imputed Income	Income minus Remittances	
2000	Counterfactual	5.8	4.9	13.8	13.0	31.7	0.52
	Actual	5.1		12.6		29.6	0.52
	Change	15%	-4%	9%	3%	7%	1%
2006	Counterfactual	8.0	6.2	18.7	16.5	35.4	0.53
	Actual	5.6		14.7		31.4	0.51
	Change	43%	10%	28%	12%	13%	3%
2014	Counterfactual	5.3	4.3	15.5	14.1	37.8	0.46
	Actual	4.2		14.0		36.2	0.45
	Change	26%	1%	11%	1%	4%	1%
2000	Counterfactual	14.5	13.3	28.1	26.6	46.2	0.54
	Actual	13.0		25.9		43.5	0.53
	Change	12%	2%	8%	3%	6%	1%
2006	Counterfactual	19.3	17.6	32.2	31.1	49.6	0.56
	Actual	16.1		28.0		45.1	0.55
	Change	20%	9%	15%	11%	10%	1%
2014	Counterfactual	13.8	11.7	27.5	24.8	48.6	0.50
	Actual	11.8		24.7		45.8	0.49
	Change	17%	-1%	11%	0%	6%	1%
2019	Counterfactual	11.1	8.7	24.4	21.6	43.4	0.47
	Actual	8.9		21.8		40.8	0.46
	Change	24%	-3%	12%	-1%	6%	2%

Source: Authors calculation using household data.

Note: The calculations here correspond to an adult equivalence that assigns a value of 1 to every adult and a value of 0.5 to any children under the age of 18.

6 Remittances and Human Capital Accumulation

María Laura Oliveri, Kinnon Scott, and Liliana Sousa

Introduction

Migration and remittances can affect households' consumption and investment decisions. Of particular importance for the welfare of the household as well as broader development goals of the country are decisions that affect investments in human capital, those attributes and skills that affect an individual's future earnings and well-being.⁹⁴ Typically, investments in human capital take the form of improving an individual's nutrition, health, education, and skills. Such investments have been shown to improve an individual's welfare by increasing their earnings over their life span,⁹⁵ while on a larger scale, human capital investments can contribute to countries' overall economic development.⁹⁶ Migration and remittances can have both positive and negative effects on human capital.⁹⁷ By increasing household income, remittances free up resources that households can then use to invest in the human capital of their members. Also, the migrants themselves can be a new source of knowledge and information for their households of origin.⁹⁸ On the other hand, if the individuals who did not migrate, especially children, become more vulnerable or experience worse outcomes than they would have otherwise, migration can actually lead to decreased human capital.

94 The seminal works on human capital investments are Mincer (1958), Becker (1962), and Becker (1964).

95 Mincer (1974), Case et al (2005), and Smith (2009).

96 Barro (1991) and Barro and Lee (2013).

97 Bucheli et al (2018).

98 Montoya Arce et al (2011), Waddel and Fontenla (2015), Valette (2018)

There is substantial evidence on how remittances affect nutrition, a core element of health, but there is less evidence on how they affect other health characteristics. By relaxing households' budget constraints, remittances allow them to buy more food and/or to consume a more nutritious or diverse diet. Remittances can also free up household members' time, particularly for childcare. Both the improved diet and greater childcare can lead to improvements in health. Studies of Guatemala, Tajikistan, Vietnam, Honduras, and Mexico have found evidence of improved nutrition outcomes in households receiving remittances as well as increased expenditure on food.⁹⁹ Remittances can also mitigate the impact of external shocks. A study of the food price shock in El Salvador in 2008 found that children living in households with access to remittances were substantially less negatively affected by the sharp rise in food prices than children in households that received no remittances whose height for age scores declined significantly.¹⁰⁰

However, migration itself can have negative repercussions for child health that may not be fully offset by remittance flows. Children whose parents do not live in the household may be more vulnerable in various ways. There may be fewer working-age adults in these households to take care of children, and the children themselves may be required to take over some tasks. In Guatemala, the absence of the primary breadwinner and the need to borrow money to finance the trip may reduce households' food budgets and their ability to obtain sufficient food, especially for children.¹⁰¹ In Tonga, the children left behind by migrants suffered poorer diets and greater levels of malnutrition, while in China, evidence was found that older children of migrant families were underweight and were required to do more household chores than before the migration. There is additional evidence that Chinese children's weight-for-age was adversely affected by parental migration.¹⁰² In Ghana, while the impact of migration on overall food consumption was insignificant, there was evidence that households with a migrant switched to less nutritious foods.¹⁰³

Educational outcomes are affected by migration and remittances. The increased household income that remittances represent can be used to invest in education and may lower the demand for child labor. Previous research in Honduras found that households receiving remittances increased their spending on education per capita.¹⁰⁴ A meta-analysis covering 30 countries yielded evidence that both domestic and international remittances increased households' budget allocations to education.¹⁰⁵ A cross-country analysis of 89 developing

99 Carletto et al (2011) for Guatemala, Azzarri and Zezza (2011) for Tajikistan, Nguyen and Winters (2011) for Vietnam, Howard and Stanley (2017) for Honduras, and Hildebrandt and McKenzie (2005) and McKenzie and Rapoport, (2006) for Mexico.

100 De Brauw (2011).

101 Davis and Brazil (2016).

102 Meng and Yamauchi (2017).

103 For Tonga, see Gibson et al (2011); for China, see Chang et al (2011), and De Brauw and Ren (2011); and for Ghana, see Karamba et al, (2011).

104 Howard, and Stanley (2017).

105 Askarov and Doucouliagos (2020).

countries showed that a 1 percent increase in remittance flows was associated with a 2 percent increase in secondary and tertiary education enrollment.¹⁰⁶ A different review of 69 countries found that primary and secondary school attainment was higher among remittance-receiving households than among non-receiving ones.¹⁰⁷ In some circumstances, this effect was found to have been stronger for children in the poorest households and for younger children, thus helping to close the educational inequality gap.¹⁰⁸

However, the effects are not always positive. The migration process can also affect the cost-benefit ratio of education investments. When the returns to migration are higher than the returns to schooling at the household level, migration leads to lower investment in human capital.¹⁰⁹ Also, as with health, the absence of one or both parents due to migration can leave children vulnerable, offsetting the positive effect of remittances on schooling,¹¹⁰ and changing the dynamics in the household. Children may spend less time studying, may be more likely to repeat a grade, and if they fall behind during their elementary school years, can experience long-term adverse effects on their educational attainment and their physical and mental health.¹¹¹ Older children may be less supervised by the remaining adults in the household or they may be called upon to substitute for the household labor of the migrant.¹¹² Thus, who migrates and remits are important factors determining the net effect on school enrollment and decisions on education spending.¹¹³

This chapter takes stock of the role played by remittances in building human capital in Northern Central America (NCA) in recent years. Specifically, the chapter focuses on education and, in the case of Guatemala, food security as a proxy for health and nutrition. Using data from the Guatemalan *Encuesta Nacional de Condiciones de Vida* 2014 (ENCOVI), we calculated the odds ratios of households being food-insecure depending on whether they received remittances or not. Unfortunately, Guatemala was the only one of the three countries that had detailed data on food security and migration in the same survey. The second central question addressed in this chapter is how remittances affect educational outcomes in Northern Central America. In terms of educational outcomes, we explored: (i) the relationship between remittances and spending

106 Abubakar and Ismail (2013).

107 Zhunio et al (2012).

108 For example, Borraz (2005) showed that remittances sent to Mexico significantly improved the lives only of children in rural areas and mothers with low educational level. Acharya and Leon (2014) found that remittances had more of a positive effect on the schooling of poor children than of richer children in Nepal.

109 Grigorian and Melkonyan (2011) found that migrant households spent less on education than those without migrants because they experienced greater returns from migration than from education. Adams (2011) found similar evidence in his review of the literature on the impact of remittances in 50 countries.

110 Bucheli et al (2018).

111 Liang and Sun (2020).

112 Adams (2011) in a review of 50 studies of the impact of remittances found greater drop out among older children, while Acharya et al (2014) found that the negative effect on schooling of an absent parent outweighed the positive effect of the remittances that they sent.

113 Cortes (2015) showed that if the migrant is the child's mother, the net effect on education was negative, while Bennet et al (2013) found that, in Tajikistan, remittances sent by siblings led to less investment in education than remittances sent by parents.

behavior on education as an investment good and (ii) the relationship between remittances and children's school attendance. For this, we used data from the year 2014 from the ENCOVI for Guatemala; the *Encuesta Permanente de Hogares de Propósitos Múltiples* (EPHPM) for Honduras for 2014 and 2019,¹¹⁴ and the *Encuesta De Hogares De Propósitos Múltiples* (EHPM) for El Salvador for 2014 and 2019. Due to data constraints, we used only information from Guatemala and El Salvador to analyze the first of the two education relationships.

Background

Human Capital in Northern Central America

Levels of human capital, those personal attributes and characteristics that allow a person to be a contributing member of the economy of their country, are low and unequally distributed in the countries of the NCA region. At the most basic level, nutrition, a key input to general health, is a serious concern. The most recent, nationally comparable data on malnutrition show that, in Guatemala, the rate of chronic malnutrition or stunting is 46 percent, meaning that almost one in every two children fall into the malnourished category. In Honduras, one in four children is malnourished. Even El Salvador, which is substantially better off, still has high levels of stunting among its children (14 percent in 2015).¹¹⁵ In Guatemala, chronic malnutrition (stunting) is a persistent problem, having fallen by only 2 percentage points since 2008 despite several government programs aimed at reducing it.¹¹⁶ The levels in the NCA countries are well above those in Latin America as a whole (Figure 6.1). Another indicator of poor nutrition is the rate of vitamin A deficiency among children, which ranges from 11 percent in Honduras to 7 percent in El Salvador and 5 percent in Guatemala.

Education levels in Central America are also low and uneven. Overall, the average years of schooling among people aged 25 and older in Central America is 4.2 years of schooling lower than the OECD average.¹¹⁷ While significant progress has been made in increasing primary

114 As children are on vacation in December in Honduras, the analysis here includes only the March, June and September rounds of the survey.

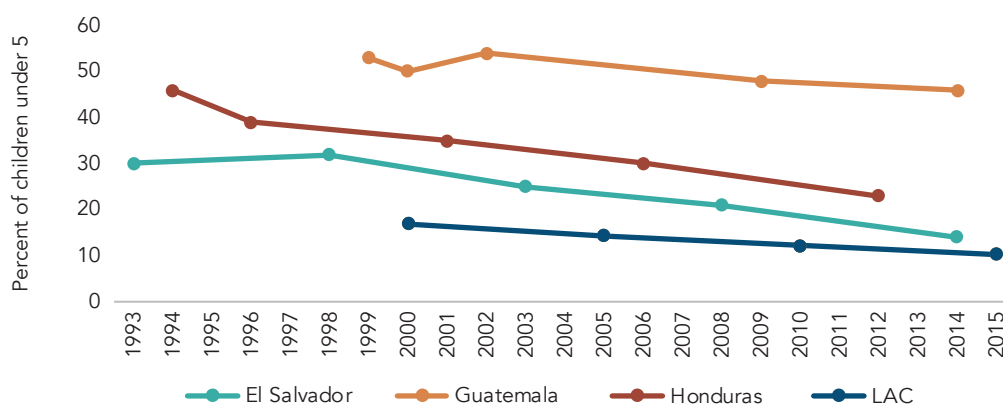
115 National data on malnutrition are infrequently collected. However, other indicators suggest that there have not been any significant changes in malnutrition in the past few years in Guatemala. The number of children under 5 years old with malnutrition treated by the Ministry of Public Health increased between 2014 and 2109 (Vargas Sejas et al, no date). In Honduras in 2020 almost 45 percent of households reported being food insecure (defined as one member having to skip a meal due to a lack of resources) (World Bank, 2022a). Given the reductions in poverty in El Salvador (see Chapter 5) and the fact that its growth was pro-poor (World Bank Group, 2022c), it can be expected that malnutrition has declined in El Salvador.

116 In 2012, the government initiated a "1000 Days Window Initiative" under the *Hambre Cero* (Zero Hunger) program aimed at reducing child malnutrition and mortality by taking a multi-sectoral approach involving several ministries. Although no specific nutrition program was implemented, the government has increased social protection spending from 2.9 percent of GDP to 3.9 percent to mitigate the economic effects of the COVID-19 pandemic (Vargas-Sejas et al, no date).

117 UNDP (2019). The average number of years of education received by people aged 25 and older (converted from education attainment levels using official durations of each level) in 2018 in Central America was 7.6, while for OECD countries, the average value was 11.8.

school enrollments, children continue to drop out of school at early ages (Figure 6.2). The effect of this is that secondary school completion rates are very low – only a third of Guatemalans between the ages of 15 and 19 had completed the 9th grade in 2014 (Figure 6.3), and tertiary enrollment and completion rates are even lower. Large gaps exist in enrollment and attainment between urban and rural areas, among households of different economic status, and between genders and ethnicities.¹¹⁸ Learning poverty (a measure of both schooling and learning deprivation) is high. As many as 67 percent of 10-year-olds in Guatemala were unable to read and understand a simple paragraph, while in Honduras the figure was 75 percent and in El Salvador 55 percent. In contrast, the comparable figure for the LAC region was 51 percent.¹¹⁹

Figure 6.1 Trends in Chronic Malnutrition



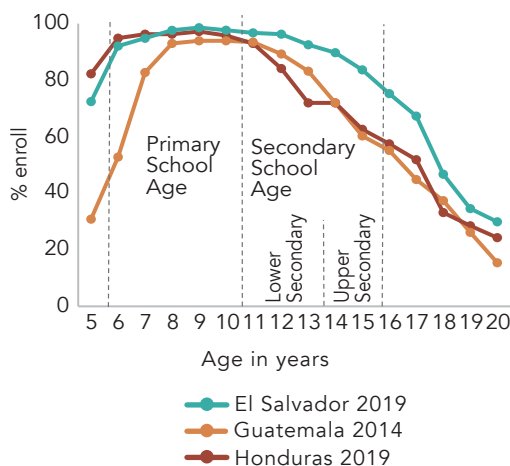
Source: LAC average from UNICEF-WHO-World Bank (2018) and country-specific figures from Global Nutrition Report (2017).

Note: The figure uses the latest available data.

118 For evidence of these gaps, see Sanchez et al (2016) and World Bank Group (2022b) for Guatemala; Calvo Gonzalez and Lopez (2015) for El Salvador; and Hernandez et al (2017) and World Bank Group (2022a) for Honduras.

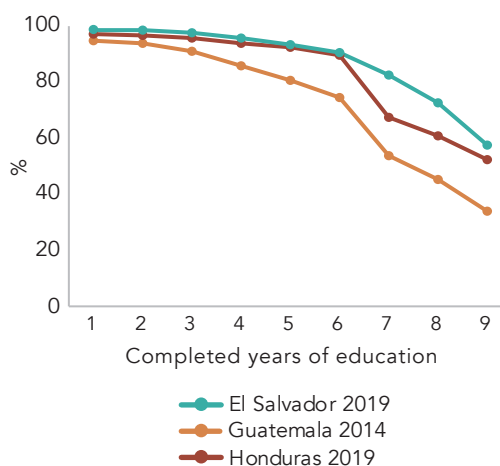
119 The indicator is $=[LD \times (1-SD)] + [1 \times SD]$ where SD is school deprivation or the share of children out of school and LD is learning deprivation or the share of children aged 10 in school who cannot read and understand a simple paragraph (World Bank, 2022d and 2022e).

Figure 6.2 Children Enrolled in School by Age (%)



Source: Authors' calculations based on EHPM 2019 (SLV), EHPM 2019 (HND), and ENCOVI 2014 (GTM).

Figure 6.3 Grade Attainment among 15 to 19 Year Olds



Source: Authors' calculations based on EHPM 2019 (SLV), EHPM 2019 (HND), and ENCOVI 2014 (GTM).

Remittances and Health

The most fundamental investment that can be made in human capital is in nutrition.¹²⁰ Adequate nutrition is critical to both health and education and, ultimately, earnings. While access to health and education services is important, malnourishment can undermine the ability of children and adults to benefit fully from such services. Research has shown that children who are malnourished are unable to take full advantage of schooling opportunities. Malnourishment affects the immune system, which can increase the incidence of illness, which in turn leads to lower attendance and more repetition and/or dropouts. Even when malnourished children attend school, they often suffer from cognitive delays that negatively affect their learning. And childhood malnutrition can lead to a lifetime of lower earnings. A longitudinal study in Guatemala showed that men who had higher levels of nutrition as children had earnings that were 46 percent higher than those of men who suffered from malnutrition in childhood.¹²¹

120 Investments in other aspects of health are also critical for the creation of human capital. Unfortunately, the spending data available in the surveys used here were inadequate for analyzing the effects of remittances on these other dimensions of health. In the three countries, public and free health care is available for the majority of the population. Those who can and who wish to can purchase health care in the private market. Essentially, health care spending is truncated for lower-income groups, which would bias any assessment of the association between the receipt of remittances and spending on health care. Obviously, not all costs associated with health care are related to the service provider as transportation costs, childcare, medicines, and other costs would still be borne by those using the public health system. However, we did not have any data on these out-of-pocket expenditures on an annual basis either.

121 Martorell et al (2010), Martorell (1992), and Ramirez-Zea et al (2010).

Remittances, by easing households' budget constraints, would be expected to decrease malnutrition by allowing households to purchase more and better-quality calories. While there are no data in the three NCA countries that would enable us to look directly at the impact of remittances on malnutrition, in Guatemala, it is possible to look at the correlation between the receipt of remittances and food security in the household. Food insecurity arises when households lack access to the food needed for health and normal functioning, whether because of the unavailability of food, problems of economic or physical access, the use of food within the household, or instability of access.¹²² In Guatemala, the 2014 ENCOVI contains a standard set of questions on food insecurity, and we used these data as a proxy for nutritional outcomes.

Guatemala has high rates of food insecurity, both relative to other countries in Latin America as well as the rest of the world.¹²³ There are several definitions of food insecurity, but we defined it in two ways. First, a household was considered to be food-insecure if, during the three months prior to the survey, any of the following conditions existed: the household ran out of food, any household member was hungry but did not eat, or any household member ate only once or not at all during an entire day. The second definition added those households in which any member was only able to consume a diet low in diversity. This joint definition took into account the importance of the content of food and not just the number of calories for health and human development.¹²⁴ The data show that the high levels of malnutrition found in Guatemala are mirrored by high levels of food insecurity. Approximately 41 percent of households reported consuming an insufficient quantity of food, while 66 percent reported consuming either insufficient food or a low diversity diet. Among children under the age of 18, 52 percent ate a diet low in diversity, and there were strong differences by poverty status with three out of four children in extremely poor households suffering from food insecurity (dietary diversity) while fewer than one in three non-poor children did so (Table 6.1).

Households that received remittances spent more, as a share of total spending, on food than households that did not received remittances. While households that reported receiving no remittances spent an average of 26 percent of their income on food, remittance-receiving households spent 29 percent. The difference was larger among lower-income households, suggesting that remittances played a role in improving nutrition. Among the poorest 20 percent of households, the ENCOVI data showed that 33 percent of the income of remittance-receiving households was spent on food, which was 5 percentage points higher than the share spent by non-recipient households in the same income bracket (Figure 6.4). This gap narrowed only slightly for households in the next three quintiles. It was only among the richest households in

122 FAO (2013).

123 Sanchez et al (2016).

124 One of the critiques of food insecurity measures is that they account for caloric insufficiency but do not address the other aspects of nutrition (such as the lack of micronutrients or protein). The dietary diversity measure captures some element of nutritional completeness. (See Kakwani and Son, 2016 for a discussion of the difference between food insecurity and undernutrition.) Note also that both measures used here are constructed at the household level, so they do not capture any variations in food insecurity within the households.

the fifth quintile – households close to or in the middle class – that food spending as a share of income was similar for both remittance-receiving and non-receiving households. These differences in spending on food could suggest that remittances have a positive impact on food consumption and nutrition.

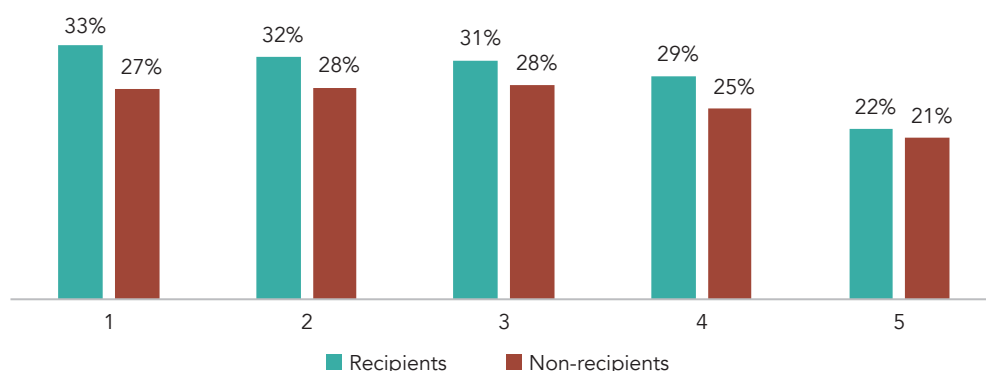
Table 6.1
Food Insecurity in Guatemala, 2014

Due to a lack of resources, in the last three months did a child under 18:	Total	Extreme	Moderate	Non-Poor
Have an unbalanced or unhealthy diet	53	74	58	33
Have a diet low in diversity	52	74	56	31
Eat less than should	30	45	32	16
Household reduced food	27	42	29	14
Miss a meal	14	24	15	6
Feel hunger without being able to eat	12	21	12	4
Eat once during a day or not at all	8	12	8	4

Source: Authors' calculations based on ENCOVI 2014.

Notes: The poverty status variables here are based on Guatemala's national poverty lines. The extremely poor represent 23 percent of the population and the moderate poor another 36 percent of the population. The non-poor are the top 40 percent.

Figure 6.4 Proportion of Income Spent on Food by Income Quintile, Guatemala 2014



Source: Authors' calculations using ENVOCI and SEDLAC (CEDLAS and The World Bank).

Note: The figure contains the average share of household income spent on food. Remittance-recipient households are those that reported a positive value for remittances received. The income quintiles were constructed from the distribution of pre-remittance household per capita income. Food products were those purchased for consumption, including food products purchased away from home for immediate consumption.

Table 6.2

Odds Ratio of Being a Food-insecure Household, Guatemala 2014

	(1)	(2)
1 if the household has positive remittances	0.611*** (0.049)	0.525*** (0.043)
=1 if head is male	0.964 (0.055)	0.945 (0.060)
Age of the head	1.006*** (0.002)	1.001 (0.002)
Never attended	10.441*** (2.600)	12.074*** (2.176)
Primary incomplete	7.339*** (1.817)	7.940*** (1.401)
Primary complete	5.158*** (1.289)	4.967*** (0.885)
Secondary incomplete	4.367*** (1.114)	3.798*** (0.701)
Secondary complete	2.385*** (0.613)	1.853*** (0.340)
Tertiary incomplete	1.523 (0.530)	1.489 (0.378)
Number of household members	0.922*** (0.010)	0.951*** (0.010)
Share of dependents	1.300*** (0.128)	1.189* (0.118)
Observations	9,594	10,157
Pseudo-R2	0.0789	0.124
Department FE	Yes	Yes

Source: Authors' calculations based on ENCOVI 2014 and SEDLAC (CEDLAS and The World Bank).

Notes: Dependent variable is a dummy taking value =1 if a household is food insecure, 0 otherwise. Two definitions for food insecurity are considered. In the first definition, in column (1), a household is considered food insecure if -during the last three months and at least once: (i) the household ran out of food; or (ii) any member was hungry but did not eat; or (iii) any member ate only once not at all during a whole day. The second definition in column (2) adds the additional condition of any household member having eaten a diet low in diversity. Regression is run at household level including weights and department fixed effects. Robust standard errors in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

The association between receiving remittances and better food security was strong. Even after considering other household characteristics that could explain differences in food insecurity, remittances were associated with lower levels of food insecurity (Table 6.2). The odds of a household reporting having insufficient food fell by nearly 40 percent if it also reported receiving remittances compared to a similar household that reported receiving no remittances. The odds of a household experiencing the broader type of food insecurity (insufficient food or low diversity diet) fell by nearly half when remittances were received. In short, remittances appeared to be a protective factor against food insecurity. Among recipients of remittances, a 10 percent increase in the amount of remittances received by a household reduced the likelihood of food insecurity by 7 to 7.8 percent depending on which definition was used (Annex Table 6.1).

Remittances and Education

Education Spending

The existing studies of the relationship between remittances and household investments in children's education have used different measures of educational attainment such as school enrollment,¹²⁵ years of schooling,¹²⁶ and school grade attained.¹²⁷ In this section, we focus on expenditures and enrollment of children from 6 to 22 years old. Due to data limitations, we were able to conduct the expenditure analysis only for Guatemala (2014) and El Salvador (2014 and 2019). However, enrollment data exist for all three NCA countries, so we were able to look at the relationship between remittances and enrollment across the region.

Households that received remittances set aside a higher share of their total expenditures for education than those households that did not receive remittances (Table 6.3).¹²⁸ The share of household income devoted to schooling was much higher in El Salvador in both 2014 and 2019 than in Guatemala, although the amounts, in 2011 PPP terms, were higher in Guatemala. In 2014, in both Guatemala and El Salvador, remittance-receiving households had higher total education spending per child (aged from 6 to 22) or per enrolled child (in the same age range) than households that received no remittances. In 2014, in El Salvador, the differences were greatest for poor households (defined as those living under the \$5.50 per person per day poverty line) and for rural households. The education spending gaps between remittance-receiving and

125 Amuedo-Dorantes and Pozo (2010), Acosta (2011), King and Lillard (1987), Nguyen and Purnamasari (2011), and Cox Edwards and Ureta (2003).

126 Hanson and Woodruff (2003).

127 McKenzie and Rapoport (2006).

128 The surveys in both Guatemala and El Salvador contain data on education spending at the household level. In El Salvador, the question on education spending is asked at the aggregate level so the data on spending cannot be assigned to an individual student. In Guatemala, the data are collected at the individual level. For comparability, for both countries, total household education expenditure was used in calculations to produce total education spending per child. The more detailed information in Guatemala shows similar patterns to those found in the aggregate analysis, but for simplicity's sake, we do not report these additional figures.

non-receiving households were consistently larger in Guatemala, suggesting that remittances relaxed the liquidity constraints faced by households in Guatemala more than in El Salvador, a not surprising finding given the higher poverty rates in Guatemala. In El Salvador, while the results are largely consistent with remittances being associated with an increased demand for private schooling, reflected through higher educational spending among recipients, this is not the case for urban and non-poor families in 2019. These results, combined with Ministry of Education data showing a reduction in enrollment in private secondary schools,¹²⁹ suggest a potential decreased demand for private schooling among this group. This could also reflect a reduction in gang activity in public schools coinciding with an overall decrease in crime rates (as measured by homicides). Additional investigation is needed to better understand if there were underlying policy changes or changes in the quality of public schooling during this period that could explain this shift away from private schooling in urban El Salvador.

The contrast with Guatemala is strong: among the poor in Guatemala, remittance-receiving households spent almost twice the amount spent by non-receiving households per enrolled student. Indigenous households that received remittances spent 75 percent more per student than non-remittance-receiving households did. While no recent data exist for Guatemala, estimates of poverty have shown no reduction,¹³⁰ so it can be expected that the situation there had not changed.

Table 6.3

Education Spending Measures by Remittance Status of Household, 2014 and 2019

	Household receives remittances?	Education spending per capita (US \$ 2011 PPP)	Education Spending per child (US \$ 2011 PPP)	Education spending per enrolled child (US \$ 2011 PPP)
El Salvador 2014				
Overall		98	238	264
Overall	Yes	111	259	291
Overall	No	95	234	259
Rural	Yes	83	181	221
Rural	No	63	147	174
Urban	Yes	133	319	345
Urban	No	111	279	303
Poor (5.5)	Yes	90	206	254
Poor (5.5)	No	71	165	197
Non-Poor (5.5)	Yes	117	272	300
Non-Poor (5.5)	No	106	265	287

129 Between 2014 and 2019, for upper secondary, the share of students in private schooling fell from 26 percent to 22 percent ((MINEDUCYT, 2022).

130 World Bank (2022b).

Table 6.3 Continued

	Household receives remittances?	Education spending per capita (US \$ 2011 PPP)	Education Spending per child (US \$ 2011 PPP)	Education spending per enrolled child (US \$ 2011 PPP)
El Salvador 2019				
Overall		91	229	250
Overall	Yes	88	213	234
Overall	No	91	234	254
Rural	Yes	65	153	180
Rural	No	59	149	174
Urban	Yes	109	268	284
Urban	No	108	279	298
Poor (5.5)	Yes	79	189	220
Poor (5.5)	No	68	169	196
Non-Poor (5.5)	Yes	89	216	236
Non-Poor (5.5)	No	97	249	269
Guatemala 2014				
Overall		175	388	437
Overall	Yes	236	506	576
Overall	No	169	376	423
Rural	Yes	133	270	320
Rural	No	76	161	194
Urban	Yes	345	764	857
Urban	No	245	559	618
Poor (5.5)	Yes	143	293	344
Poor (5.5)	No	70	148	181
Non-Poor (5.5)	Yes	280	611	691
Non-Poor (5.5)	No	241	549	607
Indigenous	Yes	161	350	386
Indigenous	No	82	184	220

Source: Authors' calculations based on EHPM 2014 and 2019 (El Salvador) and ENCOVI 2014 (Guatemala) and SEDLAC (CEDLAS and The World Bank).

We explored the extent to which the receipt of remittances was related to education expenditures after controlling for other household characteristics. Specifically, we regressed household spending on education on whether or not a household received remittances. We first ran a simple ordinary least squares (OLS) regression, and then, given that the decision to migrate and to remit are linked to household characteristics, we estimated the effect using a linear regression with an endogenous treatment effect model (ET) to allow for the possibility that receiving remittances in a household can be endogenous to the investment decision.

We first estimated the relationship between human capital expenditures (education spending) and the receipt of remittances. The analysis was limited to households with dependent children between 6 and 22 years of age. We excluded from the analysis any individuals under 23 who were either the head of household or the spouse of the head of household.¹³¹ The ordinary least squares (OLS) model specification was:

$$\text{Expenditure per child}_i = \beta_0 + \beta_1 R_i + \beta_2 X_i + \beta_3 \text{region}_i + e_i \quad (I)$$

where the dependent variable was education expenditures per child in the relevant age group, R_i was a dummy variable indicating if the individual lived in a household that received remittances,¹³² and X_i represented a vector of household characteristics including: a location dummy taking on the value of one if the household lived in an urban area, the share of adults in the households, per capita household income (income minus remittances), the characteristics of the head of household (such as male/female, married, and age), the highest level of education of the household members, a dummy variable indicating that there was at least one member with tertiary education in the household, and a dummy variable indicating whether the household had multiple children from 6 to 22 years old in school. Finally, e_i referred to a random error term.

The results are presented in Table 6.4, columns 1 through 3. We found a positive and significant coefficient on the remittance variable for education spending per child. The receipt of remittances was associated with a 48 percent higher education expenditure per child in Guatemala and 23 percent in El Salvador. While not reported here, we ran the model using education spending per enrolled child as the dependent variable, and the association between higher spending and remittances was consistent. In the case of Guatemala, the coefficient on remittance receipt was higher when we used education expenditure per child rather than education expenditure per enrolled child.

131 In Guatemala, this led to 9 percent of households with children from 6 to 22 years old being excluded from the analysis and 8.8 percent in El Salvador.

132 All monetary variables are in 2011 PPP. Adults are defined as those aged 25 and older.

Table 6.4

Results of the OLS and Linear Regression with Endogenous Treatment Effect (ET) Models for Education Spending Per Child (in log)

Dependent variable: In (education spending per child)	GTM (OLS) 2014 [1]	SLV (OLS) 2014 [2]	SLV (OLS) 2019 [3]	GTM (ET) 2014 [4]	SLV(ET) 2014 [5]	SLV (ET) 2109 [6]
HH receives remittances	0.483*** (0.0735)	0.398*** (0.0357)	0.228*** (0.0398)	0.624* (0.333)	0.802*** (0.160)	0.0482 (0.147)
Urban area	0.534*** (0.0459)	0.227*** (0.0291)	0.247*** (0.0324)	0.667*** (0.0444)	0.255*** (0.0287)	0.253*** (0.0322)
Share ages 25+	2.678*** (0.175)	1.547*** (0.117)	1.594*** (0.134)	2.750*** (0.166)	1.468*** (0.102)	1.620*** (0.123)
Ln(Per capita household income)	0.276*** (0.0321)	0.138*** (0.0208)	0.0831*** (0.0240)	0.315*** (0.0352)	0.202*** (0.0299)	0.0616** (0.0306)
Female-headed household	0.291*** (0.0857)	0.0254 (0.0448)	-0.00240 (0.0470)	0.267** (0.118)	0.0209 (0.0414)	0.0149 (0.0459)
Highest years of education of adults	0.117*** (0.00583)	0.0565*** (0.00365)	0.0606*** (0.00437)	0.117*** (0.00613)	0.0541*** (0.00386)	0.0637*** (0.00450)
Married household head	-0.0306 (0.0881)	0.185*** (0.0483)	0.189*** (0.0508)	-0.0691 (0.0925)	0.246*** (0.0493)	0.173*** (0.0513)
Age of household head	-0.0182*** (0.00171)	-0.0147*** (0.00106)	-0.0162*** (0.00121)	-0.0193*** (0.00178)	-0.0164*** (0.00123)	-0.0153*** (0.00136)
At least household member with tertiary education	0.312** (0.125)	0.472*** (0.0606)	0.475*** (0.0641)	0.341*** (0.118)	0.452*** (0.0617)	0.469*** (0.0642)
Household with multiple children in school	1.864*** (0.0421)	1.741*** (0.0283)	1.738*** (0.0293)	1.892*** (0.0441)	1.746*** (0.0293)	1.743*** (0.0332)
Regional dummies	x	X	x			
Constant	1.030*** (0.217)	2.420*** (0.128)	2.719*** (0.150)	0.624* (0.333)	2.143*** (0.168)	2.891*** (0.173)
Dependent variable: Household receives remittances						
Percentage of emigrants in department in natural log				0.235*** (0.0250)	0.457*** (0.0259)	0.517*** (0.0237)
Observations	7,937	12,783	11,909	7,937	12,783	11,909
R-squared	0.373	0.317	0.280			
Lambda				-0.0862 (0.176)	-0.241*** (0.0923)	0.0994 (0.0866)
Wald chi2				5775.76	7031.55	5813.25
Prob > chi2				0.0000	0.0000	0.0000

Source: Authors' calculations based on household surveys.

Note: (1) * p<0.10, ** p<0.05, *** p<0.001; (2) regional dummies were included at the department level in the OLS model (3) Household income is total household income minus remittances.

The OLS findings, however, were likely to be biased due to the endogenous nature of both migration and remittances, but the direction of the bias was not, *a priori*, certain. To account for the potential endogeneity of the remittance decision, we needed an instrumental variable, a variable that was correlated with the probability of receiving remittances but not with school spending, except through remittances. In this context, we used the migration rate in each department as our instrumental variable as it measured the intensity of local migration networks, which, in turn, could predict the existence of remittances. We used an OLS regression with endogenous treatment effects (ET), using the instrument to re-estimate the relationship between household education spending and households' status as receiving remittances. The specification was the same except for the endogenous treatment effect with the selected instrument and the fact that no regional effects were included in the model. The analysis again was limited to households with dependent children between 6 and 22 years of age.

As can be seen in Table 6.4, columns 4 through 6, the effect of the immigration network was significant and large for Guatemala and El Salvador in 2014, when the coefficients on the remittances dummy variable were even higher than in the OLS model. The effect was particularly strong in El Salvador where a household receiving remittances spent 80 percent more than a household that received no remittances after controlling for other characteristics of the household. In Guatemala, the difference was not as large but still substantial. However, the difference became smaller and statistically insignificant in El Salvador in 2019.¹³³

School Enrollment

Another way to explore how remittances affect human capital formation is to analyze the association between the receipt of remittances and school enrollment rates among children. Overall, we looked at children between the ages of 6 and 24, with the upper age limit being an attempt to capture over-age children who may have started school late or repeated a grade. We divided the group into three sub-groups. The first group was those children from 6 to 12 years old, which corresponds to primary school age, the second contained children from the ages of 13 to 18 or secondary school age, and the third contained those in tertiary education and aged from 19 to 24. As seen earlier, overall levels of enrollment fell sharply by level of schooling. At the primary age, the vast majority of children were enrolled, but by tertiary education, only 14 to 24 percent were enrolled depending on the country (Table 6.5).¹³⁴ Additionally, there were

133 Given the difference in urban and rural areas, we re-ran the regression with an urban and remittances interaction term. The resulting coefficient on remittances was larger but still not significant.

134 The education systems in the three countries analyzed vary. In El Salvador children aged between 7 and 15 generally attend primary education, which is divided into three cycles of three years each, from 1st to 9th grade. Children aged 16 to 19 attend secondary school, which goes from 10th to 13th grade. In Honduras, basic education covers children from 6 to 14 years old, while secondary education covers those from 15 to 17 years old, divided into two modalities, each with a duration of two to three years. In Guatemala, children start primary school at 7 years of age, which ends when children are 12 years old, while secondary school covers students from 13 to 18 years old. For comparability purposes, we used the same ages for all three countries although this is somewhat problematic for comparing schooling levels.

significant differences in enrollment by location. Overall, El Salvador had the highest rates of attendance for all age groups.¹³⁵

Table 6.5

Education Attendance Rates by Country, Geographical Area, and Age Group

Country/Age Group	Overall	Rural	Urban
Guatemala 2014			
Age 6-24	57%	53%	62%
Age 6-12	86%	83%	89%
Age 13-18	59%	50%	69%
Age 19-24	14%	8%	20%
Honduras 2014			
Age 6-24	59%	50%	65%
Age 6-12	94%	92%	95%
Age 13-18	55%	37%	69%
Age 19-24	20%	6%	28%
Honduras 2019			
Age 6-24	60%	51%	68%
Age 6-12	94%	91%	96%
Age 13-18	57%	40%	72%
Age 19-24	22%	9%	31%
El Salvador 2014			
Age 6-24	66%	59%	70%
Age 6-12	96%	94%	97%
Age 13-18	75%	64%	82%
Age 19-24	23%	11%	31%
El Salvador 2019			
Age 6-24	64%	58%	68%
Age 6-12	96%	94%	97%
Age 13-18	74%	66%	81%
Age 19-24	24%	13%	32%

Source: Authors' calculations based on EHPM 2014 and 2019 (SLV); EHPM 2014 and 2019 (HND), and ENCOVI 2014 (GTM), and SEDLAC (CEDLAS and The World Bank).

135 Again, the only data available for Guatemala are for 2014 and, thus, the picture is not strictly comparable with rates for El Salvador and Honduras. However, the changes between 2014 and 2019 in the latter two countries were quite small or non-existent.

When we tested for the difference in enrollment rates among children in different age groups from households that did and did not receive remittances, we found an important link between remittances and enrollment although this relationship appears to weaken over time (Figure 6.5).¹³⁶ As might be expected, we found higher differences in attendance rates between the two types of households where there was the greatest gap in school attendance for each specific age group, in other words, where there was the greatest potential for impact. In 2014, school enrollment among most age groups was significantly higher for children living in remittance-recipient households in each country. The greatest overall difference was in Guatemala where children from households receiving remittances had a 5-percentage point higher rate of enrollment (8 percent) than children in household that did not receive remittances. In El Salvador and Honduras, the difference was much smaller. In Guatemala in 2014 the differences were significant for all age groups, except for children of tertiary schooling age. For both Honduras and Guatemala, the link between remittances and enrollment was larger among secondary school children than among the other two age groups. The difference in Guatemala was large, 13 percentage points, and in Honduras, the difference was 9 percentage points. By 2019, however, the link between remittances and enrollment was weaker in El Salvador with the only significant difference found for the oldest age group. In contrast, in Honduras enrollment rates for children of primary and secondary age continued to be significantly higher for households receiving remittances. As we have seen in Chapter 5, El Salvador had the highest share of households receiving remittances among the three NCA countries and thus, we would have expected the differences in school attendance in El Salvador to have been higher for all age groups. For Honduras, the continued importance of remittances reflects the continued high levels of poverty in the country.

Further breakdowns by geographical area and gender also showed statistically different enrollment rates for households that did and did not receive remittances (see Annex Table 6.2 for the full results). Male enrollment rates were higher in Guatemala while female enrollment rates were higher in Honduras, although these gaps closed somewhat between 2014 and 2019. In El Salvador, there is greater parity, although in 2019 there was a decline in enrollment among males in the secondary-aged cohort. The positive correlation between remittances and enrollments that existed for boys, at least in urban areas, in 2014 was no longer evident in 2019. In Guatemala, the gap between the households that did and did not receive remittances was significant for both boys and girls of secondary school age in 2014 although the difference was greater for boys. Unfortunately, without more recent data the trend is unknown. In Honduras, remittance receiving households had significantly higher enrollment rates for both genders in both years, with the gap being largest for girls of secondary age. In 2019, the urban-rural differences that were observed in the 2014 data had diminished or disappeared. In El Salvador, living in a remittance-receiving household only appears to have helped the enrollment of children of tertiary age.

136 See Annex Table 6.2 in for detailed results.

Figure 6.5 Difference in Means of School Enrollment for Subsamples (percentage points)



Source: Authors' calculations based on EHPM 2014 and 2019 (SLV); EHPM 2014 and 2019 (HND) and ENCOVI 2014 (GTM) and SEDLAC (CEDLAS and The World Bank).

Note: All differences are statistically significant except in Guatemala for the 19-24 age group in 2014, in Honduras for the 6-24 and 19-24 age groups in 2019, and in El Salvador for the 13-18 age group in 2014 and for the under 19 age groups in 2019. Turquoise bars indicate statistically significant results. For details see Annex Table 6.2.

To better assess whether remittances affect households' decisions to invest in their children's education, we regressed enrollment on the receipt of remittances and other household characteristics. The probability of school attendance was regressed on a dummy variable indicating whether the household received remittances after controlling for a set of individual and household characteristics. The model,

$$\text{logit}(\text{Pr}(\text{School attendance} = 1)_i) = \beta_0 + \beta_1 R_i + \beta_2 (R * \text{urban}) + \beta_3 X_i + \beta_4 \text{region}_i + e_i \quad (\text{II})$$

was assumed to follow a logistic distribution, where R_i was a dummy variable indicating whether the individual lived in a household that was receiving remittances, $(R*urban)$ captured the interaction between receiving remittances and urban area of residence, X_i was a vector of child characteristics including age, age squared, a dummy variable indicating whether the child was male, and highest school attainment, and of household characteristics including an urban area dummy, the share of adults in the household, per capita household income (pre-remittances), a dummy variable indicating whether the household was female-headed, the highest level of education of members of 18 or older, a dummy variable indicating whether the household head was married, the age of the household head, a dummy variable indicating that the household had multiple siblings in the same educational level, and a wealth index that was the result of a principal component analysis based on household infrastructure variables.¹³⁷ Finally, e_i referred to a random error term.

The model was run separately for each country (El Salvador, Guatemala, and Honduras) and for different age ranges (6 to 24, 6 to 12, 13 to 18, and 19 to 24 years old) (see Table 6.6). The results indicated that household receipt of remittances was positive and significantly associated with enrollment in formal schooling for children between 6 and 24 years of age in Guatemala in 2014 and Honduras in 2019. For specific age groups, we found that the coefficient associated with remittances was significant and positive for the primary school age group in Honduras in 2014 but not in 2019 and the secondary school age group in Guatemala in 2014. Moreover, the interaction between the recipient households dummy and urban areas was only significant for Guatemala and Honduras in both years for the latter and with a negative sign. In contrast, the variable was significant but positive for El Salvador in 2019. These findings suggest that the distribution of schools between rural and urban areas, the physical access to education, in Honduras and Guatemala is important while much less so in El Salvador.

137 The wealth variable was created by using polychoric principal component analysis on the following variables: (i) *Housing*: number of rooms per equivalent adult, home ownership, and home construction quality; (ii) *Utilities*: water, electric, sanitary and cellphone service; and (iii) *Durables*: ownership of a refrigerator, car, TV, washing machine, computer, and access to the internet. Different subsets of variables were used depending on the availability of these variables in each country.

Table 6.6

Results of the Logit Model for School Enrollment

	2014				2019			
	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24	6 to 12	13 to 18	19 to 24
El Salvador								
Dummy HH received remittances	0.0415 (0.0615)	0.169 (0.182)	-0.0231 (0.0858)	0.189 (0.125)	-0.0632 (0.0679)	-0.0433 (0.193)	-0.0155 (0.102)	-0.0106 (0.127)
(Remittances recipient*urban)	-0.0188 (0.0903)	0.289 (0.302)	0.0277 (0.137)	-0.194 (0.154)	0.242** (0.0973)	0.452 (0.339)	0.0669 (0.154)	0.240 (0.156)
Guatemala								
Dummy HH received remittances	0.330*** (0.0856)	0.302 (0.190)	0.479*** (0.127)	0.221 (0.190)				
(Remittances recipient*urban)	-0.130 (0.151)	-0.0579 (0.386)	-0.364* (0.205)	-0.0724 (0.265)				
Observations	23756	9273	8181	6302				
Honduras								
Dummy HH received remittances	0.0874 (0.0736)	0.555** (0.222)	0.150 (0.103)	-0.0754 (0.198)	0.246* (0.135)	0.549 (0.353)	0.247 (0.212)	0.203 (0.289)
(Remittances recipient*urban)	-0.208** (0.0916)	0.0568 (0.316)	-0.289** (0.129)	-0.209 (0.216)	-0.363** (0.173)	0.0758 (0.556)	-0.450* (0.269)	-0.356 (0.334)
Observations	32367	11604	11407	9356	8785	3235	2909	2641

Source: Authors' calculations based on EHPM 2014 and 2019 (SLV) ; EHPM 2014 and 2019 (HND) and ENCOVI 2014 (GTM), and SEDLAS (CEDLAS and The World Bank).

Note: (1) Dependent variable is school attendance. (2) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$; (3) regional dummies are included at the department level and (4) the regression includes all the variables described in the text. The full results can be found in the Annex.

Conclusions

The present analysis has shown that, when households receive remittances, this can lead them to make greater investments in human capital in both health and education, but the impacts are heterogeneous. The impacts of these investments can be large. While we were only able to observe the short-term impacts of receiving remittances, the potential effects can be long term. Better nutrition can lead to better educational outcomes leading to more access to job opportunities, greater earnings potential, and better long-term welfare. And because better educated mothers tend to have better educated and healthier children, these effects can last beyond a single generation. However, the analysis on education has shown that the impact of remittances varies depending on the output variable (spending or enrollment) and across countries and over time. In El Salvador, households living in poverty and those in rural areas receiving remittances spend more than similar households that do not receive remittances, but remittances have little impact on enrollment levels. Where enrollment levels are relatively high, this may reflect a substitution of lower quality schooling for higher quality schooling.¹³⁸ In Honduras and Guatemala, where school enrollment is far from universal, even among the primary school age range, remittances are associated with higher enrollment levels.

The policy implications of these findings are two-fold. First, there is evidence that remittances are not “wasted” on consumption. The myth that remittances are ill-spent and have no positive impact has led governments to invest in programs to stimulate productive uses for remittances, by which they mean investing in businesses. However, households are investing in productive assets: themselves. In countries with high levels of malnutrition, such as those in the NCA region, the value of increasing food consumption should not be underestimated. Clearly households can benefit from making business investments, but it is probably unreasonable to expect much of this kind of investing until the immediate needs of hunger and education are met. However, the analysis here has shown that the extent to which remittances translate into better human capital outcomes may be country and time-specific; policy makers need to nuance their understanding of the remittance-human capital nexus and update this as needed.

Second, the increased household spending on education and increased enrollments that we found are investments with long-term payoffs. Supporting households to spend their remittances on education can increase the productivity of the future labor force. Several studies have shown that migrants who remit appear to value schooling. However, a lack of information among recipients about the remitters’ preferences for education investments can reduce the amounts being remitted. Studies of both Filipino and Salvadoran migrants found that increasing information flows on preferences led to greater remittance flows.¹³⁹ The Filipino migrant study showed that even when recipients made soft commitments on education

138 Ambler (2015) found that households, when offered matching funds for remittances, used these to move their children to private schools.

139 Ambler (2015) and De Arcangelis et al (2015).

spending to remitters, this increased remittances.¹⁴⁰ Thus, there is room for government policies to foster information flows and the ways to link remittances to specific uses.

Finally, more and better data will be needed before it will be possible to measure the full impact of migration on human capital formation. Better data on health expenditures and the use of health services would enable a more in-depth assessment of the role played by remittances in improving overall health, not just nutrition. And, of course, anthropometric data would be more precise than self-reported food insecurity data, but, most importantly, longitudinal data will be needed to track if and how increased spending on food, education, and health translates into improved welfare and who specifically benefits. Understanding the time dimensions of migration is also important. Given the role of information asymmetries in remittance behavior, one could expect that both the sending and the use of remittances might be quite different for a migrant who plans to return in the short term versus one who does not. Also, the differences between El Salvador and the other two countries shown in this chapter, and the previous one, suggest that receiving remittances for a longer period affects households' spending and investment decisions as well. Certainly, the apparent evolution of the relationship between remittances and human capital that we found between 2014 and 2019 suggests that there is more involved in how remittances affect human capital than can be understood only with cross-sectional data. Longitudinal studies would help to shed light on these different behaviors and help policymakers to develop effective policies for maximizing the positive effects of remittances.

140 De Arcangelis et al (2015).

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Annex 6.1

Table 6.1

Linear Regression of the Probability of Being a Food-insecure Household (among Remittance Recipient Households) in Guatemala, 2014

	(1)	(2)
Log of remittances	0.931*** (0.016)	0.928*** (0.014)
=1 if head is male	1.006 (0.036)	1.021 (0.033)
Age of the head	1.000 (0.001)	1.000 (0.001)
Never attended	1.421*** (0.150)	1.508*** (0.205)
Primary incomplete	1.368*** (0.141)	1.456*** (0.197)
Primary complete	1.196* (0.126)	1.279* (0.177)
Secondary incomplete	1.205* (0.132)	1.250 (0.176)
Secondary complete	1.123 (0.123)	1.165 (0.166)
College incomplete	0.987 (0.135)	0.973 (0.181)
Number of household members	0.986* (0.007)	0.985** (0.006)
Share of dependents	0.975 (0.073)	0.951 (0.058)
Observations	882	939
Adjusted R2	0.0745	0.138
Department FE	Yes	Yes

Source: Own tabulations using ENVOCI and SEDLAC (CEDLAS and The World Bank).

Note: This table reports the results of two linear regressions. The dependent variable is a dummy taking value =1 if a household is food insecure, or =0 otherwise. Two definitions for food insecurity are considered: insufficient food is reported in column 1 and insufficient food or low diversified diet is reported in column 2. The rate of missing observations for food insecurity in the first and second definitions are 16.5% and 11.6%, respectively. The regression is run at household level using population weights and department fixed effects. Robust standard errors are found in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table 6.2

Test of Difference in Mean School Enrollment Rates for Subsamples

Panel a: 2014

Population		Remittances Recipient			Non-Remittances Recipient			Difference		
		overall	rural	urban	overall	rural	urban	overall	rural	urban
Overall										
GTM 2014	Age 6-24	61%	57%	67%	57%	53%	61%	0.0464***	0.0377**	0.0584**
	Age 6-12	89%	87%	91%	85%	82%	89%	0.0361**	0.0485**	0.0198
	Age 13-18	70%	61%	81%	57%	49%	68%	0.1273***	0.1221***	0.1294***
	Age 19-24	16%	12%	22%	14%	8%	20%	0.0218	0.0421**	0.0134
HND 2014	Age 6-24	61%	52%	65%	58%	49%	65%	0.0229**	0.0247**	-0.0012
	Age 6-12	97%	96%	98%	93%	91%	95%	0.0356***	0.0434***	0.0236***
	Age 13-18	62%	47%	69%	53%	35%	68%	0.0873***	0.1211***	0.0168
	Age 19-24	22%	9%	27%	19%	5%	28%	0.0219**	0.0314**	0.0007
SLV 2014	Age 6-24	67%	59%	73%	65%	58%	70%	0.0143**	0.0084	0.0378***
	Age 6-12	97%	95%	98%	95%	94%	96%	0.0123**	0.0068	0.0186**
	Age 13-18	75%	65%	84%	74%	64%	82%	0.003	0.0124	0.0312**
	Age 19-24	26%	15%	35%	23%	9%	30%	0.0347**	0.0595***	0.0474**
Female										
GTM 2014	Age 6-24	59%	51%	68%	56%	51%	61%	0.0322**	0.0083	0.064**
	Age 6-12	89%	87%	92%	86%	83%	90%	0.0339	0.0412	0.0209
	Age 13-18	66%	55%	78%	55%	43%	67%	0.1136***	0.1152***	0.1059**
	Age 19-24	15%	13%	19%	15%	8%	21%	0.0068	0.056**	-0.0253
HND 2014	Age 6-24	62%	54%	66%	60%	51%	67%	0.0195	0.0317	-0.0059
	Age 6-12	98%	95%	99%	94%	92%	96%	0.0344***	0.0261	0.0315***
	Age 13-18	66%	52%	73%	56%	37%	72%	0.097***	0.1531***	0.0219
	Age 19-24	24%	11%	29%	21%	6%	30%	0.0266	0.049**	0.0052
SLV 2014	Age 6-24	65%	57%	73%	64%	57%	69%	0.01	-0.0027	0.0399**
	Age 6-12	97%	95%	99%	96%	94%	97%	0.0121	0.0075	0.0161
	Age 13-18	74%	63%	84%	74%	62%	82%	-0.0051	0.0101	0.0281
	Age 19-24	26%	16%	35%	22%	10%	30%	0.0404**	0.0587***	0.0587**
Male										
GTM 2014	Age 6-24	64%	62%	67%	58%	55%	62%	0.062***	0.0698***	0.0524**
	Age 6-12	88%	87%	91%	85%	81%	89%	0.0378	0.0553**	0.0175
	Age 13-18	74%	67%	84%	60%	54%	69%	0.1415***	0.1287***	0.155***
	Age 19-24	18%	10%	24%	14%	8%	19%	0.039	0.0212	0.0503

Table 6.2 Continued

Population		Remittances Recipient			Non-Remittances Recipient			Difference		
		overall	rural	urban	overall	rural	urban	overall	rural	urban
Male										
HND 2014	Age 6-24	59%	50%	64%	57%	48%	64%	0.0256**	0.0166	0.0035
	Age 6-12	96%	96%	96%	93%	90%	94%	0.0373***	0.0604***	0.0175
	Age 13-18	58%	42%	65%	50%	34%	65%	0.0746***	0.0858**	0.0115
	Age 19-24	19%	6%	25%	17%	5%	26%	0.0141	0.0128	-0.0076
SLV 2014	Age 6-24	68%	62%	74%	66%	60%	70%	0.0197**	0.0209	0.0359**
	Age 6-12	96%	95%	98%	95%	94%	96%	0.0125	0.0064	0.0205**
	Age 13-18	76%	67%	85%	74%	65%	81%	0.0118	0.0174	0.0343
	Age 19-24	26%	15%	34%	23%	9%	31%	0.0282	0.0601***	0.0347
Panel B: 2019^a										
Overall										
GTM 2014	Age 6-24	61%	57%	67%	57%	53%	61%	0.0464***	0.0377**	0.0590***
	Age 6-12	89%	87%	91%	85%	82%	89%	0.0361**	0.0485**	0.0201
	Age 13-18	70%	61%	81%	57%	49%	68%	0.1273***	0.1221***	0.1294***
	Age 19-24	16%	12%	22%	14%	8%	20%	0.0218	0.0421**	0.0146
HND 2019	Age 6-24	62%	56%	65%	60%	51%	68%	0.0234	0.0534**	-0.0273
	Age 6-12	97%	96%	98%	93%	91%	96%	0.0381***	0.0510**	0.0215
	Age 13-18	64%	48%	73%	56%	39%	72%	0.0835***	0.0871**	0.0133
	Age 19-24	23%	13%	28%	22%	9%	33%	0.0111	0.0491**	-0.0506
SLV 2019	Age 6-24	64%	59%	70%	64%	58%	68%	0.0017	0.0074	0.0198
	Age 6-12	96%	94%	98%	96%	95%	97%	-0.0033	-0.0082	0.009
	Age 13-18	74%	67%	81%	74%	65%	81%	-0.0055	0.0235	0.0012
	Age 19-24	27%	16%	37%	24%	12%	31%	0.0291**	0.0401***	0.0633***
Female										
GTM 2014	Age 6-24	59%	51%	68%	56%	51%	61%	0.0322**	0.0083	0.0643**
	Age 6-12	89%	87%	92%	86%	83%	90%	0.0339	0.0412	0.0209
	Age 13-18	66%	55%	78%	55%	43%	67%	0.1136***	0.1152***	0.1056**
	Age 19-24	15%	13%	19%	15%	8%	21%	0.0068	0.056**	-0.023
HND 2019	Age 6-24	61%	56%	64%	61%	52%	68%	0.0051	0.0426	-0.0417
	Age 6-12	97%	97%	97%	94%	92%	96%	0.0308**	0.0466	0.0148
	Age 13-18	66%	48%	77%	57%	39%	74%	0.0883**	0.0898	0.0322
	Age 19-24	23%	15%	26%	23%	9%	33%	-0.0049	0.063	-0.0694

Table 6.2 Continued

		Remittances Recipient			Non-Remittances Recipient			Difference		
		overall	rural	urban	overall	rural	urban	overall	rural	urban
Female										
SLV 2019	Age 6-24	63%	58%	68%	63%	57%	67%	0.0008	0.0062	0.0183
	Age 6-12	97%	95%	99%	96%	96%	97%	0.0062	-0.0025	0.0207**
	Age 13-18	76%	69%	84%	74%	65%	80%	0.0172	0.0374	0.0353
	Age 19-24	27%	16%	38%	24%	12%	31%	0.0310**	0.0393**	0.0656**
Male										
GTM 2014	Age 6-24	64%	62%	67%	58%	55%	62%	0.062***	0.0698***	0.0532**
	Age 6-12	88%	87%	91%	85%	81%	89%	0.0378	0.0553**	0.0181
	Age 13-18	74%	67%	84%	60%	54%	69%	0.1415***	0.1287***	0.1554***
	Age 19-24	18%	10%	24%	14%	8%	19%	0.039	0.0212	0.0503
HND 2019	Age 6-24	63%	56%	67%	59%	49%	68%	0.042**	0.0622	-0.0114
	Age 6-12	97%	95%	98%	93%	90%	95%	0.0446**	0.0535	0.0278
	Age 13-18	61%	48%	69%	54%	40%	70%	0.0739**	0.0855	-0.0105
	Age 19-24	23%	11%	29%	20%	8%	32%	0.0262	0.0313	-0.0277
SLV 2019	Age 6-24	65%	59%	71%	65%	58%	69%	0.003	0.009	0.0217
	Age 6-12	95%	92%	97%	96%	94%	98%	-0.0115	-0.0137	-0.0007
	Age 13-18	71%	66%	77%	74%	65%	81%	-0.0288	0.0088	-0.032
	Age 19-24	26%	16%	36%	23%	12%	30%	0.0258	0.0411**	0.0587**

Source: Authors' calculations based on EHPM 2019 (SLV), EHPM 2019 (HND), and ENCOVI 2014 (GTM).

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$. + The data in Panel B are from 2014 for Guatemala and from 2019 for El Salvador and Honduras.

Table 6.3

Results of the logit model for school attendance

Dependent variable:	GTM	GTM	GTM	GTM	SLV	SLV	SLV	SLV	SLV	HND	HND	HND	HND
Children assistance to education	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24
Dummy HH received remittances	0.330*** (0.0856)	0.302 (0.190)	0.479*** (0.127)	0.221 (0.190)	-0.0632 (0.0679)	-0.0433 (0.193)	-0.0155 (0.102)	-0.0106 (0.127)	0.246* (0.135)	0.549 (0.353)	0.247 (0.212)	0.203 (0.289)	
(Remittances recipient*urban)	-0.130 (0.151)	-0.0579 (0.386)	-0.364* (0.205)	-0.0724 (0.265)	0.242** (0.0973)	0.452 (0.339)	0.0669 (0.154)	0.240 (0.156)	-0.363** (0.173)	0.0758 (0.556)	-0.450* (0.269)	-0.356 (0.334)	
Share ages 25+	4.432*** (0.177)	3.858*** (0.351)	5.365*** (0.288)	2.944*** (0.372)	3.361*** (0.154)	3.197*** (0.422)	3.905*** (0.266)	2.018*** (0.234)	1.499*** (0.232)	1.336** (0.660)	2.458*** (0.367)	0.349 (0.389)	
Age	0.532*** (0.0330)	3.735*** (0.185)	-1.406*** (0.373)	-4.114*** (0.799)	-0.0164 (0.0372)	1.850*** (0.275)	2.236*** (0.400)	-0.638 (0.577)	-0.605*** (0.0638)	2.091*** (0.380)	1.825** (0.572)	-1.241 (0.999)	
Age Squared	-0.0310*** (0.00122)	-0.191*** (0.0103)	0.0267** (0.0120)	0.0899*** (0.0187)	-0.0138*** (0.00115)	-0.0998*** (0.0153)	-0.0902*** (0.0128)	0.00725 (0.0135)	0.00520** (0.00189)	-0.128*** (0.0209)	-0.0741*** (0.0184)	0.0228 (0.0233)	
Male	0.115** (0.0377)	-0.102 (0.0736)	0.385*** (0.0581)	-0.120 (0.0918)	-0.149*** (0.0399)	-0.191* (0.110)	-0.168** (0.0618)	-0.0791 (0.0660)	-0.128** (0.0614)	-0.145 (0.151)	-0.137 (0.0929)	-0.0607 (0.115)	
Naive HH income per capita - Income minus remittances	0.0742** (0.0301)	0.151** (0.0598)	0.0481 (0.0468)	0.00426 (0.0740)	0.0433 (0.0314)	0.0682 (0.0786)	0.0564 (0.0488)	-0.0895** (0.0456)	0.0253 (0.0383)	0.0431 (0.0724)	-0.0837 (0.0627)	0.0785 (0.0772)	
Female headed HH	0.344*** (0.0826)	0.348* (0.193)	0.503*** (0.122)	0.217 (0.160)	-0.113* (0.0618)	-0.199 (0.206)	-0.104 (0.0943)	-0.0938 (0.102)	-0.0402 (0.0883)	0.339 (0.265)	0.0407 (0.134)	-0.189 (0.149)	
Urban area	0.154** (0.0479)	-0.0671 (0.0958)	0.223** (0.0723)	0.294** (0.114)	0.0788 (0.0504)	-0.217 (0.136)	0.108 (0.0777)	0.111 (0.0859)	0.411*** (0.0903)	0.212 (0.208)	0.619*** (0.131)	0.329* (0.177)	

Table 6.3

Results of the logit model for school attendance

Dependent variable:	GTM	GTM	GTM	GTM	SLV	SLV	SLV	SLV	HND	HND	HND	HND
Children assistance to education	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24	6 to 12	13 to 18	19 to 24	6 to 24	6 to 12	13 to 18	19 to 24
Highest years of education of adults ->=18 yo	0.123*** (0.00601)	0.0932*** (0.0115)	0.148*** (0.00892)	0.251*** (0.0187)	0.158*** (0.00641)	0.128*** (0.0157)	0.150*** (0.00909)	0.358*** (0.0164)	0.158*** (0.0115)	0.0374 (0.0255)	0.153*** (0.0156)	0.360*** (0.0286)
Married HH head	-0.270** (0.0842)	-0.0407 (0.196)	-0.355** (0.125)	-0.188 (0.163)	-0.468*** (0.0654)	-0.512** (0.219)	-0.534*** (0.102)	-0.342** (0.106)	-0.0670 (0.0923)	0.295 (0.267)	-0.115 (0.141)	-0.142 (0.152)
Age HH head	-0.0168*** (0.00182)	-0.0213*** (0.00313)	-0.0158*** (0.00299)	-0.00660 (0.00459)	-0.0109*** (0.00172)	-0.0219*** (0.00445)	-0.0115*** (0.00272)	-0.00507* (0.00286)	-0.00450* (0.00254)	-0.000149 (0.00568)	-0.0119** (0.00399)	0.00358 (0.00468)
Wealth Index	0.364*** (0.0221)	0.353*** (0.0448)	0.403*** (0.0328)	0.318*** (0.0547)	0.418*** (0.0223)	0.445*** (0.0604)	0.428*** (0.0337)	0.309*** (0.0389)	0.404*** (0.0380)	0.258** (0.104)	0.484*** (0.0555)	0.313*** (0.0759)
HH with multiple siblings in same educational level	1.977*** (0.0428)	1.791*** (0.0846)	2.164*** (0.0685)	1.824*** (0.102)	2.013*** (0.0498)	2.227*** (0.175)	1.957*** (0.0776)	1.756*** (0.0796)	0.270* (0.163)	1.817*** (0.254)	0.337 (0.262)	-0.389** (0.191)
Regional dummies	x	x	x	x	x	x	x	x	x	x	x	x
Constant	-3.023*** (0.294)	-17.65*** (0.913)	12.34*** (2.896)	40.26*** (8.489)	2.104*** (0.352)	-6.507*** (1.276)	-14.26*** (3.146)	4.194 (6.133)	6.357*** (0.624)	-7.826*** (1.816)	-11.33** (4.441)	9.581 (10.67)
Observations	23756	9273	8181	6302	25965	8817	8243	8905	8785	3235	2909	2641

Source: Authors' calculations based on EHPM 2019 (SLV); EHPM 2019 (HND) and ENCOVI 2014 (GTM), and SEDLAC (CEDLAS and The World Bank).

Note: (1) * p<0.10, ** p<0.05, *** p<0.001; (2) regional dummies are included at the department level and (3) the regression includes all the variables described in the text.

7 Remittances and Labor Supply in Northern Central America

Andrés García-Suaza and Liliana D. Sousa

Introduction

What impact do remittances have on the labor markets of Northern Central America? Out-migration can negatively impact labor supply through two channels. As shown in Chapter 2, migration from Northern Central America (NCA) has historically been biased towards young adults, which disproportionately decreases the size of the labor force in the source countries of El Salvador, Guatemala, and Honduras. As shown in Chapter 3, due to positive selection into migration, migration also leads to a decrease in the skills composition of the labor force. However, the remittances sent back by migrants can also reduce the labor supply of those who do not migrate. As with other income sources, receiving remittances can raise reservation wages and reduce labor supply. This may be of particular concern in NCA countries where the labor supply, particularly of women, is below the regional average.

In this chapter, we analyze the impact of the receipt of remittances on the labor supply and employment outcomes of men and women in El Salvador, Guatemala, and Honduras. Using household surveys for the years 2006, 2014, and 2019, we analyze the extent to which remittances affect the labor decisions of recipients.¹⁴¹ There is a well-known problem of endogeneity in establishing causal links between non-random income (such as remittances) and household labor decisions. In short, the population of households that receive remittances differs from those households that do not receive remittances in systematic yet unobserved

¹⁴¹ Our analysis for Guatemala is limited to the two earlier years because of a lack of more recent household survey data.

ways. These differences may themselves explain differences in other outcomes, including labor supply. Hence, answering the crucial question – do remittances reduce labor supply? – requires addressing issues of selection. Given the data limitations detailed in earlier chapters, the strategy undertaken in this chapter is propensity score matching.

Background

Given the central role played by labor markets as determinants of growth and poverty reduction, the impact of remittances on labor supply is an important factor to understand. An increase in labor income (such as via remittances) increases the household budget, which, as shown in the economic literature, affects the relative value of “leisure” (including home production) and employment of household members.¹⁴² The resulting income effect increases the reservation wage of recipients of remittances (the lowest wage that an individual will accept), thus altering the utility-maximizing allocation of time between leisure and employment at market wages. In other words, individuals are able to buy more leisure or home production time because of remittances at the expense of hours spent in the labor market. At the same time, the demographic change in the household from migration itself alters the value of home production. The returns to home production for non-migrating household members may be higher than in households without migration if they take over the household tasks previously performed by migrants (for example, parenting obligations and upkeep of the dwelling).

Under an assumption of perfect information and well-functioning markets, a reduction in labor supply resulting from remittances implies an increase in household utility. Yet, for individuals, reducing their labor supply because of receiving remittances can pose some risks. Leaving employment can permanently decrease their earnings potential if the job provided professional experience and on-the-job learning. This can leave them at higher risk of poverty or unemployment in the event of their remittances being reduced.¹⁴³ This can be particularly detrimental to young household members who may defer entering the labor market and may opt to underinvest in their human capital (in particular, the so-called *ninis* who are neither working nor in school).

Beyond the household, this allocation of time away from the labor market compounds the effect of migration and can be a key policy concern. Lower labor supply from remittances can reduce economic growth even as it feeds consumer demand and increases wages. Higher wages erode the country’s international competitiveness by increasing the cost of production. Higher wages and increased consumer demand (fueled by remittances) can also lead to higher prices, deteriorating the value of remittances and hence the returns to migration. A related concern is the so-called Dutch disease, in which consumption fueled by remittances leads to deteriorating terms of trade and an inefficient allocation of labor from the tradable to the non-tradable sectors (see Box 7.1).

142 For an overview of household decision models and their implications, see Killingsworth and Heckman (1986).

143 The amount remitted typically decreases over time (for example, Funkhouser 2005).

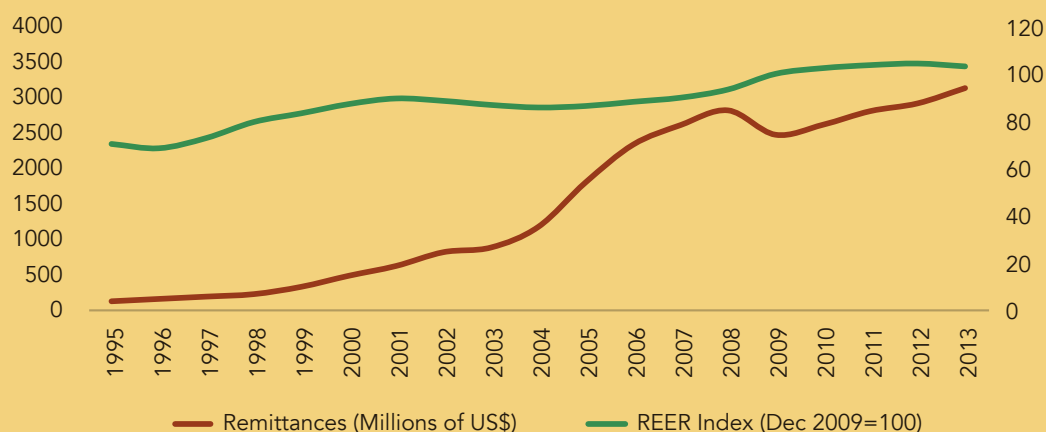
Box 7.1

Remittances and Dutch Disease

Remittances have been found to contribute to “Dutch disease” effects in Latin America, as high capital inflows cause real exchange rates to appreciate (as found by Acosta et al, 2009; Bourdet and Falck, 2006; Amuedo-Dorantes and Pozo, 2004; Larrey et al, 2012; Vargas-Silva, 2009; and Bayangos and Jansen, 2011). Increased household income as a result of receiving remittances increases consumer demand. This raises the relative prices for domestic non-tradable goods, leading to higher relative wages in these sectors (such as local services) and prompting a reallocation of labor away from export sectors and a real exchange rate appreciation. Lopez et al (2008) found that, among LAC economies, a 1 percentage point increase in remittances as a proportion of GDP led to a real exchange rate appreciation of 18 to 24 percent. Rising domestic demand and the declining competitiveness of domestic tradable sectors widens current account deficit, weakening the country’s macroeconomic position.

In the case of Honduras, there is evidence of Dutch disease as a result of the country’s high remittances, suggested by trends in the real exchange rate and remittances. Between 1995 and 2013, there was a strong correlation between growth in remittances and in the real effective exchange rate.

Real Effective Exchange Rate and Remittances in Honduras, 1995-2013



Source: Hernandez Ore et al, (2017).

Note: The real effective exchange rate (REER) is reported on the right axis.

On the other hand, given the high reliance on self-employment and low-wage microenterprises combined with limited access to credit, remittances could be used to support small businesses and used as alternative sources of credit and financing. If that is the case, remittances could increase the productivity (and hence wages and job posts) of domestic firms. Some evidence has been found supporting the hypothesis that remittances are used to start or support business enterprises, for example in Albania,¹⁴⁴ the Dominican Republic,¹⁴⁵ Mexico,¹⁴⁶ and the Philippines.¹⁴⁷

Labor Markets in Northern Central America

Employment opportunities in these three countries are limited, with a majority of jobs in each being created in the informal sector. This is one of the fundamental drivers of migration from Northern Central America as noted in Chapter 2. Economic activity in the NCA countries is particularly low among women. Participation rates for women range from 44.7 percent in Guatemala to 51.6 in El Salvador (Figure 7.1). Evidence suggests that gender norms that emphasize women's roles in the house and in household production is part of the reason for these low rates.¹⁴⁸ Participation rates are higher for men, accounting for 9 out of 10 working-age men in Guatemala and Honduras. However, they are strikingly lower in El Salvador, where only 84.3 percent of men are in the labor force. Unemployment rates are relatively low in the three countries, particularly in Guatemala where unemployment accounts for 2.4 percent of women and 1.8 percent of men in the labor force. They are highest for Honduran women (6.6 percent) and Salvadoran men (5.8 percent).

Most jobs in Northern Central America are low wage and in the informal sector. Employment in the public sector and in firms with more than five workers – the jobs that make up the formal sector – account for only 40 percent of jobs in El Salvador, 35 percent in Guatemala, and 25 percent in Honduras. The remaining workers rely on self-employment, including subsistence farming, and on microenterprises for their livelihood. This group includes employers, mostly small business owners, who constitute 3 percent of all workers in El Salvador and Guatemala and 10 percent in Honduras.

In all three countries, adults who are working are less likely to live in households that receive remittances than those who are not working.¹⁴⁹ The difference is larger in El Salvador than

144 Kilic et al (2007).

145 Amuedo-Dorantes and Pozo (2006a).

146 Shapiro and Mandelman (2016).

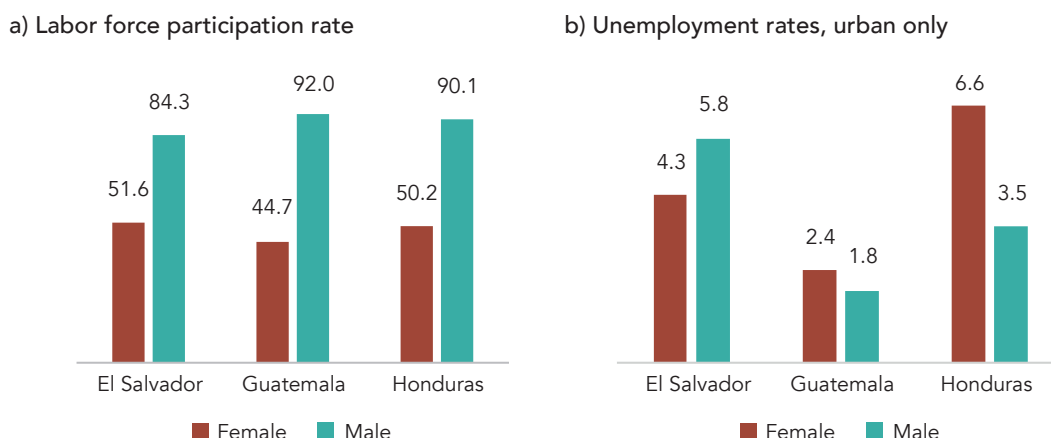
147 Yang (2008).

148 World Bank (2018).

149 The share of households (and adults) that reported having received remittances fell in all three countries between 2006 and 2014. However, macroeconomic estimates of remittances in 2006 and 2014 did not report such significant drops, suggesting that the 2014 household surveys may suffer from higher levels of underreporting. This is a larger concern in the case of Guatemala, which recorded the share of adults in recipient households falling from 15 percent to 8 percent. The survey data for 2019, which are available for El Salvador and Honduras, show an increase in the share of adults receiving remittances back up to the 2006 levels.

in the other two countries: in 2019, 21.8 percent of working-age adults versus 18.2 percent of employed adults lived in households that received remittances. The difference between the share of all adults who receive remittances and those who are employed and receive remittances is just over 1 percentage point in the other two countries. Among adults who are not working, in Guatemala and Honduras adults who are out of the labor force (inactive) and those who are unemployed receive remittances at about the same rate. In El Salvador, however, those who are inactive are significantly more likely to receive remittances than the unemployed. This descriptive analysis suggests that remittances in El Salvador may be more likely to be associated with labor supply effects than in the other two countries.

Figure 7.1 Labor Force Participation and Unemployment by Gender, 2014



Source: Authors' tabulations using the Socioeconomic Database for Latin America and the Caribbean or SEDLAC (World Bank and CEDLAS).

Note: The sample is limited to individuals ages 18-65.

Table 7.1

Percentage of Adults Receiving Remittances, Overall and by Employment Status

	El Salvador			Guatemala		Honduras		
	2006	2014	2019	2006	2014	2006	2014	2019
Overall	22.4	18.7	21.8	15.4	8.3	18.2	16.6	18.9
Employed	17.9	15.9	18.2	13.8	7.2	16.3	15.1	18.0
Inactive	31.3	24.6	29.5	19.4	10.5	21.9	20.1	20.6
Unemployed	19.9	19.3	19.6	19.0	10.9	21.9	20.4	20.5

Source: Authors' estimates based on SEDLAC and household surveys. The sample was limited to adults aged 18 to 65.

Methodology

The household models suggest that households decide that their utility-maximizing strategy is for some member to migrate and remit while another increases household production. In this case, the receipt of remittances and local labor supply are both the result of an earlier and unmeasured decision. The resulting analysis of the impact of remittances on labor supply should address this potential endogeneity, as otherwise it may overestimate an effect.

Research on this topic that does not address endogeneity has typically found a negative correlation between remittances and labor supply – that is, adults who receive remittances are also less likely to be working. For example, Funkhouser (1992) found a negative relationship between remittances and labor participation and a positive relationship between remittances and self-employment for both men and women in Nicaragua.¹⁵⁰ Airola (2008) used Heckman selection to address selection into the labor force but did not address selection into the group of households receiving remittances. The analysis found a small negative correlation between remittances and labor supply in Mexico with the estimated elasticity suggesting that, at the sample mean, male recipients of remittances worked 4.25 fewer hours per week.

Approaches used in the literature to address potential endogeneity have ranged from limiting the sample to only some types of migrants, using panel or pseudo-panel data, using propensity score matching, to using instrumental variables. Instrumental variables (IV) are exogenous variables, often based on geographical variation, that are correlated with a household's probability of receiving remittances but that are not correlated with its labor supply decisions. Amuedo-Dorantes and Pozo (2006b) used the location of Western Union offices in Mexico to estimate the effect of remittances on local labor supply. Similarly, Acosta (2006) used out-migration rates at the county and village level in El Salvador as instrumental variables to predict receipt of remittances. Using a set of 11 countries in Latin America and the Caribbean, Acosta et al (2009) built instrumental variables using the percentage of households that receive remittances in the country and their interaction with household characteristics that are expected to affect the decision to migrate.¹⁵¹ In each of these papers, addressing endogeneity by using instrumental variables reduced the estimated negative impact of remittances on labor supply and, in some cases, especially for men, erased it completely.

However, strong instrumental variables are difficult to find in the context of the limited data found in Northern Central America. Yang (2008) used exchange rate shocks to instrument for changes in remittances, finding evidence that remittances led to more entrepreneurship and

150 An increase in remittances of \$100 decreased the probability of labor force participation by 2.1 percentage points for men and 5 percentage points for women, while it increased the probability of being self-employed (conditional on being in the labor force) by 1.2 and 1.1 percentage points respectively.

151 In particular, the presence of young children and adult men in the household and the educational level of adults in the household.

more hours worked in self-employment in the Philippines. Taking advantage of the sampling strategy of the household survey, Kim (2007) built pseudo-panels in Jamaica identified by sampling cluster and found that remittances reduced labor force participation (but not hours worked). Funkhouser (2006) used a three-year panel from Nicaragua and found no effect of migration or remittances on the labor supply of adults who did not migrate but did find that young adults in remittance-receiving households were less likely to work. Rodriguez and Tiongson (2001) mitigated the bias from endogeneity by considering only households with temporary migrant members, arguing that, in those cases, household labor supply decisions and the decision to migrate are inseparable. They found a negative correlation between remittances and the number of hours worked and the labor participation of recipients. Cox-Edwards and Rodriguez-Oreggia (2009) used propensity score matching to limit the sample to recipient and non-recipient individuals who were similar across observable characteristics, mitigating but not fully addressing the endogeneity. They concluded that remittances have a neutral effect on participation rates, in essence replacing the income of the missing household member.

To better understand the causal impact of remittances on labor supply, suppose that a measure of labor supply of individual i in household h in region r , $Y_{i,h,r}$, is a function of a set of individual, household, and regional characteristics. This is written out as equation (I) where the key variable of interest is R_h , a variable identifying households in which any member received remittances.¹⁵²

$$Y_{i,h,r} = F[R_h, X_i, Z_h, R_r] \quad (I)$$

Beyond receipt of remittances, other characteristics that affect labor supply decisions include: a vector Z_h of individual-level characteristics; a vector R_r of household characteristics; and a vector of local and regional characteristics (such as urban status).

As discussed above, a significant challenge that had to be addressed in this analysis was the selection on unobservables associated with both labor force participation and the receipt of remittances. Suppose the migration of one or more members is a household strategy to increase income through remittances. Let the parameter $\theta_{i,h}$ be an unobserved measure of household welfare generated by individual i 's leisure time (in other words, non-market activities including production in the household). If the household's decision for a member to migrate, and subsequently send remittances, depends on this function of household welfare, then R_h is itself a function of $\theta_{i,h}$ (Equation II).

$$Y_{i,h,r} = F[R_h(\theta_{i,h}), X_i, Z_h, R_r, \theta_{i,h}] \quad (II)$$

152 The variable could also be reported as a continuous measure of the average monthly amount of remittances received by the household.

Under this scenario, there are two econometric problems in determining the relationship between $Y_{i,h,r}$ and R_h : omitted variable bias arising from the unobservable nature of $\theta_{i,h}$ and a violation of the ignorability assumption since selection into the group of beneficiaries of remittances is non-random.

To address the impact of $\theta_{i,h}$ on the estimates, access to either panel data, which can be used to remove individual and household fixed effects, or a strong instrumental variable would be ideal. Yet no household panel data exist for the NCA countries with enough observations for this type of analysis. At the same time, a lack of geographical disaggregation in the region's household surveys limits the extent to which survey-based geographical and temporal variation can be exploited for instrumental variables. Other potential data sources that could be mined for instrumental variables for the three countries – like municipal or departmental migration rates based on census or administrative data – are either not complete or not available.

Given the lack of exogenous information that can be used as a strong instrumental variable in the three countries, an alternative approach would be to maximize the similarity between the treated group (households that received remittances) and the control group (households that did not receive remittances). This can be accomplished by using propensity score matching. This methodology has been widely used to look at the impact of remittances internationally.¹⁵³ This approach identifies a sample of households that do not receive remittances that are similar to households that receive remittances by matching across invariant household socioeconomic features. This reduces biases that are due to systematic differences between receiving and non-receiving households.¹⁵⁴ In other words, this approach eliminates any confounding effects related to differences in *observable* characteristics between recipients and non-recipients.¹⁵⁵

Propensity score matching depends on the strong ignorability condition; in other words, the outcome and treatment are independent conditional on the observable feature. This is violated by the inclusion of $R_h(\theta_{i,h})$ in the model. However, to the extent that unobservable characteristics are correlated with observable characteristics, propensity score matching attenuates potential endogeneity.¹⁵⁶ That is, suppose that $\theta_{i,h}$ is correlated with observable characteristics in the vectors X_i, Z_h, R_r . This could be the case if, for example, the value of home production is higher in households with higher dependence ratios or in rural households with lower access to basic services. Matching across households with similar sets of these characteristics would thus reduce the difference in $\theta_{i,h}$ between treated and untreated households.

153 Acosta (2011) for El Salvador; Berlotti and Marchetta (2014) for Ecuador; Bouoiyour and Miftah (2015) for Morocco; Clement (2011) for Tajikistan; Cox-Edwards and Rodriguez-Oreggia (2009) and Esquivel and Huerta-Pineda (2007) for Mexico; De and Ratha (2012) for Sri Lanka; Garip (2014) for Thailand; Jimenez-Soto and Brown (2012) for Tonga; Kahn (2008) for Bangladesh; and Siddiqui (2013) for Pakistan.

154 Dehejia and Wahba (2002).

155 In addition, using propensity score matching may also reduce the potential for bias due to survey undercount. This is a concern since the decrease in the number of households reporting the receipt of remittances in the 2014 surveys compared to the number in the 2006 surveys suggests a potential measurement issue in the survey instruments.

156 Stuart (2010).

To ascertain the sensitivity of these results to selection bias, we estimated Rosenbaum bounds.¹⁵⁷ This approach allowed us to estimate the sensitivity of the results to potential bias due to differences in unobservable characteristics between the treated and control groups. It did not, however, establish whether this bias exist. The level of sensitivity for each of the results are reported in the robustness section.

As in the other chapters in this study that use microdata, we focused on the years 2006, 2014, and 2019, the first two being the most recent years for which nationally representative household surveys were available for the three countries. Unfortunately, data for 2019 were not available for Guatemala. These surveys are included in the SEDLAC database, a regional harmonization project that generates comparable statistics for 18 countries in Latin America and the Caribbean.¹⁵⁸ A table of basic demographic characteristics for each sample is included in Annex 7.1.

We performed a matching procedure based on standard logit models for the probability of being treated (in this case, receiving remittances) using radius matching.¹⁵⁹ To focus on the labor market implications, we limited the sample to individuals of working age – those between the ages of 18 and 65. We matched between treated and untreated individuals using individual characteristics (X_i), household characteristics (Z_h), and regional characteristics (R_r). X_i included gender, years of schooling, potential work experience, school enrollment status, and household position (head, spouse or other). Z_h included the dependence ratio (based on the number of children under 15 as share of working age adults); the number of members older than 12; number of children under the age of 6; and the highest level of schooling completed by any adult in the household (as a proxy for wealth). Finally, R_r included urban status and the local unemployment rate.

This exercise was done for a total of 24 sets of data – one each per country and survey year, and for three adult samples (all working age adults, adults in the labor force, and employed adults). The different employment samples were necessary in order to consider different dimensions of the labor supply decision (such as participation, employment, type of employment, and hours worked). Once the households that were receiving remittances were matched with their counterparts, we evaluated the effect of receiving remittances on labor participation, occupation status (extensive margin), and the number of hours worked (intensive margin).

Using two of the constructed matched samples as examples, Figure 7.2 illustrates the significant reduction in differences between the treated and control groups achieved through

157 Rosenbaum (2002) and Caliendo and Kopeinig (2008).

158 Since SEDLAC does not include a comparable variable of remittances, this variable was constructed using the original household surveys added to the SEDLAC datasets. This variable was based on the amount received either in the previous month or the previous three months, depending on the availability of data in each country.

159 We specified a neighborhood of 0.01 percentage points in order to improve the balance properties of the sample.

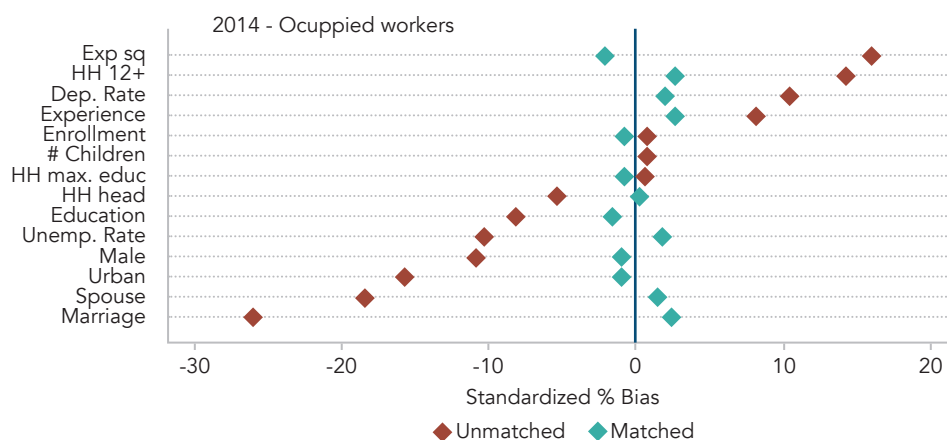
the matching exercise. It reports the standardized bias for each variable before and after the matching exercise. Whereas the two samples varied significantly across characteristics prior to matching, the propensity score matching resulted in samples with very low bias for each variable. Similarly, Table 7.2 reports the statistic and corresponding p-values from a likelihood ratio test on the joint significance of all variables regressed on the propensity score. The results support the model used for each data set at the 95 percent confidence level.

Figure 7.2 Differences between Treatment and Control Groups Before and After Matching

a) Working age population, El Salvador 2014



b) Employed workers, El Salvador 2014



Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Table 7.2

Balance Property Test Results of Likelihood Ratio Test by Data Set

		El Salvador			Guatemala		Honduras		
Data set		2006	2014	2019	2006	2014	2006	2014	2019
Working age	LR chi2	21.60	15.42	10.00	19.69	4.56	13.94	1.66	2.90
	p>chi2	0.09	0.35	0.76	0.14	0.99	0.45	1.00	0.99
Labor force	LR chi2	2.19	5.00	7.03	6.69	1.12	5.81	0.48	2.02
	p>chi2	1.00	0.99	0.93	0.95	1.00	0.97	1.00	1.00
Employed	LR chi2	1.99	5.17	7.21	6.69	0.90	5.79	0.49	2.69
	p>chi2	1.00	0.98	0.93	0.95	1.00	0.97	1.00	1.00

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Findings

Remittances can impact two different dimensions of labor supply: (i) the extensive margin or the extent to which remittances impact who is working, and (ii) the intensive margin or the extent to which labor intensity is affected by remittances. For the extensive margin, we looked at the impact of remittances on entry into the labor force and unemployment among all adults and on *nini* status among youths. We assessed the intensive margin by looking at informality, type of employment, and hours worked. The results are presented into two sections: the first considers the extensive margin of labor supply – participation and unemployment – while the second considers the intensive margin – employment outcomes.

Labor Participation and Unemployment

Among working age adults, we found that remittances were associated with lower levels of labor force participation in all countries and in all of the years analyzed (Table 7.3). In line with other results in the literature, the negative association between labor force participation and remittances was more pronounced among women than men. Lower participation rates for men are consistently apparent in all the years of data in El Salvador and Guatemala but are only in 2006 in Honduras. As suggested in Table 7.1, participation seemed to have been particularly affected by the receipt of remittances in El Salvador. The difference in participation rates between recipients and non-recipients was greatest for Salvadoran women (17.5 percentage points in 2006) and smallest for Honduran men. The results also suggest a change in how remittances affected participation in Honduras: while the negative effect on participation for men fell and lost statistical significance, the effect on women increased by 3 percentage points between 2006 and 2014 and decreased substantially between 2014 and 2019.

As discussed above, it is often hypothesized that remittances decrease labor supply by increasing the reservation wage. This can be reflected in increases in unemployment

(as individuals use remittances to finance longer job searches) as well as in decreases in participation (as discouraged workers who are unable to find work at their reservation wage stop searching). If remittances are used to finance more home production in a welfare-increasing reallocation, then we would expect to see no change in the likelihood of being unemployed along with a decrease in the participation rate as individuals exit the labor force and specialize in household production. Table 7.3 shows statistically weak or insignificant relationships between remittances and unemployment. The combination of lower participation rates and no difference in unemployment among recipients suggests the latter motivation, a welfare increasing reallocation of household labor, may be playing a more important role in the NCA countries than would-be workers searching for higher wage jobs.

Table 7.3

Labor Force Participation and Unemployment Rates by Gender (Propensity Score Matching Results)

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Labor force participation									
Men	Treated	0.757	0.781	0.795	0.903	0.858	0.838	0.858	0.876
	Control	0.819	0.831	0.853	0.936	0.894	0.88	0.872	0.885
	Diff (p.p.)	-0.062	-0.049	-0.058	-0.033	-0.036	-0.042	-0.014	-0.009
	Diff (%)	-0.076	-0.059	-0.068	-0.035	-0.041	-0.048	-0.017	-0.010
	t-stat	-7.48	-6.86	-8.80	-4.44	-3.19	-6.23	-1.12	-0.74
Women	Treated	0.382	0.403	0.393	0.462	0.392	0.445	0.463	0.506
	Control	0.558	0.537	0.545	0.523	0.468	0.506	0.555	0.544
	Diff (p.p.)	-0.175	-0.134	-0.152	-0.061	-0.075	-0.062	-0.092	-0.038
	Diff (%)	-0.315	-0.25	-0.279	-0.116	-0.161	-0.122	-0.166	-0.070
	t-stat	-21,010	-17,430	-20.55	-5,390	-5,480	-7,780	-5,640	-2.31
Unemployment									
Men	Treated	0.046	0.058	0.049	0.025	0.032	0.053	0.079	0.061
	Control	0.048	0.052	0.048	0.014	0.021	0.047	0.06	0.059
	Diff (p.p.)	-0.002	0.006	0.001	0.012	0.01	0.006	0.019	0.001
	Diff (%)	-0.033	0.106	0.016	0.852	0.482	0.136	0.312	0.021
	t-stat	-0.33	1.19	0.19	2.83	1.67	1.41	1.76	0.14
Women	Treated	0.032	0.041	0.041	0.016	0.038	0.057	0.086	0.074
	Control	0.026	0.037	0.044	0.015	0.021	0.051	0.083	0.099
	Diff (p.p.)	0.006	0.003	-0.004	0.001	0.016	0.006	0.003	-0.025
	Diff (%)	0.218	0.088	-0.082	0.085	0.766	0.116	0.035	-0.249
	t-stat	1.28	0.72	-0.81	0.32	1.99	1.12	0.22	-1.98

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Note: This table reports the labor force participation rate and unemployment rate of the treated group (those who received remittances) and the control group (similar individuals who did not receive remittances).

Young people in Latin America are particularly vulnerable to unemployment and economic inactivity, and some research on the “*ninis*” (the Spanish acronym for “not in school and not working”) has found high rates in the NCA countries.¹⁶⁰ Considering only those between the ages of 18 and 25, Table 7.4 reports the likelihood of being a *nini* for youths who received remittances compared to similar youths who did not by gender. For women, the effect of receiving remittances on being a *nini* were in line with the results reported above for participation rates. In 2014, young women in households that received remittances were 6.5 percentage points (Guatemala), 8.3 percentage points (Honduras), and 9.2 percentage points (El Salvador) more likely to be *ninis* than similar young women whose households received no remittances. This pattern of lower participation continues into adulthood as women in household that receive remittances were about 7.5 percentage points (Guatemala), 9.2 percentage points (Honduras), and 13.4 percentage points (El Salvador) less likely to be in the labor force than similar women without remittances. Remittances were associated with the largest increase in the likelihood of being a *nini* in El Salvador, where they translated into a 5 percentage point increase for men in 2014 and a 10 percentage point increase for women in 2019. However, there was no statistical evidence of an increased likelihood of being a *nini* for either men or women in Honduras in 2006 and 2019.

Table 7.4
Nini Rates by Gender

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Men	Treated	0.188	0.204	0.175	0.077	0.125	0.122	0.171	0.162
	Control	0.153	0.15	0.152	0.045	0.074	0.098	0.13	0.119
	Diff	0.035	0.054	0.024	0.032	0.051	0.024	0.041	0.042
	Diff (%)	0.230	0.358	0.156	0.714	0.686	0.241	0.313	0.356
	t-stat	2.51	4.38	2.01	2.69	2.89	2.30	1.73	1.73
Women	Treated	0.492	0.503	0.512	0.522	0.546	0.429	0.514	0.445
	Control	0.363	0.411	0.415	0.445	0.481	0.414	0.431	0.481
	Diff	0.129	0.092	0.097	0.077	0.065	0.015	0.083	-0.036
	Diff (%)	0.356	0.224	0.233	0.173	0.134	0.037	0.193	-0.075
	t-stat	7.74	6.16	6.50	3.68	2.52	1.09	2.74	-1.13

Source: Authors’ tabulations using SEDLAC (CEDLAS and the World Bank).

160 de Hoyos et al (2016).

Employment Outcomes

Our analysis found that, receiving remittances is associated with informality for both men and women in El Salvador and Guatemala, but not in Honduras. Conditional on being employed, individuals in El Salvador and Guatemala who lived in households that received remittances were more likely to be informally employed. Salvadorans were 6 percentage points more likely and Guatemalans 9 percentage points more likely to be informally employed if they received remittances (Table 7.5). Looking at informality by gender reveals that the effect of remittances was greater for men than for women in El Salvador (6.8 percentage points and 5.1 percentage points in 2019) and in Guatemala in 2006. In Guatemala, the magnitudes of the change were inverted in 2014, being higher for women than for men (7.8 and 10 percentage points for men and women respectively).

Table 7.5

Informality Rates by Gender (Propensity Score Matching Results)

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Overall	Treated	0.598	0.652	0.645	0.729	0.705	0.525	0.555	0.569
	Control	0.538	0.585	0.586	0.637	0.618	0.507	0.542	0.554
	Diff	0.06	0.066	0.059	0.093	0.086	0.018	0.013	0.016
	Diff (%)	0.112	0.113	0.101	0.145	0.140	0.035	0.024	0.028
	t-stat	6.95	8.78	8.28	10.02	6.72	2.22	0.83	1.03
Men	Treated	0.556	0.627	0.610	0.673	0.651	0.483	0.508	0.544
	Control	0.482	0.542	0.542	0.571	0.573	0.488	0.516	0.536
	Diff	0.074	0.085	0.068	0.102	0.078	-0.004	-0.008	0.007
	Diff (%)	0.154	0.157	0.126	0.179	0.137	-0.009	-0.016	0.014
	t-stat	6.36	8.33	7.120	7.83	4.48	-0.41	-0.38	0.36
Women	Treated	0.65	0.685	0.694	0.793	0.78	0.572	0.619	0.604
	Control	0.607	0.643	0.643	0.724	0.68	0.536	0.575	0.580
	Diff	0.043	0.042	0.051	0.069	0.099	0.036	0.044	0.025
	Diff (%)	0.071	0.065	0.079	0.095	0.146	0.067	0.076	0.043
	t-stat	3.36	3.71	4.750	5.04	5.12	3.03	1.81	1.05

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

In El Salvador and Guatemala, remittances were associated with an increased likelihood of self-employment (Table 7.6). Could remittances be creating more jobs by facilitating or encouraging self-employment and entrepreneurship? Remittances were associated with increases in the self-employment rate of 7 percentage points (from 27 percent to 34 percent) in 2019 in El Salvador and 11 percentage points (from 26.7 to 37.7 percent) in Guatemala in the same year. As in the analysis on informality, there was no evidence of a relationship between

self-employment and remittances in Honduras. In terms of entrepreneurship, the likelihood of being an employer was higher for individuals who received remittances in El Salvador and Honduras than among those who did not receive remittances. In 2019, the share of working individuals who reported being an employer increased by 2.9 and 4 percentage points among those who receive remittances in El Salvador and Honduras respectively. There was no statistical relationship between remittances and employer status in Guatemala.

Table 7.6

Self-employment and Employer Rates (Propensity Score Matching Results)

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Self-employed	Treated	0.348	0.361	0.339	0.419	0.377	0.306	0.309	0.303
	Control	0.286	0.287	0.269	0.335	0.267	0.293	0.293	0.290
	Diff	0.062	0.074	0.070	0.084	0.109	0.014	0.016	0.013
	Diff (%)	0.219	0.257	0.260	0.251	0.409	0.046	0.056	0.045
	t-stat	7.55	9.89	10.10	8.40	8.12	1.86	1.10	0.92
Employer	Treated	0.062	0.060	0.066	0.039	0.034	0.125	0.140	0.123
	Control	0.043	0.035	0.037	0.038	0.024	0.106	0.104	0.083
	Diff	0.020	0.024	0.029	0.001	0.009	0.019	0.036	0.040
	Diff (%)	0.460	0.690	0.790	0.026	0.389	0.182	0.350	0.475
	t-stat	4.80	6.79	8.23	0.25	1.89	3.71	3.30	4.01

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

One interpretation of these results is that remittances may be encouraging small enterprises, in the form of either self-employment or small-scale employers, at the expense of employment in larger firms. Under this interpretation, remittances could be supporting lower productivity employment at the expense of employment in larger and presumably more productive firms. On the other hand, if there are insufficient positions available in larger firms, remittances could be generating employment opportunities for individuals who are unable to secure employment in larger firms. In addition, if remittances ameliorate the credit constraints of small business owners, then they may lead to higher earnings for self-employed and small-scale employers. One way to see if remittances are encouraging lower productivity employment is to check for wage differentials between individuals who receive remittances and those who do not. We conducted this analysis for all employed workers, as well as for the self-employed and employers and found that there was no statistically significant difference in the average wage of individuals who received remittances and those who did not, except in the case of self-employed individuals in the rural areas of Honduras (Annex Table 7.2). This suggests that remittances are neither leading to lower productivity employment nor to higher earnings for small business owners.

Sensitivity Analysis

As noted above, the methodology of propensity score matching does not fully correct for unobserved differences between the treated and control groups. To ascertain how sensitive the results reported above are to potential selection on unobservables, we estimated Rosenbaum bounds.¹⁶¹ While it is not possible to directly test for selection bias based on unobservables, Rosenbaum bounds provide evidence of how sensitive the results of propensity score matching are to selection bias. In essence, these bounds report how strongly an unobservable characteristic influences the selection into the treatment group so that the difference in outcome between the treated and control group can be attributed purely to non-random assignment.

Table 7.7

Rosenbaum Bounds: Critical Values of the Odds Ratio of Receiving Treatment

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Labor force participation	Men	1.90	1.80	1.90	1.95	1.90	1.90	1.30	1.10
	Women	1.70	1.60	1.75	1.00	1.10	1.00	1.15	No Sig
Youth inactivity	Men	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	Women	2.00	No Sig	2.00	No Sig	No Sig	1.10	No Sig	1
Informality	Men	2.00	2.00	2.00	2.00	2.00	1.05	No Sig	No Sig
	Women	1.00	2.00	2.00	2.00	2.00	No Sig	No Sig	No Sig
Self-employed	All	2.00	2.00	2.00	2.00	2.00	No Sig	No Sig	No Sig
Employer	All	2.00	2.00	2.00	No Sig	No Sig	No Sig	2.00	2.00

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

Note: This table reports the results of Rosenbaum bounds test using the Mantel and Haenszel test statistic. The table reports the minimum value of gamma (odds ratio at which the treated group is more likely to be treated) for which the treatment effect could be explained by differences in selection rather than due to treatment. "No Sig" means the treatment effect is not statistically significant.

The underlying logic of this robustness check is that some individuals are more likely to receive remittances than others who have otherwise similar observable characteristics. Table 7.7 reports how much higher the odds of treatment must be among the treated to explain the statistical differences seen in the results above. We conducted the test for an odds ratio equal to 1 (no selection bias) through 2 (double the odds of treatment) following the standards in the literature. Higher values mean that the differences between the treated and control groups are more robust, while values closer to 1 are more sensitive to selection bias.

161 Rosenbaum (2002), Becker and Caliendo (2007), and Caliendo and Kopeinig (2008).

The values reported in Table 7.7 show that some of the results of the propensity score matching exercise are highly sensitive to selection bias. This includes the impact of remittances on female labor force participation in Guatemala and Honduras as well as young women's inactivity in all three countries. On the other hand, the results are robust for male participation and youth inactivity. Based on this analysis, the negative impact on female labor force participation in El Salvador is unlikely to have been solely due to selection. Among our employment outcomes, the results for male informality are more robust than those for female informality in El Salvador and Guatemala, though not robust for either gender in Honduras. The effect of remittances on self-employment is more robust in Guatemala than in El Salvador and is not significant in Honduras. The effect on employer status is insignificant or highly sensitive to selection in Guatemala and Honduras. These results do not show that there is selection bias – only that some of the results of the matching exercise could be sensitive to the presence of selection bias.

Conclusion

Remittances can play a positive role in development, as shown in Chapter 6 of this study, which found that they have had positive effects on households' education and nutrition outcomes. Yet, when it comes to improving labor market and employment outcomes in countries that receive remittances, the evidence suggests that they can hurt more than help. In this chapter, we used propensity score matching to estimate the effect of remittances on labor market outcomes. While propensity score matching does not fully address selection bias, it can attenuate its effects by comparing individuals who receive remittances with similar individuals who do not receive remittances. In addition, we performed a sensitivity analysis to estimate how sensitive each result was to selection bias.

Our results suggest that remittances were indeed associated with negative labor supply effects in each of the three countries but to varying degrees in each of the three countries over the past two decades. These negative labor supply effects appear to have been more pronounced in El Salvador, the NCA country with the longest history of and greatest migration flows. El Salvador's results suggest that recipients of remittances decreased their labor force participation by 6 percentage points among males and 15 percentage points among females. While the effect on women was considerable, in Guatemala and Honduras this may reflect non-random selection into migration rather than an effect of receiving remittances. Worryingly, remittances were also associated with young adults neither working nor being in school, suggesting that remittances may delay employment and potentially lead to long-term non-participation. This effect was particularly robust for boys and young men in El Salvador and Guatemala. However, our results suggest that the relationship between remittances and being a *nini* has become less pronounced for El Salvadoran boys and young men over time.

We also found that the receipt of remittances may be associated with higher informality and self-employment in El Salvador and Guatemala, though this was not the case in Honduras. However, there was a small but robust increase in the likelihood of being an employer in El Salvador and Honduras among households that receive remittances, suggesting that some recipients of remittances may have used them to finance the creation of small enterprises. Interestingly, this effect grew over time, suggesting that other factors such as increased access to credit or to markets may have contributed to the ability of households to convert their remittances into investments.

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Annex 7.1

Table 7.1
Sample Characteristics

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Individual	Received remittances (%)	22.6	18.7	21.8	15.5	8.2	18.2	16.7	18.9
	Male (%)	43.9	45.5	45.6	45.1	46.9	45.3	45.4	45.8
	Potential experience	23	22.5	22.8	24.2	23.4	23.3	22.4	23.0
	Enrolled in school (%)	7.4	8.2	7.9	7.8	6.9	9.5	9.3	8.5
	Household head (%)	39.2	38	37.3	38.1	35	36.8	36.8	34.8
	Spouse (%)	25.7	25.3	24.2	29.3	27.9	27	25.5	24.0
	Married (%)	54.6	54.7	52.9	67.7	63.9	60.6	57.9	56.2
	Years of education	7.2	8.1	8.5	5.2	5.8	6	7.2	7.7
Household	Dependence ratio	0.32	0.28	25.3	0.38	0.33	0.36	0.32	29.9
	Highest education level	9.9	10.8	11.0	7.9	8.7	8.4	9.8	10.3
	Number of children (<6 years old)	0.5	0.4	0.4	0.9	0.7	0.7	0.6	0.5
	Household members older than 12	3.6	3.6	3.5	4	4.2	3.9	3.8	3.8
Region	Urban (%)	62.9	65.1	63.6	53.4	53.3	49.7	55.9	58.8
	Local unemployment rate (%)	3.4	4.1	4.3	1.6	1.9	3.7	5.8	6.6
Observations		34,834	45,893	45,140	31,683	28,213	48,180	12,713	12,708

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank) with sampling weights. Potential experience is measured as (age-years of schooling-6).

Table 7.2

Wages, Propensity Score Matching Results

		El Salvador			Guatemala		Honduras		
		2006	2014	2019	2006	2014	2006	2014	2019
Urban									
Employer	Treated	0.773	0.958	1.030	3.013	2.705	3.274	3.528	3.600
	Control	0.772	0.942	1.060	2.953	3.005	3.261	3.260	3.670
	Diff	0.001	0.016	-0.033	0.058	-0.300	0.012	0.269	-0.069
	t-stat	0.010	0.200	-0.570	0.430	-1.020	0.150	1.070	-0.490
Self-employed	Treated	0.591	0.661	0.656	1.908	2.106	2.865	3.052	3.055
	Control	0.580	0.620	0.645	1.887	2.116	2.783	3.134	3.101
	Diff	0.011	0.042	0.012	0.021	-0.009	0.083	-0.082	-0.046
	t-stat	0.520	2.170	0.680	0.360	-0.120	0.560	-0.890	-0.600
Rural									
Employer	Treated	0.725	0.672	0.685	2.803	2.514	2.194	2.832	2.695
	Control	0.768	0.812	0.801	2.803	2.137	2.129	2.530	2.134
	Diff	-0.043	-0.140	-0.115	0.000	0.377	0.065	0.302	0.561
	t-stat	-0.460	-1.920	-1.590	0.000	0.900	0.640	1.410	2.160
Self-employed	Treated	0.533	0.558	0.561	1.581	1.623	2.278	2.767	2.506
	Control	0.505	0.558	0.550	1.569	1.703	2.063	2.518	2.263
	Diff	0.019	0.000	0.011	0.119	-0.081	0.215	0.249	0.243
	t-stat	1.480	0.010	0.690	0.270	-1.340	3.760	2.070	2.210

Source: Authors' tabulations using SEDLAC (CEDLAS and the World Bank).

8 Do Remittances Promote Financial Development in Northern Central America?

Tanida Arayavechkit

Introduction

Previous chapters of this book have studied the impact of remittances on human capital and labor markets, which are the main drivers of economic growth. In this chapter, we focus on the impact of remittances on financial development. The direction of causality between financial development and economic growth has long been a debatable issue in theoretical literature, but an extensive empirical literature, mostly using cross-country analysis, suggests that countries with better financial development grow faster.¹⁶²

Sound and efficient financial systems play promote economic growth by increasing the savings rate and channeling capital to its most productive uses. Financial systems serve as a lubricant for the real economy, essentially by reducing the information, enforcement, and transaction costs that may arise when funds are channeled from savers to borrowers. This leads to higher capital accumulation and the allocation of funds to investment projects that are more profitable and involve innovative technology. The pioneer work by King and Levine (1993) found that various financial development initiatives were positively associated with per capita GDP growth via productivity increases in 80 countries between 1960 and 1989. Later work by Levine et al (2003) addressed the reverse causality issue using traditional cross-section, instrumental variable procedures and dynamic panel techniques. The authors found that the

162 See Schumpeter (1911), McKinnon (1973), Shaw (1973), King and Levine (1993), and Levine (1997). On the other hand, many argue that there is no relationship between the economic growth and financial development or that economic growth fuels financial development. See Lucas (1988), Stern (1989), and Chandavarkar (1992).

exogenous components of financial development positively influenced economic growth. The same long-run causality has also been found in developed countries.¹⁶³

Remittances and financial development are intertwined, and the causality is bi-directional. On the one hand, countries with less-developed financial markets have higher transaction fees, which can lead migrants to use informal channels to transfer funds instead. Freund and Spatafora (2008) showed that a 1 percentage point decrease in transaction fees in developing countries would lead to an increase in remittance flows of 14 to 23 percent. Ratha (2003) argued that strengthening financial sector infrastructure would bring more remittances in via formal channels. On the other hand, demand for formal banking services may increase as a result of migrants seeking less risky ways of sending remittances, while remittance-receiving households may increase demand for credit and savings products.¹⁶⁴ This can then lead to increased pressure to develop the financial sector to facilitate remittance flows and use.

Rather than looking at the importance of the financial sector on increasing flow of remittances, this chapter attempts to shed light on the impact of remittances on growth in Northern Central America (NCA) through their influence on the local financial sector development. The levels of financial sector development are measured by four sets of proxy variables characterizing a well-functioning financial system as identified by the World Bank's Global Financial Development Database.^{165,166}

Financial depth. Financial depth captures the size of the financial sector relative to the economy. It increases the power of financial systems and helps both governments and the private sector to access adequate funds without affecting asset prices and exchange rates. The two measures used for the analysis are bank deposits as a percentage of GDP and private credit (credit issued by deposit money banks and other financial institutions) as a percentage of GDP as these are the most standard measures of financial development used in the empirical literature as pioneered by King and Levine (1993).

- **Financial access.** Financial systems allow households and firms to save, insure against risks, obtain credit, and invest in profitable projects. Expanding access to basic financial services ensures that the benefits produced by financial intermediation are spread widely throughout the population, which can have positive effects on growth, income distribution, and poverty levels. The two measures used for the analysis are the number of adults who borrow from commercial banks per 100,000 adults and the number of bank branches per 100,000 adults.¹⁶⁷ However, it is important to note that these numbers can be misleading.

163 Rousseau and Wachtel (2000).

164 Aggarwal et al (2011).

165 Because financial markets are relatively small in Northern Central America, only indicators related to financial intermediaries are considered.

166 Cihak et al. (2012).

167 Another common proxy is the number of accounts held at financial institutions, but this data is lacking for Northern Central America.

Financial intermediaries are increasingly moving towards branchless banking, and while the number of borrowers measures the actual use of financial services, it does not measure financial inclusion.

- Financial efficiency. Efficient financial systems enable a better allocation of resources and facilitate access to funds with fewer costs. As a result, better-developed financial systems tend to be more profitable. The efficiency of financial intermediaries is measured using such indicators as overhead costs to total assets, overhead costs to income, net interest margin, lending-deposits spread, and the ratio of non-interest income to total income. The two measures used for the analysis are the ratio of banks' overhead costs to their income and their net interest margin. The former is also called the bank efficiency ratio. It measures the operating costs that must be incurred to earn each dollar of revenue, suggesting the extent to which a bank is able to leverage its fixed costs. A positive net interest margin means that the investment strategy pays more interest than it costs.
- Financial stability. The two measures used for the analysis, which reflect the stability of financial intermediaries, are non-performing loans (NPL) and Bank Z-scores. Banks with large NPL holdings or the high ratio of defaulting loans to total gross loans are less profitable and pay a risk premium on capital and liquidity markets, which limits their lending ability. The Bank Z-score is the probability of a banking system defaulting. It compares the buffer of a banking system with the volatility of those returns.

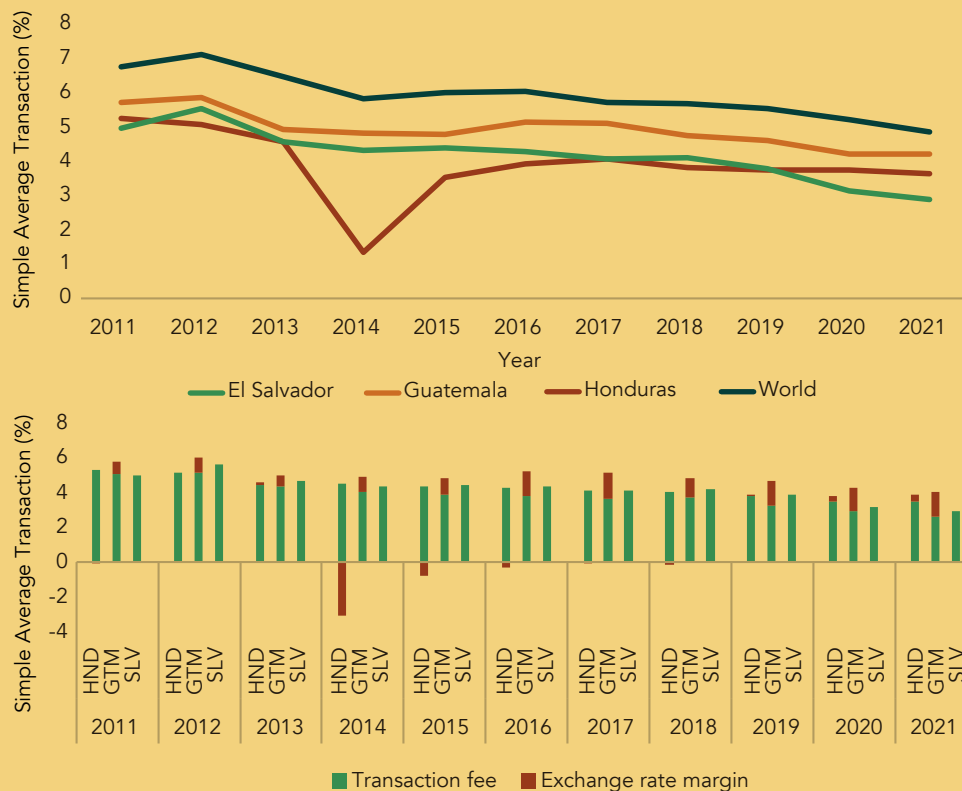
The analysis quantifies the overall effect of remittances on financial development for all four aspects and explores how the impact differs in El Salvador, Guatemala, and Honduras. It also attempts to distinguish the short-run impact of remittances on financial development from the long-run impact, which in theory can be different in magnitude and sign.

Box 8.1

Cost of sending remittances

The figures below show the average cost of sending \$200 to Northern Central America via all corridors between 2011 and 2021. Sending money to Northern Central America is cheaper than sending funds to other developing countries (top panel). In fact, there has been a decrease in the average cost of sending money to the NCA countries over the past decade, except in the last five years when the cost of sending money to Honduras barely decreased at all. While transaction fees consistently declined in all three countries, the pace was slower in Honduras. Remitters who sent money to Honduras have also faced increasing foreign exchange rate margins in recent years. Of the three countries, it was cheapest to send remittances to El Salvador because of dollarization in that country, meaning the only cost involved in sending money to El Salvador was the transaction fee. The most expensive NCA country to which to send remittances was Guatemala, despite a significant decrease in the transaction fee, due to the country's high exchange rate margins.

Transaction Costs of Remittances



Source: The World Bank, Remittance Prices Worldwide, available at <http://remittanceprices.worldbank.org>

Do Remittances Promote Financial Development?

There are two contrasting views on the impact of remittances on the financial development of receiving countries.¹⁶⁸ The positive view posits that remittances sent via formal channels allow banks in the receiving countries to offer their banking services and/or financial products to remittance-receiving households, many of whom may not otherwise demand these services or have access to them. For example, banks become more willing to expand credit to remittance-receiving households because they regard a regular flow of remittances as some form of collateral. Remittance-receiving households, at the same time, gain access to the banking system and may demand other bank products. Even if remittances are sent via informal channels or non-bank formal channels, such as non-bank financial institutions and money transfer operators, the recipient households may still need to access deposit or savings accounts to store their remittance funds. This supports the development of financial system.

The negative view is explained by a substitution between bank loans and remittances in relaxing household's budget constraints.¹⁶⁹ Particularly in situations where loans are difficult to obtain, remittances help remittance-receiving households overcome their liquidity constraints and reduce their demand for credit, which in turn dampens the development of credit markets. Despite the absence of the substitution effect, other studies have argued that the impact of remittances on financial development may be weakened if banks are reluctant to lend and prefer to hold liquid assets or if remittance-receiving households receive remittances on a frequent basis and use them to cover their regular expenses rather than saving them. These situations do not translate into an increased demand for banking services. The dominant role currently played by money transfer operators in handling remittances to the NCA countries also prevents banks from benefiting from the remittance market. As a result, remittances may not have a positive effect on financial development.

Studies of remittances and financial development usually have to contend with issues of endogeneity due to mismeasurement, reverse causality, and omitted variables. Although a large flow of remittances may lead to the development of the financial system, it is possible that the causality is the other way around with higher financial development fostering larger remittance inflows by reducing transaction costs, increasing the efficiency of funds transfers, and thus increasing the amount of funds remitted through formal channels. Moreover, an external factor might drive both remittances and financial development, which would result in biases in the estimation.

The existing literature mostly focuses on the depth aspect of financial development, and the empirical findings are mixed. One of the most rigorous studies was done by Aggarwal et al

168 Aggarwal et al (2011).

169 Chami et al (2005) and Giuliano and Ruiz-Arranz (2009).

(2011). Using data on remittance flows to 109 developing countries between 1975 and 2007, they found that remittances had had a positive, significant, and robust effect on financial development by increasing the aggregate level of deposits and credits. They addressed endogeneity issues by using economic conditions in the countries that sent the highest remittances as instruments to estimate remittance flows that were unrelated to any changes in the financial development of the receiving countries. In Africa, Gupta et al (2009) constructed a panel data estimation. Even with a fixed effect instrumental variable estimation to control for reverse causality, they found that remittances had a positive effect on financial development in 44 Sub-Saharan African countries. Karikari et al (2016) included money supply as an indicator for financial development and found that remittances had a positive effect on bank deposits and money supply in the receiving countries but not on private credit in the short run. In the long run, however, the authors found that the positive impacts disappeared. Demirgüç-Kunt et al (2011) found evidence that remittances to Mexico increased the number of bank branches, of accounts per capita, and of deposits.

Building on the existing literature, the analysis in this chapter estimates the impact of remittances on financial development as measured along the four dimensions noted above, using data from the World Bank's Global Financial Development Database and World Development Indicator Database. Our objective was to explore how the impact of remittances received by the NCA countries differs from the impact on other developing countries and how the impact varies between El Salvador, Guatemala, and Honduras. We also identify the differences between the short-run and the long-run impacts of remittances on financial development in these NCA countries. Time series data were required for this part of the exercise, but, given that long time series were available only for deposits as a percentage of GDP and private credit as a percentage of GDP, we analyzed only the depth aspect of financial development over time.

Does Northern Central America Differ from Other Remittance-receiving Countries?

In our analysis of the link between financial development and remittances, we followed the approach taken by Aggarwal et al (2011). Specifically, we estimated the following model using various methods to address the endogeneity problems:

$$FD_{it} = \alpha_0 + \alpha_1 \text{Rem/GDP}_{it-1} + \gamma_i X_{it-1} + \mu_i + \delta_t + \varepsilon_{it}, \quad (1)$$

where i and t denoted country and time respectively. FD was one of eight financial development indicators that captured the characteristics of financial development: (i) bank deposits as a percentage of GDP (financial depth); (ii) private credit issued by banks and financial institutions as a percentage of GDP (financial depth); (iii) bank branches per 1,000,000 adults (financial access); (iv) borrowers from commercial banks per 1,000 adults (financial access); (v) bank net interest margins (financial efficiency); (vi) bank overhead costs relative to income (financial

efficiency); (vii) non-performing loans (financial stability); and (viii) bank z-scores (financial stability). represented remittances as a share of GDP, the variable of interest.

X was a vector of the control variables that impact financial development, including real GDP per capita, log of real GDP, inflation rates, exchange rates, net FDI and ODA flows expressed as percentage of GDP, and total exports expressed as percentage of GDP, while μ_i was a country fixed effect and δ_t was a time fixed effect. Log of real GDP and GDP per capita controlled for the size of the economy and its level of economic development. Generally, the larger and the richer the country, the better the financial system due to economies of scale, efficiency of resources, and better legal systems. External inflows from financial accounts and current accounts may create demand for better financial systems and are also associated with a degree of financial liberalization. Inflation and exchange rates may distort households' saving and investment decisions. To distinguish the impact of remittances on financial development for each country in Northern Central America, we also estimated the model with the interaction terms:

$$FD_{it} = \alpha_0 + \alpha_1 \text{Rem/GDP}_{it-1} + \sum_{NT} \beta_i \text{Rem/GDP}_{it-1} \times 1\{i = NCA\} + \gamma_i X_{it-1} + \mu_i + \delta_t + \varepsilon_{it}, \quad (2)$$

where NCA was El Salvador, Guatemala, or Honduras.

The sample of 114 developing countries covered the period from 1988 to 2019. We excluded any outliers in the remittance flows and financial development indicators.¹⁷⁰ Only countries with at least four consecutive years of data were included in the sample. Due to a lack of data, the sample might include fewer than 114 countries for certain financial development indicators.¹⁷¹

We estimated the models using fixed effect panel regressions with time dummies. This approach controls for unobserved country characteristics and for common time trends across countries. The fixed effect panel estimation did not address the issues of endogeneity created by the reverse effect of financial development on remittance flows. Moreover, remittance inflows are susceptible to measurement errors, which was another potential source of estimation bias. To address these endogeneity issues, we followed Aggarwal (2011) and used economic conditions in the remittance-sending countries as instruments for remittances. Specifically, we used the two-period lagged unemployment rate, per capita GDP, and GDP growth in remittance-sending countries as instruments for the one-period lag of remittances flows. The instrument was constructed from the weighted average of the economic indicators in the top five sending countries in the sample.

Table 8.1 shows the fixed-effect IV panel estimation of Equations 1 and 2 for financial depth. Overall, we found the link between remittances and bank deposits to be insignificant but that

¹⁷⁰ Outliers as the 1% largest values are excluded.

¹⁷¹ See Annex 1 for the list of countries in the sample.

remittances were positively associated with private credit. A 1 percentage point increase in remittances as a share of GDP was associated with an estimated 1.44 percentage point increase in the private credit to GDP ratio. The impact of remittances in Northern Central America was not significantly different from the impact in other countries, except for Guatemala, where the impact on bank deposits was stronger than other countries while the impact on private credit was weaker. Specifically, a 1 percentage point increase in the remittances to GDP ratio was associated with a 0.86 percentage point increase in the deposits to GDP and a 0.7 percentage point increase in the private credit to GDP ratio.

We found that the link between remittances and financial access was weak and negative, in terms of both financial coverage and the use of financial services. Table 8.2 shows our estimation results for financial access. Remittances lead to neither higher banking infrastructure penetration nor a higher share of the population borrowing from a financial institution. In fact, an increase in remittances as a share of GDP was associated with lower shares of adults borrowing from a financial institution. Overall, we found that the link between remittances and financial access indicators in Northern Central America was not significantly different from the link in other countries in the sample.

Table 8.3 illustrates the mixed results that we found for financial efficiency. While high levels of remittances are associated with a lower net interest margin, it does not result in lower overhead costs. One possible explanation might be that remittance products have higher overhead costs than bank loans. While financial intermediaries usually incur much higher costs than other categories of remittance companies such as money transfer operators when offering remittance products,¹⁷² in countries with large remittance flows, they may offer more remittance products and services and thus face higher overhead costs per unit of income. In Guatemala, the high level of remittances is positively associated with a lower ratio of overhead costs to income, while in Honduras, the evidence points to a stronger negative relationship between remittances and financial efficiency than the world average.

In terms of financial stability, we found that El Salvador had a stronger negative relationship between remittances and financial stability than the world average, with larger flows of remittances being significantly linked to higher NPL ratios and bank Z-scores. The probability that a bank's losses would exceed its capital increased by 0.76 percentage points as a result of a 1 percentage point increase in the ratio of remittances to GDP, while the NPL ratio rose by 1.25 percent. These estimation results are reported in Table 8.4.

172 Ratha and Riedberg (2005).

Table 8.1

Fixed Effect IV Estimation of the Link between Remittances and Financial Depth

	Deposits to GDP (%)				Private credits to GDP (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances to GDP (%)	0.49 (1.40)	0.52 (1.38)	0.49 (1.41)	0.50 (1.44)	1.44*** (4.30)	1.47*** (4.01)	1.44*** (4.29)	1.44*** (4.32)
Log GDP per capita	17.23*** (9.02)	17.25*** (8.98)	17.43*** (9.07)	17.31*** (9.02)	29.13*** (15.92)	29.13*** (15.85)	28.96*** (15.89)	29.11*** (15.97)
Inflation	-0.07 (-0.27)	-0.08 (-0.29)	-0.07 (-0.25)	-0.07 (-0.25)	-0.20 (-0.58)	-0.21 (-0.60)	-0.20 (-0.59)	-0.20 (-0.58)
Exchange rate	-0.90** (-2.51)	-0.91** (-2.47)	-0.89** (-2.49)	-0.91** (-2.51)	-1.59*** (-3.05)	-1.62*** (-3.02)	-1.60*** (-3.06)	-1.59*** (-3.04)
FDI to GDP (%)	5.39* (1.95)	5.41* (1.95)	5.47** (1.98)	5.38* (1.94)	17.27*** (4.27)	17.28*** (4.26)	17.21*** (4.27)	17.27*** (4.27)
Official aid to GDP (%)	24.27*** (3.09)	24.22*** (3.07)	23.91*** (3.06)	24.34*** (3.10)	4.31 (0.55)	4.16 (0.53)	4.60 (0.59)	4.29 (0.55)
Export to GDP (%)	0.08** (2.12)	0.08** (2.12)	0.08** (2.09)	0.08** (2.09)	-0.01 (-0.16)	-0.00 (-0.14)	-0.00 (-0.13)	-0.00 (-0.15)
Rem to GDP X SLV		-0.11 (-0.24)				-0.23 (-0.54)		
Rem to GDP X GTM			0.86*** (2.59)				-0.74*** (-2.66)	
Rem to GDP X HND				0.48 (1.21)				-0.12 (-0.35)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	2055	2055	2055	2055	2054	2054	2054	2054
# Countries	126	126	126	126	126	126	126	126
Hansen J Statistics	0.26	0.28	0.25	0.26	0.83	0.86	0.88	0.84
P-value								

Source: Own tabulations using data from The World Bank's Development Indicator and Global Financial Development Database.

Note: t statistics in parentheses * p<.10 ** p<.05 *** p<.01.

Table 8.2

Fixed Effect IV Estimation of the Link between Remittances and Financial Access

	Bank branch per 100,000 adults				Loan from a financial institution (% of adults)†		
	(1)	(2)	(3)	(4)	(5)	(7)	(8)
Remittances to GDP (%)	-0.18 (-0.80)	-0.18 (-0.80)	0.11 (0.34)	-0.22 (-0.92)	-8.62* (-1.83)	-5.80** (-2.03)	-5.73** (-1.96)
Log GDP per capita	8.48*** (4.71)	8.48*** (4.71)	9.70*** (4.60)	8.32*** (4.63)	168.49*** (4.14)	182.33*** (4.93)	182.64*** (4.95)
Inflation	0.14 (1.17)	0.14 (1.18)	0.19 (1.51)	0.15 (1.18)	2.46 (0.63)	3.06 (0.85)	3.10 (0.87)
Exchange rate	-0.34 (-1.20)	-0.34 (-1.20)	-0.39 (-1.39)	-0.32 (-1.13)	-8.87* (-1.75)	-7.96 (-1.41)	-8.06 (-1.40)
FDI to GDP (%)	0.97 (1.14)	0.97 (1.14)	0.53 (0.59)	1.00 (1.18)	18.53 (0.49)	15.50 (0.77)	15.58 (0.77)
Official aid to GDP (%)	2.31 (0.69)	2.32 (0.69)	0.95 (0.29)	2.36 (0.70)	221.31*** (3.58)	210.71*** (3.99)	211.45*** (4.03)
Export to GDP (%)	-0.02 (-0.77)	-0.02 (-0.77)	-0.03 (-1.25)	-0.02 (-0.73)	0.72 (1.05)	0.03 (0.07)	0.04 (0.07)
Rem to GDP X SLV		1.33 (1.01)					
Rem to GDP X GTM			-11.89 (-1.41)			3.80 (0.27)	
Rem to GDP X HND				0.53 (0.94)			-11.62 (-1.57)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	947	947	947	947	616	640	640
# Countries	104	104	104	104	66	71	71
Hansen J Statistics P-value	0.13	0.13	0.11	0.13	0.31	0.57	0.35

Source: Own tabulations using data from The World Bank's Development Indicator and Global Financial Development Database.

Note: t statistics in parentheses * p<.10 ** p<.05 *** p<.01. † Data for El Salvador were not available. ‡ Data for El Salvador is not available.

Table 8.3

Fixed Effect IV Estimation of the Link between Remittances and Financial Efficiency

	Net interest margin (%)				Overhead cost to income (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances to GDP (%)	-0.26*** (-2.80)	-0.26** (-2.32)	-0.26** (-2.33)	-0.25** (-2.32)	-0.32 (-0.76)	-0.32 (-0.76)	-0.35 (-0.84)	-0.28 (-0.69)
Log GDP per capita	-1.34*** (-2.65)	-1.32** (-2.20)	-1.28** (-2.13)	-1.25** (-2.10)	-4.06 (-1.43)	-4.22 (-1.47)	-4.84* (-1.69)	-3.64 (-1.29)
Inflation	0.54*** (7.07)	0.53*** (5.54)	0.54*** (5.59)	0.54*** (5.66)	0.69 (1.43)	0.71 (1.48)	0.68 (1.42)	0.73 (1.51)
Exchange rate	0.00 (0.00)	0.01 (0.04)	0.00 (0.01)	-0.03 (-0.10)	1.90*** (3.93)	1.81*** (3.53)	1.92*** (3.93)	1.80*** (3.72)
FDI to GDP (%)	0.33 (0.45)	0.32 (0.75)	0.33 (0.76)	0.31 (0.74)	2.60 (0.44)	2.62 (0.45)	2.59 (0.44)	2.52 (0.43)
Official aid to GDP (%)	6.44*** (2.87)	6.44*** (2.59)	6.45*** (2.59)	6.71*** (2.70)	-25.06** (-2.42)	-25.17** (-2.44)	-25.30** (-2.44)	-23.63** (-2.35)
Export to GDP (%)	0.01 (0.79)	0.01 (0.84)	0.01 (0.83)	0.01 (0.93)	-0.08 (-1.54)	-0.08 (-1.55)	-0.08 (-1.51)	-0.08 (-1.47)
Rem to GDP X SLV		0.04 (0.15)				-0.72 (-1.22)		
Rem to GDP X GTM			0.17* (1.74)				-2.52*** (-4.19)	
Rem to GDP X HND				0.34*** (3.18)				1.88*** (2.73)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1244	1244	1244	1244	1266	1266	1266	1266
# Countries	105	105	105	105	108	108	108	108
Hansen J Statistics	0.52	0.42	0.25	0.38	-	0.25	0.31	0.29
P-value								

Source: Own tabulations using data from The World Bank's Development Indicator and Global Financial Development Database.

Note: t statistics in parentheses * p<.10 ** p<.05 *** p<.01.

Table 8.4

Fixed Effect IV Estimation of the Link between Remittances and Financial Stability

	Net interest margin (%)				Overhead cost to income (%)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances to GDP (%)	0.21 (0.57)	0.21 (0.56)	0.20 (0.54)	0.25 (0.65)	-0.48** (-2.56)	-0.50*** (-2.82)	-0.49*** (-2.79)	-0.49*** (-2.83)
Log GDP per capita	-4.39** (-2.04)	-4.15* (-1.90)	-4.42** (-2.00)	-4.30** (-2.01)	-2.89** (-2.31)	-2.66** (-2.11)	-2.74** (-2.18)	-2.85** (-2.29)
Inflation	-0.46* (-1.68)	-0.47* (-1.75)	-0.45* (-1.67)	-0.46* (-1.71)	0.63*** (3.68)	0.60*** (3.53)	0.63*** (3.73)	0.64*** (3.74)
Exchange rate	1.10** (2.15)	1.14** (2.21)	1.11** (2.15)	1.10** (2.16)	-0.46* (-1.82)	-0.31 (-1.27)	-0.46* (-1.81)	-0.47* (-1.84)
FDI to GDP (%)	2.03 (1.57)	1.96 (1.51)	2.03 (1.57)	2.05 (1.59)	-0.51 (-0.38)	-0.53 (-0.39)	-0.49 (-0.36)	-0.50 (-0.37)
Official aid to GDP (%)	-31.74*** (-3.54)	-31.48*** (-3.52)	-31.74*** (-3.54)	-31.26*** (-3.47)	-2.29 (-0.60)	-2.26 (-0.59)	-2.34 (-0.61)	-2.21 (-0.57)
Export to GDP (%)	0.05* (1.69)	0.06* (1.73)	0.05* (1.70)	0.05* (1.70)	0.04** (2.11)	0.04** (2.18)	0.04** (2.12)	0.04** (2.15)
Rem to GDP X SLV		1.25*** (2.81)				1.26*** (4.70)		
Rem to GDP X GTM			-0.19 (-0.48)				0.57*** (2.95)	
Rem to GDP X HND				-0.89 (-0.83)				0.24 (1.20)
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	1032	1032	1032	1032	1305	1305	1305	1305
# Countries	88	88	88	88	110	110	110	110
Hansen J Statistics	0.16	0.17	0.15	0.18	0.13	0.13	0.13	0.45
P-value								

Source: Own tabulations using data from The World Bank's Development Indicator and Global Financial Development Database.

Note: t statistics in parentheses * p<.10 ** p<.05 *** p<.01.

Long-run Effect of Remittances on Financial Development

The short-run and long-run impact of remittances on financial development can be different. In the short run, if households use remittances mainly to finance their consumption, the effect on financial development is likely to be negligible. In the long run, households may use remittances for savings and investment, meaning that previously unbanked households choose to access certain financial products. As a result, the long-run impact of remittances on financial development may be larger than in the short run.

In this section, we attempt to distinguish the short-run and the long-run impacts of remittances on financial development in the NCA countries. Most studies on the differential effect of remittances on financial development are recent.¹⁷³ The most recent paper by Fromentin (2017) used the Pooled Mean Group (PMG) approach to analyze the dynamic impact of remittances on financial development in developing countries over the period from 1974 to 2014. He found that an increase in remittances was significantly associated with financial depth in long run. In the short run, its impact on financial development was slightly positive for countries in all income groups except for low-income countries where the effect was insignificant or negative.

We applied the methodology used in Fromentin (2017) to the NCA countries but allowed for the long-run effect to differ across the three countries. Thus, we used the Mean Group (MG) approach instead of the PMG approach.¹⁷⁴ Both approaches can be used with non-stationary dynamic heterogeneous panel data. Given that long time series were not available for most of our financial indicators (except for the deposits to GDP ratio and the private credit to GDP ratio), we only analyzed the depth aspect of financial development. The data that we used from the World Bank's Development Indicator and Global Financial Development Database spanned the period from 1978 to 2019 for El Salvador and from 1988 to 2019 for Honduras and Guatemala because remittances to Honduras and Guatemala were less than 1 percent of GDP prior to the late 1980s. Specifically, we estimated the following model:

$$\Delta FD_{it} = \Phi_i [FD_{it-1} - \theta_i \text{Rem}/\text{GDP}_{it-1}] + \alpha \Delta FD_{it-1} + \gamma_i \Delta X_{it-1} + \mu_i + \varepsilon_{it},$$

where θ_i was the long-run relationship between the financial development indicator and the remittances to GDP ratio and Φ_i was the speed of adjustment toward the long-run equilibrium when there is a change in remittances. The long-run equilibrium or the co-integration between remittances and financial development would exist only if Φ_i was significantly negative. X_{it} included $\text{Rem}/\text{GDP}_{it-1}$ and all short-run stationary control variables – changes in per capita GDP, log GDP, overseas development aid to GDP, exports to GDP, inflation, and foreign direct

173 For example, Fromentin (2017), Karikari et al (2016), Masuduzzaman (2014), and Uddin and Sjö (2013).

174 See Pesaran and Smith (1995) for the MG approach and Pesaran et al (1999) for the PMG approach. The Hausman test rejects the null hypothesis that a difference in coefficients is not systematic when the ratio of private credit to GDP is used as a financial indicator. The test does not reject the null hypothesis when the ratio of deposits to GDP is used. Nevertheless, we allowed the long-run effect to differ between the three countries for both financial indicators.

investment to GDP. γ_i and α were the short-run adjustments to the financial development indicator in response to its past value and other control variables.

Table 8.5 presents the results of our MG estimation. We found that a long-run positive relationship between remittances and bank deposits only existed for the deposits to GDP ratio in Guatemala. In the long run, we found no links between remittances and financial depth in El Salvador and Honduras. This confirms that the positive result of the deposits to GDP ratio from the fixed effect IV estimation was indeed a long-run relationship. We did observe a short-run, albeit rather weak, relationship between remittances and bank deposits in El Salvador and Honduras, which was negative in the case of El Salvador and positive in the case of Honduras.

Table 8.5

Mean Group Estimation of Long-run and Short-run Effects

	Deposits to GDP			Credit to GDP		
	El Salvador	Guatemala	Honduras	El Salvador	Guatemala	Honduras
Long Run (EC)						
Rem to GDP	0.37 (0.81)	1.98*** (4.08)	-0.12 (-0.07)	-0.14 (-0.28)	0.14 (0.42)	0.48 (0.89)
Short Run						
EC	-0.38*** (-3.17)	-0.40*** (-2.90)	-0.13 (-0.93)	-0.40*** (-3.69)	-0.54*** (-2.97)	-0.35*** (-3.06)
Δ Rem to GDP (%)	-1.05* (-1.94)	0.40 (0.84)	0.58* (1.90)	-0.74 (-1.38)	0.67 (1.52)	-0.02 (-0.06)
Δ GDP per capita	-2.18 (-0.49)	3.21 (0.59)	5.59 (0.79)	3.62 (0.73)	14.26** (2.04)	21.50*** (2.64)
Δ Log GDP	99.48 (0.76)	-213.51 (-1.14)	-100.66 (-0.79)	-77.60 (-0.52)	-489.25** (-2.02)	-372.45** (-2.49)
Δ Official Aids to GDP (%)	67.59 (1.08)	66.56 (0.41)	-8.77 (-0.44)	132.02** (1.99)	129.66 (0.80)	3.23 (0.16)
Δ Export to GDP (%)	-0.32 (-1.31)	0.02 (0.08)	-0.17 (-1.13)	-0.08 (-0.33)	0.05 (0.27)	-0.41** (-2.54)
Inflation (%)	-0.37*** (-3.44)	-0.04 (-0.58)	-0.04 (-0.42)	-0.49*** (-4.44)	-0.09 (-1.55)	-0.11 (-1.14)
FDI to GDP (%)	13.92 (0.51)	95.47 (1.56)	23.65 (0.67)	21.81 (0.75)	88.00 (1.49)	15.97 (0.46)
Number of observations	103			103		

Source: Own tabulations using data from The World Bank's Development Indicator and Global Financial Development Database.

Note: t statistics in parentheses * p<.10 ** p<.05 *** p<.01.

Conclusions

Our results suggest that there is a strong link between remittances and bank deposits in Guatemala, while the link appears to be weaker in the other two countries. Guatemala's higher remittances are also associated with lower bank overhead costs. One important difference between Guatemala and its immediate NCA neighbors is that it has more macroeconomic stability, which usually results in less crowding out and higher levels of financial intermediation. So, it would seem that the results of our analysis were probably influenced by the overall health of the economies in these three countries.

These positive findings in Guatemala may also be partially attributable to the extensive role played by credit unions in offering relevant products to unbanked remittance-receiving households. The fact that a significant proportion of Guatemalan remittance recipients have bank accounts (42 percent) and receive relatively large remittance transfers (\$363 per month or \$4,356 annually) may also explain the improvement in Guatemala's financial development measures over the long run (Table 8.6). However, the substitution effect – remittances substituting for loans or credits – seems to prevail in Guatemala.

Table 8.6

Remittances and Bank Accounts in the Countries of Northern Central America

	El Salvador	Guatemala	Honduras
Average remittance transfer (\$)	339	363	225
Annual value of remittance transfers (\$)	4068	4356	2700
Remittance recipients with bank accounts (%)	38	42	61
Credit union penetration (%)	3.3	10.2	9.9

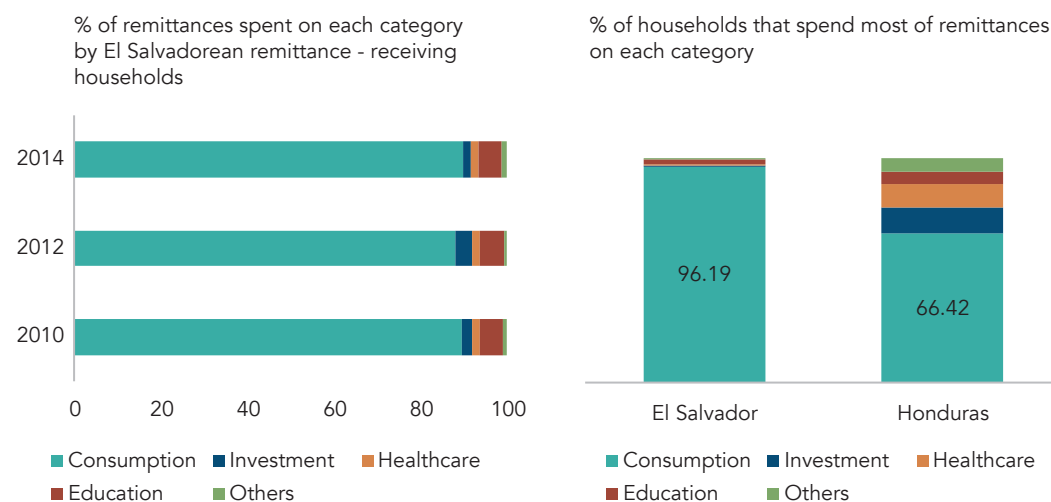
Source: Orozco (2015), Orozco and Yansura (2015), and World Council of Credit Unions Database (2017). Total number of reported credit union members as a share of the total economically active population, ages 16-64.

In the case of Honduras, while recipients of remittances are the most likely to have bank accounts of the three countries and the country also has relatively high credit union penetration, there is only weak evidence that the large inflows of remittances have increased financial depth. One possible reason is that the country's smaller remittance transfers, \$225 as opposed to \$363 in Guatemala and \$339 in El Salvador, may limit the need for remittance-receiving households to open savings instruments.

In El Salvador, we found only a short-run relationship between remittances and bank deposits, which seems to have been because most remittance-receiving households used this money to pay for their immediate consumption needs and to overcome their liquidity constraints. Ninety-six percent of Salvadoran remittance-receiving households spent most of their remittances on

consumption, compared to 66 percent in Honduras (Figure 8.1). As a result, their lack of excess funds for savings and investment translated into a lower demand for banking services than in the other NCA countries. The results from Chapter 4, which found strong altruistic motives in El Salvador where households use their remittances to help each other, also support this conclusion.

Figure 8.1 Remittances Spent on Each Category



Source: Own tabulation from household surveys.

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Annex 8.1

Table 8.1

List of Countries Included in the Fixed-Effect IV Panel Estimation

Afghanistan	Djibouti	Madagascar	Senegal
Albania	Dominica	Malawi	Serbia
Algeria	Dominican Republic	Malaysia	Sierra Leone
Angola	Egypt, Arab Rep.	Maldives	Solomon Islands
Argentina	El Salvador	Mali	South Africa
Armenia	Equatorial Guinea	Mauritania	South Sudan
Azerbaijan	Fiji	Mauritius	Sri Lanka
Bangladesh	Gabon	Mexico	St. Lucia
Belarus	Gambia	Moldova	St. Vincent and the Grenadines
Belize	Georgia	Mongolia	Sudan
Benin	Ghana	Montenegro	Suriname
Bhutan	Grenada	Morocco	Swaziland
Bolivia	Guatemala	Mozambique	Tajikistan
Botswana	Guinea	Myanmar	Tanzania
Brazil	Guinea-Bissau	Namibia	Thailand
Bulgaria	Guyana	Nepal	Togo
Burkina Faso	Haiti	Nicaragua	Tonga
Burundi	Honduras	Niger	Tunisia
Cabo Verde	India	Nigeria	Turkey
Cambodia	Indonesia	Pakistan	Uganda
Cameroon	Iran, Islamic Rep.	Panama	Ukraine
Chad	Iraq	Papua New Guinea	Vanuatu
China	Jamaica	Paraguay	Venezuela, RB
Colombia	Jordan	Peru	Vietnam
Comoros	Kazakhstan	Philippines	Yemen, Rep.
Congo, Dem. Rep.	Kenya	Romania	Zambia
Congo, Rep.	Kyrgyz Republic	Russian Federation	Zimbabwe
Costa Rica	Liberia	Rwanda	
Cote d'Ivoire	Libya	Samoa	

9 And Then the World Changed: First Insights on How the Pandemic Affected Remittances in Northern Central America

Kinnon Scott and Jorge Soler-Lopez

Introduction

Both migration and remittances in the countries of North Central America (NCA) have been affected by the health and economic shocks caused by the COVID-19 pandemic. Since the first cases of the virus were identified in late 2019, the toll on health around the world has been high, with more than 288 million people sickened and 6.3 million deaths by the end of 2021.¹⁷⁵ As the pandemic grew, governments around the globe attempted to interrupt the path of contagion and slow the spread of the disease. Lockdowns were ordered, quarantine policies were rolled out, and restrictions placed on many of the activities of daily life. International travel became almost non-existent as borders were closed. The restrictions, and the fall in demand for goods and services as people remained home, forced many businesses to close and led to high levels of unemployment in some sectors.

How then has this pandemic affected migration and remittances in the NCA countries? It was widely predicted at the beginning of the pandemic that the related restrictions and widespread economic contraction would lead to a sharp decline in remittances if they resulted in earnings reductions for migrants.¹⁷⁶ At the same time, the pandemic raised serious concerns about rising food insecurity among recipient households brought about by falling household resources,

175 Data on COVID from COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (Du et al, 2020).

176 Knomad (2020) and Caruso et al (2021).

reduced access to food,¹⁷⁷ job and income losses, and the illness or death of household members. The increased rates of unemployment, business closures, and decline in economic activity associated with the pandemic decreased household income and negatively affected welfare, suggesting that the amounts of remittances that households had been receiving prior to the pandemic might not have been sufficient to offset these negative factors even if they had continued at their previous level, let alone if they had decreased.

Answering these questions is critically important for understanding welfare in the regions of the world that are highly dependent on remittances such as Northern Central America. We have found that remittances have been surprisingly resilient, particularly in the NCA countries, and understanding how these flows and their effects have changed in the face of an unprecedented shock can give governments insights into how to design social assistance policy for future shocks. The impact of the economic downturn and subsequent recovery has varied widely between countries, with many countries that host migrants recovering more quickly than the countries from which migrants tend to come. This suggests that remittances will play an even more important role in the future. Moreover, as COVID restrictions have been lifted, migrant flows have resurged to even higher than their pre-pandemic levels,¹⁷⁸ but the dynamics may change in response to the long-lasting effects of the pandemic. Thus, there seems to be much to learn from the present situation that can inform policymakers about ways to enhance the positive effects of remittances.

In this chapter we take a first look at the impacts in NCA, taking advantage of the limited data available. The chapter is organized in the following manner. In the first section, we provide a brief overview of the impact of the COVID-19 pandemic to highlight the global nature of the shock and how this has affected the NCA countries in terms of the health of both the population and the economy. In the second section, we look at changes in the pattern of remittances in the NCA countries and examine why, in the middle of a crisis in the sending countries, remittances not only did not fall overall but rose instead. In the third section, we analyze the role played by remittances in sustaining household welfare by increasing their food security and their ability to make ends meet, thus reducing the need for them to engage in coping strategies that make them more vulnerable in the future. We close with final conclusions and policy implications.

Overview of the Global Pandemic

The COVID-19 pandemic began in late 2019 but spread around the world in early 2020 and continues as we write this chapter. It has had many significant impacts on the world, in both social and economic terms, which we outline in the following sections.

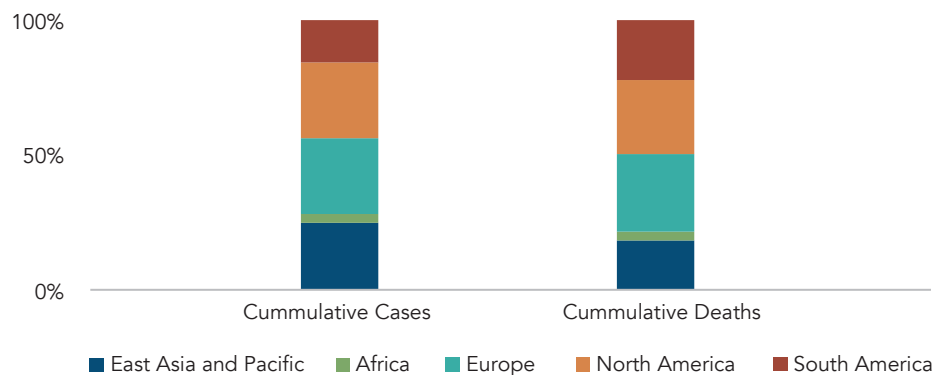
177 Niles et al (2020) predicted a 32 percent increase in food insecurity in one state of the United States due to COVID-19, while Gunderson et al (2021), Headey et al (2020), and Koltai et al (2021) all found evidence of increased food security during the first months of the pandemic.

178 In some cases the levels are higher but this may simply reflect a one-off catchup of pandemic-delayed migration.

The Health Impact

Latin America was one of the most badly affected regions in the world. Accounting for 8.3 percent of the world's population, Latin America experienced close to 16 percent of the COVID-19 cases in 2020 and 22 percent of COVID-19 fatalities.¹⁷⁹ The excess mortality rate in the Americas was 60 percent higher than the reported deaths from COVID-19 (Figure 9.1).¹⁸⁰ By the end of 2021, excess deaths in the Americas represented 21 percent of all excess deaths, while the region only accounted for 13 percent of the global population.¹⁸¹ The NCA countries were not exempt: cases per million people in Honduras were above the global case rate, and deaths per million in both Guatemala and Honduras were above the global death rate (Table 9.1).¹⁸² Nor were the main destination countries for NCA migrants exempt. The United States had one of the highest rates of contagion (60.7 per million population), although the fatality rate was lower (1.7 per million).

Figure 9.1 Share of COVID-19 Cases and Deaths by Region, end 2020



Source: Authors' calculations based on data from JHU CSSE COVID-19 Data.

¹⁷⁹ Population figures come from the United Nations Population Fund (2022).

Data on COVID-19 cases, cumulative as of December 31, 2021, and fatalities as of December 30, 2021, from JHU CSSE COVID-19 Data.

¹⁸⁰ WHO (2021b).

¹⁸¹ Authors' calculations based on data in WHO (2021c).

¹⁸² Data on excess mortality come from Karlinsky and Kobak (2021).

Table 9.1

COVID-19 Cases and Deaths in NCA Countries, end 2020

	Cases	Cases	Death	Death	Death
El Salvador					
Guatemala					
Honduras					
Mexico	ask for this table, data not editable				
Spain					
United States					
Global					

Source: Authors' calculations based on data from JHU CSSE COVID-19 Data.

The Economic Impact

The impact of the pandemic and of the efforts to contain it on the global economy has been substantial. GDP growth slowed or became negative in most countries. Overall, it is estimated that the world economic growth declined by 3.4 percent in 2020 compared to 2019.¹⁸³ Trade in the services sector was particularly hard hit, and, in Central America, sectors related to tourism (such as restaurants and hotels), construction, commerce, and transport suffered the most.¹⁸⁴ These negative economic effects have been experienced both in migrant-sending countries such as those in NCA region and in migrant destination countries, and the longer-term effects could also be substantial as the pandemic has disrupted important drivers of growth such as economic and human capital investments.¹⁸⁵

Although a strong rebound occurred both in the economies of the region and in the destination countries for NCA migrants in 2021, this is likely to have been a one-off recovery as growth projections for the next few years remain low. Estimates for 2022 and 2023 show that the net loss of growth due to COVID will be substantial for many countries (in other words, what growth was projected to be pre-COVID compared to actual and projected growth after two years of the pandemic). In the LAC region, this net loss in growth amounts to 5.2 percentage points (see Figure 9.2). In the countries of Northern Central America, there is a great deal of variation, with Honduras projected to experience a loss of 5.9 percentage points and El Salvador a loss of 3 percentage points, with only Guatemala expected to have recovered its pre-COVID cumulative growth by the end of 2021. The US economy, which is of prime importance for the NCA countries' patterns of remittances and migration, was expected to fully recover in 2022

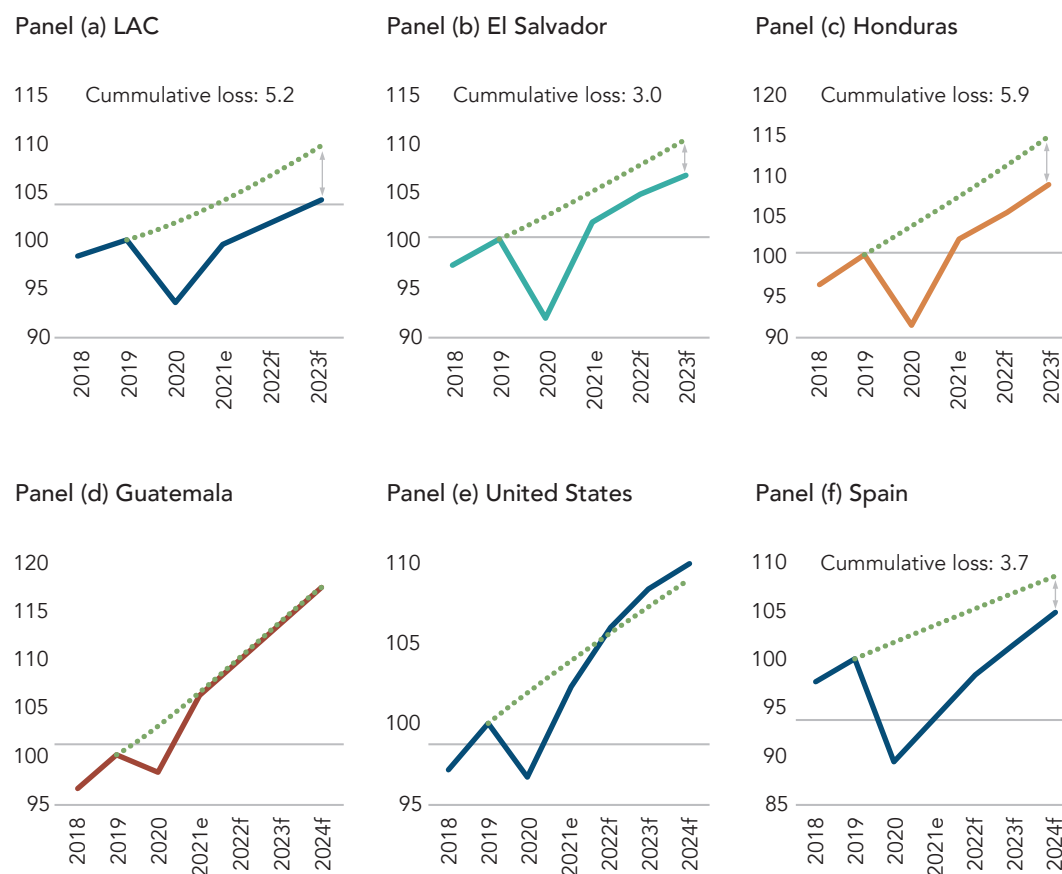
183 World Bank (2022a)

184 Ando and Hayakawa (2022) and CABI (2021).

185 World Bank (2021b).

and to continue a healthy growth through 2023 (though more recent developments suggest a slower than initially anticipated recovery).¹⁸⁶ The situation is less positive in Spain, another key destination country for NCA migrants, where there will be losses well into 2024.

Figure 9.2 Cumulative Loss of Economic Growth



Source: Calculations based on World Bank (2022a). El Salvador data are from World Bank staff estimates.

To contain the virus and protect human health, the NCA countries closed their economies and schools for extended periods. Table 9.2 presents a timeline in Honduras, which shows just how quickly the economy and social life of the country was shut down. The first case was confirmed on March 9, and by March 13 the schools were closed, and both the public and private sectors shifted to telework. While some of the measures were reversed within several months (for example, part of the public sector was reopened after three months), there were

¹⁸⁶ It is not clear if this recovery will stay on track. These projections were under revision at the time of writing.

other longer-term impacts. Classes in the public school system did not resume until April of 2022 after a two-year closure that hindered learning at all levels.¹⁸⁷ Guatemala and El Salvador implemented similar curfews and closures to slow the spread of the disease and to prevent their health systems from becoming overwhelmed. According to the Oxford Stringency Index, a measure of the restrictions implemented by countries around the world,¹⁸⁸ the NCA countries instituted stricter closures during the first wave of the pandemic than the average for Latin America and the United States.

The pandemic-related restrictions on the mobility of individuals have greatly affected labor markets, with unemployment rates going up around the world. In the LAC region, the tourism-related sectors (lodging and restaurants) experienced the highest job losses, followed by other services and trade. While job losses peaked in the first months of the pandemic, even by the end of 2020 the percentages of lost jobs were still high (9 percent in the tourist sector, 11

Table 9.2
The Shuttering of Honduras in the Face of COVID-19

Timeline	Restrictions
March 9, 2020	First COVID-19 case confirmed
March 12, 2020	All schools closed
March 13, 2020	Telework authorized for public and private institutions
March 14, 2020	First round of prevention measures, including restrictions on crowd sizes and requirements for workers over 60 years old to telework
March 15, 2020	Non-essential businesses closed and curfews imposed
March 16, 2020	Suspension of certain constitutional rights
March 16, 2020	Complete curfew ordered in three cities with high infection rates
March 21, 2020	State of emergency declared until December 31
March 21, 2020	Incoming international flights banned, and land borders kept open only for Hondurans arriving back into the country
March 24, 2020	Partial re-opening of financial institutions
March 29, 2020	Hondurans outside of the country allowed to return under various conditions
May 22, 2020	Returning Hondurans required to quarantine for 14 days
June 8, 2020	Partial re-opening of public institutions
June 29, 2020	System to control movement suspended and partial re-opening of private businesses allowed depending on region and sector
August 3, 2020	Public institutions re-opened with partial staffing

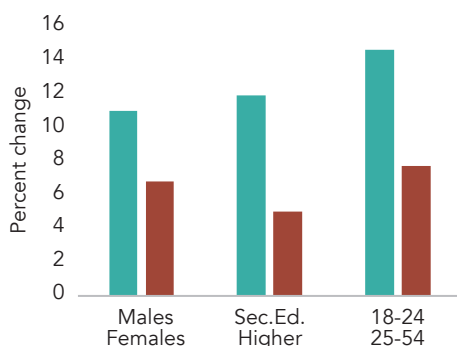
Source: BLP Legal (2022).

¹⁸⁷ See UNESCO (2021) for an analysis of the negative impacts of the pandemic on learning.

¹⁸⁸ Hale et al (2021).

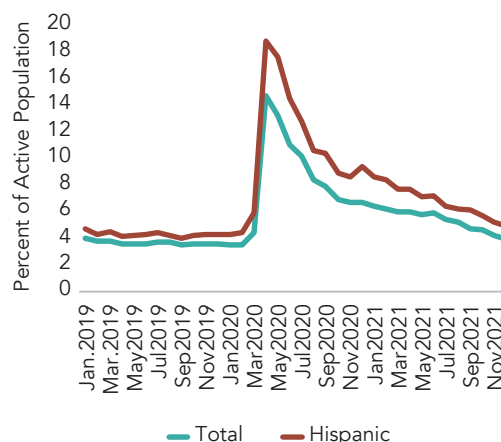
percent in trade, and 10 percent in construction).¹⁸⁹ Women, young people, and those with lower levels of education were the worst affected (Figure 9.3). The three NCA countries were hard hit as well. During the first wave of the pandemic, when strict lockdowns were in place, job losses ranged from 16 to 18 percent in all three countries. Recent estimates of the increase in unemployment between 2019 and 2020 range from 1.4 percentage points in Guatemala to 2.7 percentage points in Honduras. Also in that period, one in four formal businesses had closed because of the pandemic.¹⁹⁰ The unemployment rate in the US, the main destination country for NCA migrants, also rose sharply, peaking at 14.7 percent in April of 2020 (Figure 9.4), and while it decreased to about 6.7 percent in December of 2020, this was still a 3 percentage point increase from December 2019. Unemployment rates among Hispanics in the US were particularly high at 18.8 percent at their peak, and while they fell, by December of 2021 the gap between the Hispanic and the overall unemployment rates was still wider than before the pandemic. However, those of Hispanic descent who were foreign-born (migrants) fared better as their unemployment rate in June 2021 was 5.9 percent compared to 8.3 percent for US-born Hispanics.¹⁹¹

Figure 9.3 Job Losses during the Pandemic in LAC (% change)



Source: Based on Mejía-Mantilla et al (2021a)
 Note: The secondary education category includes people with only primary school, partial secondary, and completed secondary education. Higher refers to any post-secondary schooling. "Youths" refer to the 18 to 24 age group.

Figure 9.4 Unemployment Rates in the US, 2019-2021



Source: Authors' calculations based on Bureau of Labor Statistics, 2022

189 Mejía-Mantilla et al (2021a).

190 Mejía-Mantilla et al (2021a) for early job losses, World Bank (2022b) for unemployment rates, and Aterido et al (2021) for business closures.

191 Kochhar and Bennett (2021)

Governments in both the migrants' origin and destination countries attempted to mitigate the welfare impacts of the pandemic and the closures through a variety of social programs. These included providing cash or in-kind transfers to households, freezing loan repayments, granting tax exemptions, and providing funds to particularly hard-hit sectors. The goal of these programs was to mitigate the worst impacts of the crisis on human welfare and the economy.¹⁹² The NCA governments rolled out an unprecedented number of initiatives (see Annex 9.3 for a list of these programs.) Given the high level of informality in the three countries, governments were careful to include all sectors of the economy. Despite their broad scope, the programs do not seem to have completely offset the effects of the pandemic as various models have suggested that poverty increased during the period. Oliva et al (2021) found that the social assistance programs in the NCA countries, despite their broad scope, were insufficient to fully offset the impacts of the pandemic. Poverty rates as estimated using the US\$3.2 poverty line rose in 2020 in all three countries and, in 2021 were still higher in El Salvador and Guatemala than they were in 2019.¹⁹³ However, estimates of the impact of social assistance programs in the United States tell a different story in that the official poverty rate increased by only 1 percentage point to 11.4 percent in 2020, while the Supplemental Poverty Measure – which is a more comprehensive measure of income sources such as housing assistance, stimulus checks, and refundable tax credits – showed an actual decrease in poverty from 11.7 percent in 2019 to 9.1 percent in 2020.

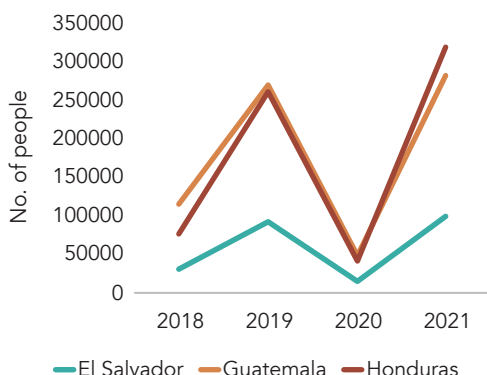
The Pandemic's Impact on Migration and Remittances

The immediate effect of the pandemic was to reduce migration from the three NCA countries. New immigrant arrivals to the US took a sharp downward turn as borders closed and other restrictions on travel were implemented. Official US data show that the flow of immigrants from the NCA countries fell by about 83 percent, down from a total of 623,000 in 2019 to 104,000 in 2020 (see Figure 9.5). This same trend can be seen in the data on returning migrants (Figure 9.5). In 2019, 251,000 NCA migrants returned to their home countries from the US, while in 2020, 90,138 returned, a decrease of 64 percent. In 2021, as many of the restrictions of the previous year were lifted, migration to the US increased to pre-pandemic levels while for Honduras and Guatemala, the numbers of returnees also increased, though remaining below 2018 and 2019 levels.

192 In addition to the pandemic, the NCA countries were hit by two hurricanes – Eta, which made landfall as a Category 5 storm, and Iota, which was a Category 4 hurricane when it came ashore. Both made landfall in Nicaragua's Caribbean Coast at almost the same spot. The aftermath hit Honduras hard as large swathes of the country were flooded, displacing the population and causing widespread crop losses. Guatemala was also affected by flooding in specific areas of the country. It is estimated that the costs in terms of damage and losses amounted to \$2.1 billion in Honduras (ECLAC, 2021) and \$778 million in Guatemala (SEGEPLAN, 2021).

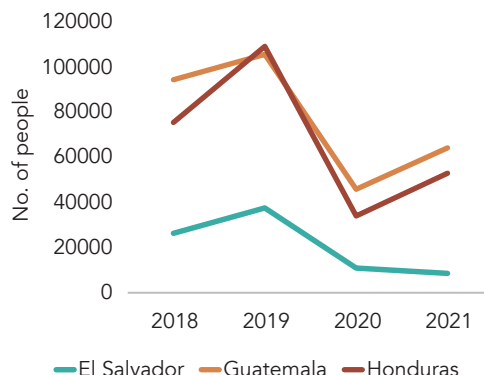
193 World Bank (2022b). In Guatemala, poverty rates rose from 23.7 percent in 2019 to 27.2 percent in 2020 and are then estimated to have gone down slightly in 2021. In Honduras, the comparable figures are 29 percent, 35.2 percent, and 29 percent. For El Salvador, they are 5.7 percent, 7.4 percent, and 6.4 percent. Simulations of the impacts of social assistance in Guatemala do show that these were able to offset some of the pandemic impacts as poverty would have been 6 percentage points higher in the absence of such programs (World Bank, 2020).

Figure 9.5 Irregular Migration Flows from NCA Countries, 2018-2021



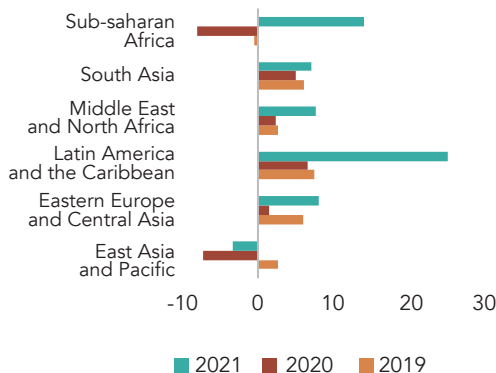
Source: U.S. Customs and Border Services, 2022
 Note: Corresponds to the US fiscal year ending in October. The data represent apprehensions at US borders and do not represent total migration.

Figure 9.6 Migrant Returnees to NCA Countries, 2018-2021



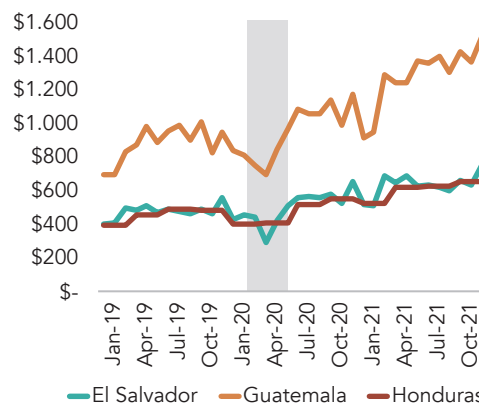
Source: IOM (2022) data collected from DGME (El Salvador), IGM and SBS (Guatemala), and CONMIGHO (Honduras).

Figure 9.7 Year-on-Year Growth of Remittances by Region



Source: Data for 2019 from Knomad (2020). Data for 2020 and 2021 from Knomad (2022).

Figure 9.8 Remittance Flows to El Salvador, Guatemala, and Honduras, 2019-2021 (millions of USD, nominal)



Source: Authors' calculations based on Central Bank data for the three countries.
 Note: Data from the Central Bank of Honduras are quarterly, hence the information presented is smoothed by dividing by three. The blue shaded area indicates the first wave of the pandemic (April and June 2020).

As was expected, remittances fell during the first months of the pandemic, but quickly recovered, exhibiting a resilience similar to that seen in other parts of the world (Figure 9.7). In fact, remittances to most regions grew in 2020, with only Sub-Saharan Africa, and East Asia and the Pacific showing declines. By 2021, only East Asia and Pacific continued to see negative growth, while the rest of the regions saw a steep increase in remittances. The remittance flows into the three NCA countries remained robust as well. Although remittance flows to the region initially dropped during the first wave of the pandemic, widely defined as starting in March/April to June in 2020, (Figure 9.8), the amounts recovered quickly and, by the second half of the year, had surpassed previous levels. Growth in absolute amounts has continued ever since. By the end of 2021, remittances to El Salvador and Honduras were over 60 percent higher than just before the pandemic struck and close to 90 percent higher in Guatemala. In the next section, we look at what may be driving this recovery.

Methodology

Difficulties in Collecting and Comparing Data during the Pandemic

One of the many effects of the lockdowns, quarantines, and the health risks of the pandemic was the disruption of the household-level surveys in El Salvador, Guatemala, and Honduras. Data gathered are not comparable with the previous rounds of household survey data used elsewhere in this book.¹⁹⁴ In the absence of comparable data, we have used data from the High Frequency Phone Survey (HFPS). This survey was developed by the World Bank in 2020 to collect timely data on the pandemic-related changes in labor markets, household incomes, food security, and other aspects of welfare.¹⁹⁵ In the NCA countries five waves of data collection have been carried out since May of 2020 using computer-assisted telephone interviewing (CATI).¹⁹⁶ As the HFPS was designed to be representative of the population aged 18 and older with access to a phone, whether a landline or a mobile phone, the sample is not strictly comparable with samples used for face-to-face surveys because phone coverage is not universal and because phone surveys are likely to have different non-response biases than in-person surveys. While the HFPS sample has a similar gender ratio to the NCA populations, the interviewees, on average, had higher levels of education, were more urban, and were somewhat younger than found with the national household surveys.¹⁹⁷ The survey was originally conceived as a panel survey but, the very high rate of attrition of respondents between waves turned it into a repeated cross-section survey. However, within each wave of the survey, questions were asked about any changes that had occurred since the pandemic began, which provided a panel element that we used in our analysis. The calculations and econometric models in

194 Annex 9.2 contains more detailed information on the comparability issues.

195 The United Nations Development Program partnered with the World Bank to field the HFPS in 2021.

196 The information in this section is taken from <https://www.worldbank.org/en/topic/poverty/brief/high-frequency-monitoring-surveys> and World Bank (2021b). Note that Phase 1 of the HFPS had three waves of data collection and Phase 2 had two waves. For simplicity, we refer to each wave sequentially as 1 through 5.

197 Mejía-Mantilla et al (2021b).

this chapter used the data from wave 5 (October-December 2021), in which several additional questions were added regarding migration and remittances,¹⁹⁸ although we also used data from waves 1 through 4 to illustrate trends where relevant.

The means of the key variables from the survey are presented in Table 9.3. Because of the small sample sizes, we have pooled the data for the three NCA countries in much of our analysis as the pandemic hit each country at the same time and they all immediately instituted lockdowns. Also, as the majority of NCA migrants are living in the same destination country – the US – this meant that the source of remittances to all three countries was the same.

Table 9.3

Means Table for Wave 5 of the HFPS Survey in the NCA Countries

	NCA		El Salvador	Guatemala	Honduras
	N	Mean	Mean (N= 812)	Mean (N= 1,521)	Mean (N=1,004)
Food Insecurity, Migration, and Financial Strains					
Went without food at least once	3337	.241	.205	.205	.347
No food for an entire day	3337	.090	.064	.066	.162
Lack of nutritious food	3337	.249	.205	.207	.374
No food once or whole day	3337	.255	.222	.216	.361
Intent to migrate	3304	.371	.355	.334	.461
Difficulty making ends meet	3195	.501	.536	.453	.568
Reduced income	3322	.261	.259	.262	.262
Coping: Used Savings or didn't pay debts	3337	.574	.568	.520	.687
Demographic and Household Variables					
Married	3337	.591	.587	.588	.605
Age	3337	37.6	40.2	36.8	36.7
Female	3337	.471	.484	.500	.40
Education: Less than primary	3336	.234	.284	.247	.165
Primary education	3336	.292	.277	.269	.352
Secondary education	3336	.383	.28	.412	.416
Tertiary education.	3336	.090	.16	.071	.068
Urban area	3337	.526	.558	.527	.496

198 The authors are grateful to the HFPS team for accommodating these questions on migration and changes in amounts and channels of remittances.

Table 9.3 Continued

	NCA		El Salvador	Guatemala	Honduras
	N	Mean	Mean (N= 812)	Mean (N= 1,521)	Mean (N=1,004)
Demographic and Household Variables					
Number of household members	3336	4.77	4.33	4.86	4.99
Wealth index*	3331	-.266	-.214	-.335	-.178
Government Help and Pre-pandemic Variables					
Without food pre-pandemic	3337	.203	.199	.149	.313
Recipient of govt program during pandemic	3337	.188	.46	.149	.141
Recipient of govt. help specifically for COVID	3337	.356	.652	.294	.212

Source: HFPS Wave 5 data using household weights.

Note: The number of observations for each country corresponds to the total number of observations. Non-response for individual questions may vary, reducing the number of observations. The wealth index is constructed using Principal Component Analysis at the country level using the following household goods and services: washing machine, clean water, availability of a computer or tablet, access to WiFi or the internet, motorcycle ownership, and a measure of overcrowding.

What really happened to remittances?

The predictions that remittances to the NCA countries would drop sharply as a result of the pandemic's impact on mobility and the labor market were not realized. As noted above, remittances fell for a very brief period at the start of the pandemic, but they then recovered and have been growing ever since. There are several hypotheses for why this increase has occurred. The first is that the sudden and sharp restrictions of human mobility forced remittances to move out of informal channels (individuals traveling back to their countries were a trusted means of sending remittances) to formal channels such as banks and money transfer companies. As mentioned in Chapter 3, there was already a movement in this direction before the pandemic, in part because the costs of using formal channels were declining. If this was the case, then the apparent sustained increase in remittances could partly reflect better measurement as remittances that were previously not registered in administrative data would have suddenly become measurable. The second hypothesis is that the destination countries (mainly the US) recovered more quickly than the sending countries, thus fueling the growth in remittances. As found in Chapter 4, remittances tend to be pro-cyclical with GDP in the sending country. Also, the substantial social assistance measures implemented in the US during the pandemic, if well targeted, may have maintained household income levels despite indicators of increased unemployment and a fall in economic growth, in which case migrants continued to be able

to afford to remit. Migrants also tend to be concentrated in the sectors that experienced fewer losses during the height of the pandemic or that had higher demand immediately after, such as agriculture and construction. A third hypothesis is that migrants remitted more as a response to worsening economic conditions for their families in the countries of origins. While pre-COVID findings suggest that contractual motivations for remittances were stronger than altruistic motives in Honduras and Guatemala, the pandemic may have increased the altruism motive. However, the data available at present do not allow us to test for changes in motivation.¹⁹⁹

Is the measurement hypothesis correct?

The evidence in support of the measurement hypothesis is mixed. Kpodar et al (2021) tested this hypothesis by comparing flight arrival data before and during the pandemic from 52 countries and found that a reduction in the number of flights was indeed associated with a rise in formal remittances. A study of Mexico by Dinarte-Diaz et al (unpublished) also supported the hypothesis that a switch to different remittance-sending channels may well explain part of the observed increase in remittances. The study found evidence that the closer to the US-Mexico border a remittance-receiving household lived, the greater the increase in remittances that it received. This seems to support the theory that cross-border travel was used as a means to send remittances before the pandemic as the authors found that remittance-receiving households located further away from the border experienced little change in the amount of their remittances. These results were robust after controlling for unemployment rates and government social assistance payments in the US.

It could be possible that new remittances, or remittances by “dormant” migrants are driving the observed change, Dinarte et al (unpublished) could not rule out that this was occurring. Using banking data in Nicaragua, De la Fuente et al (unpublished), found an increase in the numbers of recipients and in the amounts of remittances, but the increase was driven either by new households receiving remittances from new bank clients or by existing bank clients who, previous to the pandemic, sent remittances less frequently. While the presence of new accounts suggests that some element of a switch from informal to formal channels may have occurred, the authors did a follow-up phone survey that asked specifically about such a shift and found little evidence of such a move.

We found similar results to the Nicaragua study for the NCA countries in terms of changes in receipt of remittances (Table 9.4). About 7.2 percent of the HFPS respondents in the NCA countries reported receiving remittances during the pandemic but had not received any

199 There are multiple theories on the reasons for the observed resilience of remittances. We have concentrated on the more likely explanations for the NCA region. Other possible causes include eased restriction on migrants' work in destination countries, increasing savings repatriation, and remittances-bound tax incentives (Tiongson and Caron (2020), Mercer-Blackman and Li (2021)).

previously. The net increase in households receiving remittances was about 2 percent, as some households that received remittances pre-pandemic were no longer doing so during the pandemic. Our findings on the channels used to send remittances were also similar to the findings from the phone survey in Nicaragua done by De la Fuente et al (unpublished) which found no switch in the channels used to send remittances. The HFPS Wave 5 data show that the channels used to send remittances to NCA households remained very similar before and during the pandemic, with almost half of households reporting receiving them via bank transfers or e-wallets, while the other half received them via transfer agencies like Western Union or MoneyGram. Fewer than 10 percent reported using any mixture of in-kind, third-party payments or other types of channels during 2021.

Table 9.4
Remittance Dynamics

	NCA		El Salvador	Guatemala	Honduras
	N	Mean	Mean	Mean	Mean
Remittance Channels Pre-Pandemic					
Bank and e-wallet	603	.462	.431	.562	.463
Direct payment to third party	603	.01	.006	.009	.013
In-kind	603	.062	.104	.029	.058
Western Union & similar	603	.420	.417	.364	.471
Other	603	.044	.042	.036	.05
Remittance Channels Used During 2021					
Bank and e-wallet	362	.508	.46	.592	.311
In-kind	362	.060	.0	.088	.024
Western Union & similar	362	.424	.54	.308	.665
Other	362	.008	.0	.01	.0
Changes in Remittances					
Remittances during the pandemic	3337	.203	.250	.135	.294
Remittances before the pandemic	3337	.170	.222	.106	.253
New remittances or higher remittances than before	3337	.0817	.086	.066	.110
Remittances during the pandemic, but not before	3337	.072	.075	.059	.097
Remittances went up	459	.071	.064	.0.09	.061
Remittances went down	459	.355	.379	.316	.365

Source: Authors calculations using HFPS Wave 5.

Is the recovery in destination countries hypothesis correct?

There seems to be more support for the second hypothesis about why remittances increased during the pandemic. The analysis in Chapter 4 showed that conditions in the economies of the destination countries drive remittances more than need in the migrants' countries of origin. Therefore, economic contraction and large-scale reductions in employment in the main destination countries for NCA migrants would suggest that remittances would fall after the onset of the pandemic. However, as was shown in Figure 9.2, the pandemic repressed economic growth much more in the NCA countries than in the US and even Spain. At the same time, the US government also instituted a series of COVID relief and stimulus programs. In 2020, five relief bills that appropriated \$3.3 trillion for these efforts were passed, and in 2021, an additional \$1.8 trillion was invested in relief and stimulus activities.²⁰⁰ The scale of the stimulus was significantly larger than that rolled out in response to the 2008 global financial crisis²⁰¹ and substantially greater than the NCA countries themselves were able to allocate. Its impact was substantial. According to the Supplemental Poverty Measure that incorporates all government programs, the US poverty rate fell by 2.7 percentage points, lifting 8 million people out of poverty and preventing 9 million from falling into poverty.²⁰² The poverty rate for Hispanics fell by even more than the overall rate, declining by a third, while overall rates fell by a quarter (Table 9.5). At the same time, despite higher rates of unemployment among the Hispanic population in the United States (Figure 9.4), which might suggest that migrants would be unable to continue to remit, median hourly wages rose between 2019 and 2020 with those for all foreign-born workers increasing by about 13 percent in the period.²⁰³ Social assistance, along with a strong recovery in terms of employment and wages in the main host country, appears to have enabled migrants to keep remitting.

This finding can only be considered suggestive in the absence of other data. It may well be that there was a shift from contractual (investment and insurance) motivation for remitting to an altruistic motive during the period of COVID. In this case, migrants' sources of funds for remittances might have moved to a drawing down of saving rather than relying on current income. A study by IFAD and WB (2021) found some evidence for this among migrants in Italy, for example. Interviews in migrants in the US (Jordan, 2021) also point to this shift in behavior.²⁰⁴ Unfortunately, the HFPS data do not allow us to test whether there has been a shift in remittance behavior nor identify the source of funds.

200 Cox et al (2022)

201 The US government's response to the 2008 global financial crisis was one-third of the COVID-19 response as a share of the economy (Cox et al, 2022). Discretionary fiscal spending in the 2020-2021 period for the US was 27 percent of GDP (in terms of additional spending or foregone revenue), while, for Guatemala and Honduras it was less than 5 percent (IMF, 2021).

202 Burns and Fox (2021).

203 Kochhar and Bennett (2021). The authors do not address the composition effects, if more lower wage earners are let go, then median hourly wages would rise but without that benefit accruing to migrants.

204 Some migrants interviewed reported that the dire situation on their home countries led them to keep remitting despite losing their employment.

Table 9.5

Poverty Rate in the US, 2019-2020

	2020	2019	Percentage change
All White	9.1	11.8	-22.9
White (non-Hispanic)	6.5	8.2	-20.7
Black	14.6	18.9	-22.8
Asian	8.8	4.3	104.7
Hispanic	14.0	18.8	-25.5
Foreign Born	13.7	17.5	-21.7

Source: Burns and Fox (2021).

Note: Based on the Supplemental Poverty Measure.

Were remittances able to protect households during the pandemic?

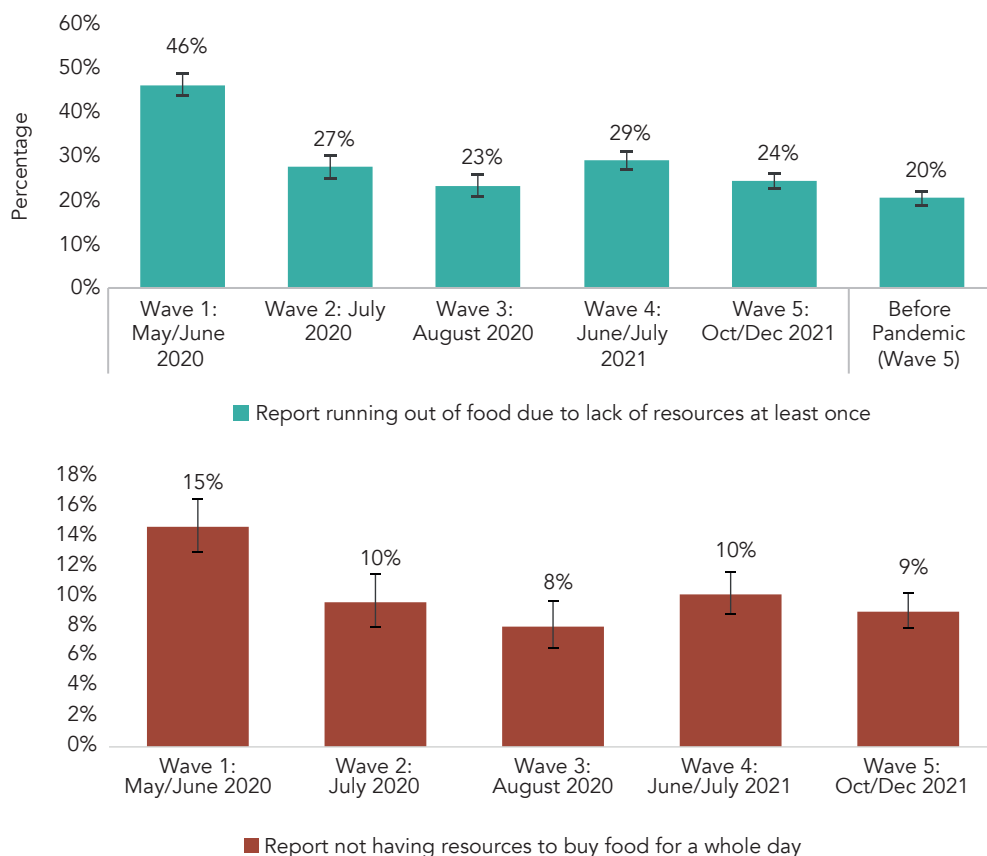
Increased food insecurity has been a very real consequence of the pandemic. Studies from early in the pandemic found increased hunger, lack of dietary diversity, and difficulties in accessing food in both upper-income and lower-income countries.²⁰⁵ The increased food insecurity was linked to different socioeconomic characteristics (age, ethnicity, or urban location, for example) that varied between countries. However, one consistent predictor of worsening food insecurity was job loss. Niles et al (2020) studied Vermont, a state in the US, and found that the odds of living in a food-insecure house was three times greater among workers who had lost a job. Koltai et al (2021) found the highest prevalence of food insecurity in the UK in July of 2020 was among unemployed people, and in Myanmar, Headey et al (2020) also found job losses to be a strong predictor of food insecurity.

Levels of malnutrition and food insecurity were high in the NCA countries prior to the pandemic, with almost one in two children in Guatemala suffering from chronic malnutrition (Sanchez et al, 2016). Given this and the job interruptions in the region during the pandemic, both public and private transfers have a crucial role to play in protecting households from hunger. Figure 9.9 shows that, at the height of the pandemic, about half of households in the NCA countries reported having run out of food during the month before their HFPS interview. As the pandemic progressed, this measure of food insecurity declined, with the last wave of data indicating that 24 percent of households suffered from this kind of food insecurity, which was still an increase from the pre-pandemic level of 20 percent. The results for another type of food insecurity – having to go without food for a day – were similar. About 15 percent of households had to do without food for a whole day during May 2020 because of a lack of

205 Niles et al (2020), Headey et al (2020), Koltai et al (2021), and Brown et al (2022).

resources, but after the worst of the pandemic, this share came down and stabilized at around 8 to 10 percent.²⁰⁶

Figure 9.9 Percentage of Households Running Out of Food Due to a Lack of Resources in the Previous 30 Days (Panel A) and Not Eating for a Full Day (Panel B)



Source: Authors' calculations based on the HFPS, 2020 and 2021.

Notes: 95% confidence intervals are indicated by the vertical lines. The question about going without food before the pandemic was retrospective to February 2020 and was asked in both waves 4 and 5.

The protective effect of remittances on food security was shown earlier (see Chapter 6).²⁰⁷ Households receiving remittances were found to have a lower probability of experiencing food insecurity than households that did not receive remittances. Unfortunately, the only country

²⁰⁶ The lean season in the NCA tends to be concentrated during the April to June period (FAO – GIEWS), which can impact the results, as seen in the increase in food insecurity from Wave 3 to 4.

²⁰⁷ Chapter 6 also contains an analysis of the effect of remittances on education spending and attendance. Given the fact that schools were shut down for large periods of time during the pandemic, there was no way to replicate that analysis for the pandemic period.

with data available for that analysis was Guatemala. However, the HFPS data gave us an opportunity to determine whether remittances were able, despite the widespread health and economic shocks caused by COVID-19, to continue to afford this protection to the households in Northern Central America. Using data from Wave 5 of the HFPS, we looked at the food insecurity of households while controlling for whether a household received remittances along with other characteristics. For this, we created a binary model using a logit regression in the following form:²⁰⁸

$$y_i = X_i\beta_1 + e_{1i}. \quad (I)$$

We used several variables relating to food insecurity and financial strains as dependent variables (y_i). First, we used three food insecurity variables from the HFPS. The first variable identified households that had run out of food in the month prior to the survey, and these appear in our tables under the category *Without food at least once*. The second variable identified households that had no food to eat for a whole day because of a lack of resources, and these are categorized as *No food for an entire day*. The third variable was based on the least severe definition of food insecurity as if anyone in the household was unable to eat a diverse diet, and these were categorized under *Lack of nutritious food*. We also used a fourth variable that added together the first and second variables and was titled *No food once or for whole day*.²⁰⁹ In order to explore the protective effect of remittances further, we also looked at two other measures indicating welfare losses: *making ends meet* and *loss of income*.

We added a series of controls including demographic, household, economic, and government assistances variables (X_i). The household variables included whether a household received remittances before and during the pandemic, the characteristics of the head of the household (marital status, age, and gender), and the characteristics of the household (location, size, and average education of the household members). The characteristics of the household and household head were all variables that were found to be associated with food insecurity in the early pandemic studies. We also included a job loss variable, which indicated whether the individual had been working prior to the pandemic but was no longer working at the time of the survey. Finally, we included whether the household had received government assistance and, given the concerns about crowding out effects, interacted this with the receipt of remittances. Details on how we created the main variables are available in Annex 9.4.

208 We also used Propensity Score Matching using a smaller set of balancing variables and different matching methods. Given the sample size and limited number of variables, this method has its limits, but it is useful as a robustness check. In most cases, the direction of the general results does not change from one method to the other.

209 This analysis is not strictly comparable to that done in Chapter 4 as the measure of food insecurity that we used differs from that used in Chapter 4 both in terms of the reference period (three months in the previous analysis and one month here) and in the actual questions that were asked because the HFPS covers only a limited number of dimensions of food security.

We distinguished between those households that received remittances both prior to the start of the pandemic and continued to do so, those that only began to receive them after the start of the pandemic (*new recipients*), and those that were not receiving remittances at the time of the survey. Our reasoning for this was that households differ in terms of several characteristics and that remittances serve a different purpose in each case, either separating or “grouping” households. In the case of households in the *Always received remittances* category, remittances served the role of permanent income, thus protecting households from hunger and financial difficulties. Evidently, if a *household lost remittances* during the pandemic, it should follow that this loss of income worsened their economic situation, which in some cases could lead to food insecurity. For households that were *new recipients* of remittances, however, the remittances may have acted as a coping mechanism for them in the face of the pandemic. We would expect that, if remittances have a protective effect, they would have reduced food insecurity for those households, all other factors being equal. However, if remittances were a coping mechanism, then whether or not they were protective would depend on the size of the remittance. If they were small overall, then these households might still have been food insecure. Because the HFPS data do not include any information on the level of remittances received, we could only speculate that these households were indeed using remittances as a coping mechanism and that they were not fully protected. The differences among the three categories of households (see Table 9.6) provide some evidence that remittances played dissimilar roles, as we found that the *new recipient* households had lower levels of education, were more likely to have resorted to other coping strategies, and were more food insecure, even in pre-pandemic times.

Table 9.6

Differences among Households by Remittance Receiving Status

	Always received	No longer received	Never received	New receivers
Observations	459	144	2493	241
Without food at least once	0.281	0.366	0.356	0.455
No food for an entire day	0.091	0.135	0.181	0.241
Lack of nutritious food	0.268	0.364	0.398	0.477
No food once or whole day	0.284	0.379	0.372	0.475
Intent to migrate	0.486	0.591	0.436	0.441
Difficulty making ends meet	0.492	0.592	0.578	0.695
Income down	0.272	0.381	0.228	0.416
Coping: used savings or didn't pay debts	0.682	0.73	0.671	0.809
Married	0.559	0.611	0.621	0.585
Age	36.731	36.663	36.467	39.109
Female	0.403	0.498	0.388	0.36

Table 9.6 Continued

	Always received	No longer received	Never received	New receivers
Less than primary education	0.128	0.083	0.185	0.214
Primary education	0.327	0.334	0.348	0.507
Secondary education	0.492	0.524	0.389	0.274
Tertiary education	0.053	0.058	0.078	0.005
Urban area	0.538	0.5	0.489	0.424
No. of members of household	4.927	4.317	5.148	4.577
Wealth index	0.211	-0.042	-0.295	-0.424
Without food pre-pandemic	0.233	0.297	0.336	0.358
Received govt program during pandemic	0.147	0.068	0.149	0.161
Received govt help specifically for COVID	0.182	0.221	0.219	0.21

Source: Authors' calculations using HFPS Wave 5.

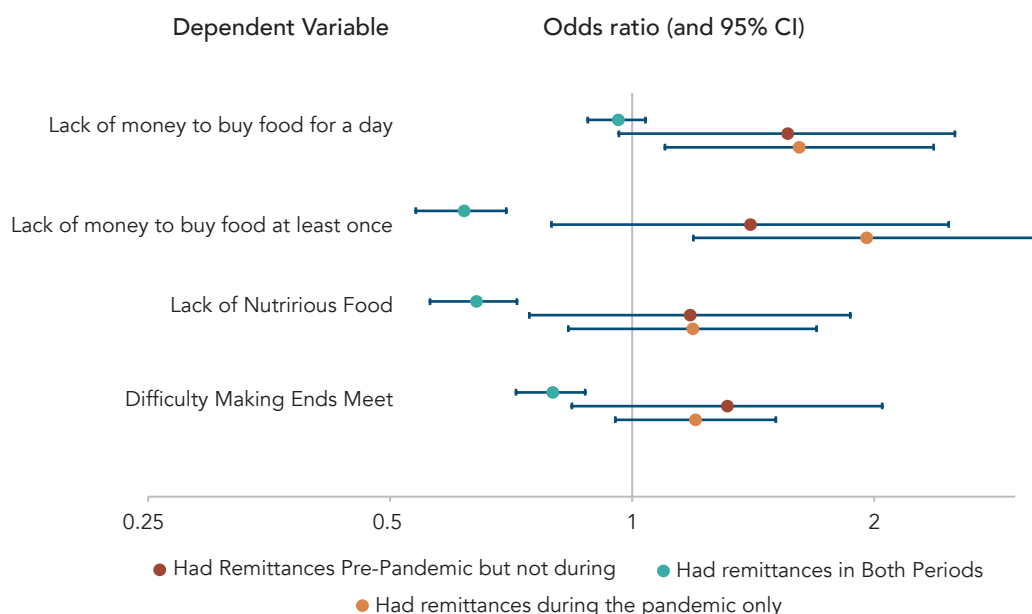
The results of our regression showed that remittances had a protective effect only for households that received remittances both before and during the pandemic (see the full results in Annex 9.5). The continued receipt of remittances protected these households from two of the three types of food insecurity measures used in our regression. All other factors being equal, these households were 38 percent less likely than other households to go without food for a day (the most severe measure of food insecurity), and 36 percent less likely than other households to have had a non-nutritious or unhealthy diet in the previous 30 days (the least severe measure) (Figure 9.10). Moreover, these households had a 20 percent lower probability of reporting any of these problems than other households. The HFPS divides government assistance into programs that existed before the pandemic and those that were specifically created in response to the COVID-19 pandemic. Most government assistance was not significant for the food insecurity variable, but government assistance provided specifically for COVID was significant in reducing the probability of households not being able to make ends meet.

The situation was different for households that did not receive remittances before the pandemic but only started to receive them during the pandemic. These new recipients had the worst food security outcomes, with a higher incidence of going without food for a day and lacking resources for food. As these were new recipients, and the data provided no information on how recently they had begun to obtain remittances nor in what amounts, it was hard to establish the relationship between remittances and food insecurity. It may well be that the new recipient households were those facing a particularly difficult situation and the remittances represented a new coping mechanism, even if they were not large enough to protect them from food

insecurity. The fact that the variable on whether the household had experienced an income loss in the last month was significant for these households, suggests that this interpretation is correct.

Reducing the household's food consumption can be seen as a coping strategy, albeit a drastic one. As food insecurity is just one manifestation of low levels of wellbeing, we also looked at other coping strategies and the degree to which remittances were associated with less of a need to engage in such strategies. The coping strategies covered by the data were drawing down savings and/or putting off making rent or mortgage payments in order to pay for basic expenses like food, education, or health care. As with the reduction in food consumption, these coping strategies can have long-term negative impacts on households that will persist after the pandemic ends. We see that households that are new receivers have a higher chance of reporting having used these types of coping strategies (up to 37 percent more), reinforcing our hypothesis of them in a precarious economic situation.

Figure 9.10 Odds Ratio for the Coefficient on Remittances



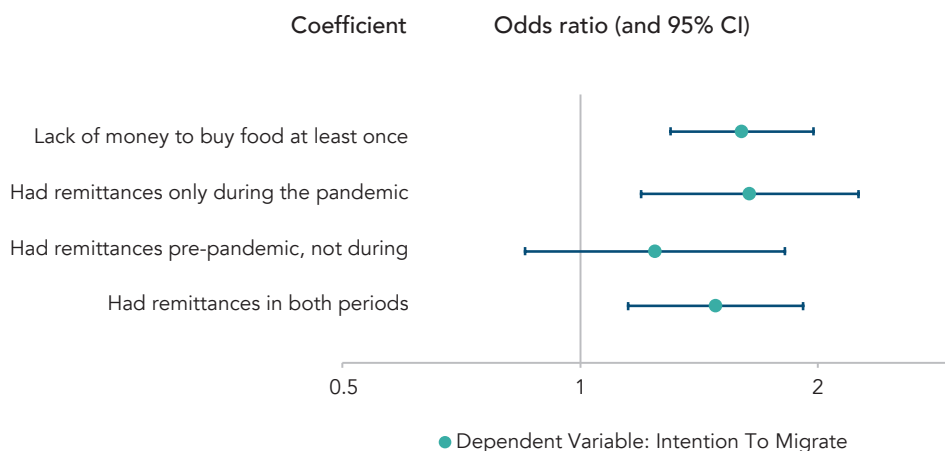
Source: Authors' calculations based on HFPS Wave 5.

Note: Each line represents the odds ratio for the coefficient from a logit regression with all control variables. The control variables include the demographics of the household head, household variables, and basic socioeconomic information. Each group of three lines represents a different dependent variable. For example, the first lines represent the coefficient of *Received remittances pre-pandemic but not during* for the regression with dependent variable *Lack of Money to buy food for a day*. *** $p < .01$, ** $p < .05$, * $p < .1$

Food insecurity is also an important driver of migration. Previous studies have shown that households that are food-insecure are more likely to report an intention to migrate. Kumar et al (2021) found evidence of this in Honduras. While the intention to migrate is not the same as actually migrating, Smith and Wesselbaum (2020) argued that there are close links between food insecurity and migration and predicted that the pandemic might increase migration. Sadiddin et al (2019) showed that food insecurity in Sub-Saharan Africa led to greater migration up to a point, after which food insecurity was too great for people to be able to migrate.

To look at this effect in Northern Central America, we constructed a model using the same form of equation (I), but in this case we use as dependent variable *Intention to migrate in the following 3 years*. Our results indicated that there is indeed a relation between food insecurity and the intention to migrate. An individual who reported having been without food at least once in the 30 days prior to the interview was 60 percent more likely to declare that he or she had an intention to migrate in the following three years, compared to those without food deprivation (Figure 9.11). Whether or not this will translate into a migration decision remains to be seen. We also found that those households that received remittances in both periods were 45 percent more likely to declare that they wanted to migrate, with the figure being about 60 percent for those who received remittances only during the pandemic. Since the baseline was those households without remittances in both periods, this might have been due to a “network effect,” in other words, the fact that remittance-receiving households (in either period) were more likely to have a relative or close associate living in a foreign country which could facilitate migration.

Figure 9.11 Factors Affecting the Intention to Migrate



Source: Authors' calculations based on HFPS, Wave 5.

Note: Each row of the graph represents a different coefficient (in odds ratio) of the same regression, in which the dependent variable is intention to migrate.

Conclusions

The impact of the global COVID-19 pandemic has been severe, both in terms of direct health shocks and the economic shocks that resulted from both the pandemic and efforts to contain it. The Americas were particularly hard hit, with a disproportionate share of both cases and deaths. The pandemic has also had a substantial economic impact on the countries of the region, and the NCA countries are no exception. The global nature of the pandemic has meant that both migrant-sending and destination countries have been affected. The welfare impacts on households in NCA have been hard to measure given that the pandemic itself disrupted regular data collection efforts. However, a new telephone survey – the HFPS – has helped to shed light on the effects of the pandemic, and the resulting data have allowed us to conduct some initial analysis of the factors that have affected key measures of welfare.

Our analysis has shown that remittances sent to NCA countries have continued to grow. On the one hand, this reflects the fact that the main destination countries were less badly affected than the migrant sending countries and that household income among migrants appears to have been protected. On the other hand, the evidence of new remitters during the pandemic and the fact that the new receiving households were among the most vulnerable, lends credence to an increase in altruism as a motive for remittances. The remittances themselves appear to have protected recipient households from the rising food insecurity and increased levels of vulnerability that resulted from pandemic-related income losses. COVID-specific government social assistance programs in the NCA countries were also found to have mitigated the effects of the pandemic, although their effect was limited.

The analysis has shown that remittances have responded to the pandemic in ways that might have been expected. However, the severity of the COVID crisis and the urgent needs of some households in the countries of origin appear to have generated an altruistic response among migrants. In short, to some extent, remittances have acted to complement the social safety nets. However, neither remittances nor government assistance programs have been sufficient to protect households in the face of a shock of this magnitude. The policy implications are that, in the event of a future shock, remittances will help, but more public assistance will be required to help households to weather the negative effects.

Going forward, the fact that the emergency pandemic-related social assistance programs in both the host and origin countries are coming to an end raises concerns about the continued welfare impact of COVID in Northern Central America. If the labor market in the destination countries do not continue to recover, there may be a decline in, or a slowing in the growth rate of, remittances going forward. For NCA households that are unable to recover the income they have lost because of lost employment, reduced working hours, or having moved from formal

to informal jobs,²¹⁰ a fall in remittances could significantly reduce their food security and other aspects of welfare. Our analysis found that households that experienced such economic losses were more likely to declare that they had used their savings (if they had any) or that they had stopped paying important debts, which could have persistent negative repercussions for their welfare. This effect would be exacerbated if, at the same time, these households lose access to their own government programs.

Clearly, there is much that remains to be learned about the pandemic. The world has yet to reach the end-stage of the pandemic, and its full economic and social effects have yet to be felt. Our analysis has shed some light on the narrow question of whether remittances have protected households from food insecurity and financial distress during the pandemic. Beyond that question lies the bigger issue of how migration patterns, which have altered enormously during the pandemic, will continue to change in the near future. Lingering food insecurity, economic distress, and weak recovery in the NCA countries are likely to fuel the desire of households to look for opportunities abroad.

The uncertainty about the future effects of the pandemic should be seen as an invitation for researchers, governments, and other actors to recognize the urgent need for up-to-date data. It is hoped that the NCA countries can resume full data collection efforts as soon as possible so that more can be learned about the effects of migration and remittances on education, labor markets, and poverty and inequality during the pandemic.

210 The latest analysis by Mejia et al (unpublished) shows that much of the recovery of jobs is coming in the informal sector and that there continues to be a net loss in formal employment.

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Annex 9.1. High Frequency Phone Survey

As the COVID-19 pandemic unfolded, it was clear that the impacts on individuals and households would be severe and that there was a need to collect some data on key indicators of wellbeing in order to inform policy. In response to this need, the World Bank began the High Frequency Phone Survey in 2020 to provide data on COVID-19-related effects on labor markets, household incomes, food security, access to digital and financial services, health, education, and the extent to which the effects differed between men and women. The first rounds of the survey were fielded just a few months after the pandemic's effects were first felt by a broad swath of the global population.²¹¹ The survey was carried out in most regions of the world. In the LAC region, the first Phase I of the project (HFPS I) collected data from 13 countries using computer-assisted telephone interviewing (CATI). Data were collected in three waves during 2020, during May/June, July, and August (Annex Table 9.1.1), with a goal of collecting 800 observations per wave for each country. Phase II of the survey (HFPS II), implemented in 2021, was administered jointly by the World Bank and the United Nations Development Program (UNDP). It consisted of two waves of data collection in a total of 24 countries, and the sample was expanded from 800 to 1,200 respondents in each country.

Table 9.1

High Frequency Phone Survey: Rounds of Data Collection in NCA Countries

2020: Data collection:	Wave 1	Wave 2	Wave 3
El Salvador	5/22-6/06 (n=804)	7/03-7/14 (n=625)	8/04-8/15 (n=604)
Guatemala	5/26-6/03 (n=806)	7/03-7/14 (n=625)	8/04-8/15 (n=636)
Honduras	5/22-6/11 (n=807)	7/03-7/16 (n= 550)	8/04-8/15 (n=521)
2021: Data collection	Wave 4	Wave 5	
El Salvador	6/12-6/30 (n=1 207)	Oct-Dec (n=1 521)	
Guatemala	5/25-6/11 (n=812)	Oct-Dec (n=812)	
Honduras	6/12-7/14 (n=1 021)	Oct-Dec (n=1 004)	

Source: HFPS data

Note: Waves 1, 2, and 3 had a goal of 800 interviews, while Waves 4 and 5 were designed to include 1,200. The numbers included in this table were the actual number of observations in each wave.

In each country, the sample was designed to be representative of the population aged 18 and older with access to a phone, either a fixed (land) line or a mobile phone. Due to this sampling frame, the data are not strictly comparable with face-to-face surveys. First, access to telephones is still not universal in the NCA countries, and second, there are differences in non-response rates between face-to-face interviews and those done via telephone. Indeed,

211 The Information in this section is taken from <https://www.worldbank.org/en/topic/poverty/brief/high-frequency-monitoring-surveys> and World Bank (2021b).

the findings do show that the survey samples did differ in characteristics from the countries' populations. While the HFPS sample has a similar gender ratio to the NCA populations, the interviewees in the HFPS sample, on average, had higher levels of education, were more urban, and were somewhat younger.²¹²

The survey sample was designed to be a panel, in that the same person (or household) is interviewed on several different occasions over time. This design is more efficient than selecting a new sample each time and yields data that show who has experienced changes in welfare and other indicators over time. However, the HFPS survey has suffered from a very high rate of attrition and, thus, for all practical purposes, has become a repeated cross-section. Fortunately, within each wave of the survey, questions were asked about any changes that occurred to the respondent person or household between the start of the pandemic and the moment at which the interview was being carried out, thus making it possible to assess these changes although it is not possible to track, at the household level, changes throughout the two-year period.

212 Mejía-Mantilla et al (2021b).

Annex 9.2. Why NCA Household Survey Data for 2020 Are Not Comparable with Data Collected Before the Pandemic

El Salvador's household survey is designed to collect data throughout each year. However, in 2020, the first year of the pandemic, the interviews were carried out normally using in-person computer-assisted personal interviews (CAPI) from January to mid-March but were then suspended completely from April until the end of July as the country closed down to prevent the spread of the virus. Although some interviewing restarted in the last week of July, it was not possible in locations where COVID-19 cases were most prevalent. Also, restrictions on mobility, a shortage of interviewers, and other issues reduced the size of the sample.²¹³ Therefore, the resulting data are likely to underestimate the impacts of the pandemic, particularly as the months when the situation was at its worst were precisely those months when no data were collected.

In Honduras, the household survey data for 2020 were collected using computer-assisted telephone interviews (CATI). In 2019, a total of 22,221 households had been interviewed, although telephone information was obtained for only 16,451 households. The latter households formed the basis of the sample for 2020, however, even among these households, only 3,482 were able to be interviewed.²¹⁴ This very high non-response rate raises questions about the comparability of the data between rounds. Further concerns about comparability arise from the fact that it is generally difficult to administer an in-depth and lengthy questionnaire in a telephone interview.²¹⁵ The Honduran National Statistical Office (INE) did not publish any national or international poverty numbers from these 2020 data, hoping to re-start publication when the 2021 data become available in mid-2022.

These changes in data collection methods, timing, and samples in both El Salvador and Honduras mean that the data collected in 2020 are unlikely to be comparable with the rounds of data collected in the years prior to the pandemic. For these reasons, the analysis in this book ends with the data from 2019 for El Salvador and Honduras, and in this chapter, we used a different data source – the HFPS (see Annex 9.1) – to analyze the impacts of the pandemic.

As for Guatemala, the last year in which a full household survey was carried out to measure welfare was 2014, and unfortunately there are no more recent data.

213 Dirección General de Estadística y Censos. DIGESTYC, 2020 Encuesta de Hogares de Ministry of Economics, "Encuesta de hogares de propósitos múltiples" El Salvador, <http://www.digestyc.gob.sv/index.php/novedades/avisos/1034-ya-se-encuentra-disponible-la-encuesta-de-hogares-de-propositos-multiples-2020.html>.

214 https://www.ine.gob.hn/publicaciones/Hogares/EPHPM_2019/Metodologia2019.pdf and <https://www.ine.gob.hn/V3/imag-doc/2021/02/Metodologia-Encuesta-telefonica-2020.pdf>.

215 For a more in-depth discussion on the comparability and generalities between CATI, CAPI, and other methods of surveying, see Weeks et al (1983), Marcus and Crane (1986), Wells et al (1988), Carr and Worth (2001), Roster et al (2004), and Fricker et al (2005).

Annex 9.3 Programs to Mitigate the Effects of COVID

Table 9.3

Public Assistance Programs to Mitigate COVID-19 Effects in NCA

El Salvador	Guatemala
Computers to public school students	Credit fund for working capital
Food package for families (school feeding program)	Food packages (<i>Hogares Comunitarias</i>)
Food baskets (Sanitary Emergency Program)	Support to commerce
Subsidy payment \$300 per household	Expanded program to support elderly
Price control/fixing	Prohibition of cutting of basic services
Suspension of payment of basic services	Cash payment (<i>Bono Familiar</i>)
Debt relief	"Moving forward together" fund
	Food donation
	School feeding program
	Debt relief
	Monetary transfers
	Energy subsidies
Honduras	
Tablets for students	Tax relief
Subsidy payment to independent and self-employed workers	School feeding
Modification of existing cash transfer program <i>Vida Mejor</i>	Protection of Electricity Connection despite non-payment
Subsidy payment to transport workers	Package of food and hygiene products (<i>Honduras Solidaria</i>)
Package of food, hygiene products and meals to street vendors (<i>El encargado solidario</i>)	Debt Relief
Protection of telecommunications services	Productivity package for farmers
	Basket food basket

Source: ECLAC (2021).

Table 9.3

Public Assistance Programs to Mitigate COVID-19 Effects in the United States

Package 1 (March 6, 2020)

Public Law No: 116-123 (03/06/2020) of the 116th Congress: Did not involve the general population and was aimed at fighting the disease.

Package 2 (March 18, 2020)

Families First Coronavirus Response Act (FFCRA). Public Law No: 116-127.

For individuals and families: Support for families with children in schools, Free COVID-19 testing, Eviction moratoriums.

Companies and employees: Paid sick leave in small companies; unemployment benefits

Package 3: CARES Act

Public Law No: 116-136 (Largest single relief package in U.S. history).

For individuals: Direct cash transfer of \$1,200 per person, plus \$500 per child. Expansion of unemployment benefits. Possibility of fee-free withdrawal from pension accounts. Mortgage moratoriums.

For companies: loans and grants for different types of companies affected by the pandemic.

For other entities: Grants for hospitals, state and municipal governments, schools and universities

Subsequent programs have included:

Delaying of tax payments and suspension of loan capital and interest payments.

Source: US Government Publishing Office (2020a, b, and c).

Annex 9.4. Definitions of Food Insecurity, Migration, and Financial Strains

Table 9.4

Comparison of Standard Food Insecurity Questions and HFPS 2021

Standard Food Insecurity Questions	HFPS Food Insecurity Questions
Due to a lack of resources, in the last three months did a child under 18:	In the past 30 days, because of lack of money or resources:
Have an unbalanced or unhealthy diet	Were you left without food? (household in general)
Have a diet low in diversity	Did you go without food for a day? (respondent or any adult)
Eat less than they should	Did you not eat healthy food, including meat, eggs, legumes, cereals? (respondent or any adult)
Household reduced food	Were you left without food? (household in general) – Pre-pandemic Feb 2020
Miss a meal	
Feel hunger without being able to eat	
Eat once during a day or not at all	

We defined the financial strain variables as follows:

Income Loss: The respondent reports having a lower income than in the previous month.

Difficulty Making Ends Meet: The question is “Currently, does your household has \$_____ amount to cover basic expenses?” where the amount is subjective and asked in a previous question.

Coping: Respondents were asked if, in order to pay for basic needs like food, healthcare, or education, they had to withdraw money from savings (if they had any) or had to stop paying the rent or mortgage.

Job Loss: Reports whether the person was employed pre-pandemic but not at the time of the interview.

Annex 9.5. Results of Logistic Regression

Table 9.5
Food Insecurity

	(1) Intention to migrate	(2) Coping	(3) Inability to make ends meet	(4) Lack of nutritious food	(5) No food for an entire day	(6) Without food at least once	(7) No food once or whole day
Remittances Group							
New remittances	1.597*** (.259)	1.367* (.219)	1.199 (.192)	1.19 (.233)	1.956*** (.512)	1.616** (.313)	1.659*** (.315)
Received rem. both before and after pandemic	1.455*** (.189)	.979 (.12)	.796* (.103)	.64** (.113)	.618* (.174)	.96 (.167)	.926 (.158)
Received rem. before pandemic but not during	1.216 (.236)	1.4* (.274)	1.314 (.259)	1.18 (.264)	1.404 (.412)	1.56** (.347)	1.521* (.334)
Demographic, Economic, and Household Variables							
Married	.63*** (.053)	1.051 (.083)	.912 (.075)	1.123 (.119)	.962 (.15)	1.074 (.115)	1.084 (.114)
Age	.969*** (.003)	1.003 (.003)	1.015*** (.003)	1.017*** (.004)	1.002 (.006)	1.008* (.004)	1.008** (.004)
Woman	1.869*** (.156)	.728*** (.055)	.65*** (.052)	.765** (.08)	1.162 (.182)	.675*** (.072)	.724*** (.075)
Urban area	1.105 (.101)	1.051 (.091)	.941 (.084)	.854 (.095)	.843 (.14)	.999 (.112)	.978 (.108)
Members of Household	1.034 (.021)	1.105*** (.021)	1.015 (.02)	1.059** (.026)	1.109*** (.037)	1.09*** (.026)	1.088*** (.026)
Primary Ed.	1.096 (.137)	1.255** (.145)	1.371*** (.163)	.601*** (.082)	.437*** (.083)	.687*** (.095)	.642*** (.087)
Secondary Ed.	1.118 (.144)	1.552*** (.184)	1.398*** (.171)	.445*** (.065)	.317*** (.068)	.436*** (.065)	.439*** (.064)
Tertiary Ed.	1.063 (.188)	1.262 (.198)	.889 (.149)	.241*** (.066)	.101*** (.063)	.328*** (.088)	.298*** (.078)
Wealth Index	.947 (.033)	.862*** (.027)	.645*** (.021)	.744*** (.033)	.712*** (.052)	.748*** (.034)	.754*** (.033)
Without food pre-Pandemic	1.36*** (.15)	2.124*** (.231)	1.362*** (.143)	3.429*** (.385)	3.8*** (.587)	4.298*** (.486)	4.279*** (.478)

Table 9.5 Continued

	(1) Intention to migrate	(2) Coping	(3) Inability to make ends meet	(4) Lack of nutritious food	(5) No food for an entire day	(6) Without food at least once	(7) No food once or whole day
Loss of pre-pandemic job	1.14 (.157)	1.315** (.175)	1.088 (.146)	1.25 (.195)	1.596** (.338)	1.241 (.197)	1.265 (.196)
Difficulty making ends meet	1.532*** (.135)			2.453*** (.271)	1.222 (.199)	2.218*** (.247)	2.135*** (.231)
Income down	1.465*** (.136)			1.857*** (.199)	1.612*** (.253)	1.699*** (.185)	1.719*** (.184)
Without food at least once	1.765*** (.189)						
Government Assistance							
Gov. Program Before Pandemic	1.006 (.128)	1.161 (.141)	.908 (.113)	.863 (.133)	.907 (.202)	.945 (.147)	.937 (.143)
Gov. Program During Pandemic	.968 (.13)	1.088 (.138)	1.247* (.163)	.867 (.142)	1.295 (.298)	1.21 (.2)	1.201 (.194)
Gov. help specifically for COVID	1.022 (.096)	.985 (.086)	.821** (.075)	1.043 (.12)	.758 (.131)	1.075 (.125)	1.086 (.123)
Remittances and Gov. help	.887 (.205)	1.036 (.232)	.651* (.15)	1.27 (.381)	.784 (.354)	1.034 (.302)	1.015 (.29)
Observations	3151	3324	3190	3179	2923	3179	3179
Pseudo R2	.112	.072	.115	.262	.242	.261	.254

Note: Significance levels * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Each column reports results from a different regression, where the dependent variable is noted in the column name. Robust standard errors clustered at household level. Omitted reference groups for Education: Less than primary.

