Coping During the Covid-19 Pandemic: Evidence from Remittances into Nicaragua

Alejandro de la Fuente, Xavier Giné, Meritxell Martínez, Elizaveta Perova and Arndt Reichert*

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Abstract

The volume and number of remittances to Nicaragua increased substantially during the COVID-19 pandemic. Using administrative data from the largest bank in Nicaragua, we find that this increase comes from new recipients that were not receiving bank remittances before. Complementary household survey data from a sample of recipients suggests that informal channels are rarely used by Nicaraguan migrants, confirming that these new recipients only started to receive remittances once the pandemic started. This suggests that altruism from relatives and friends from abroad played a key role in the sending patterns observed.

Keywords: COVID-19, remittances, financial inclusion, Nicaragua.

JEL codes: F24, F22, C80, G50

* de la Fuente: World Bank (adelafuente@worldbank.org); Giné: World Bank and BREAD (xgine@worldbank.org); Martinez: World Bank(mmartinez@worldbank.org); Perova: World Bank (eperova@worldbank.org); Reichert: University of Hannover and World Bank (arndt.reichert@ihe.uni-hannover.de). We thank the staff of BanPro for sharing the data with us and IPA for collecting survey data. We also thank Kinnon Scott for helpful comments. Santiago R. Cesteros provided excellent research assistance.

1. Introduction

In low-income countries where formal credit and insurance markets are often missing, households typically cope with adverse shocks through loans, cash or food donations from friends and relatives. These coping mechanisms, however, are less effective when covariate shocks like storms or droughts affect many households simultaneously, as it becomes more difficult to pool risk (Lucas and Stark 1985; Rosenzweig and Stark, 1989; Townsend, 1994; Yang and Choi, 2007).

Remittances are another mechanism used the world over to help households in need as migrants living abroad send portions of their income back to their home countries (World Bank, 2020). Nicaragua is one of the poorest countries in Latin America and the Caribbean and one of the most remittances-dependent country, accounting for 13% of its GDP in 2019 (World Bank, 2020). Remittances tend to fluctuate in response to adverse shocks in both sending and receiving countries: all things equal, they decrease (increase) when sending (receiving) countries experience a downturn.

During the Covid-19 pandemic, global institutions were predicting that remittances into Latin America and the Caribbean would fall due to the economic decline in the region's main remittance-source sending countries like Spain and the United States. The anticipated drop in remittances was expected to be sharper than in other regions (World Bank, 2020). However, after a small decline at the beginning of the crisis, remittances actually rose during the pandemic for many countries in the region, including Nicaragua (see Figure 1). These flows were primarily driven by the Nicaraguan migrants based in the US and to a lesser extent, in Spain and Costa Rica. According to official sources, remittances grew by 10 and 16 percent in 2020 and 2021, respectively.[1]

So why did the number and volume of remittances increase in the aftermath of a pandemic? We note first that the increase in formal remittances may not necessarily imply an increase in total remittances, but rather reflect a shift from informal channels (person-to-person) to formal

[1] According to the Nicaraguan Central Bank (BCN), monthly remittances into Nicaragua increased to USD 2.1M in 2021 USD compared to 1.85M in 2020 and USD 1.68M in 2019.

channels (bank-to-bank) given the physical closure of borders and transit shutdowns in the aftermath of the pandemic (Dinarte et al., 2021).

One reason that may explain the increase in total remittances, however, is altruism, as migrants abroad try to help their relatives and friends back home given the economic deterioration and poor health care in the face of Covid-19 (Lucas and Stark, 1985). This altruistic behavior could result in new recipients that were not receiving transfers before the pandemic or prior recipients that received higher amounts after the pandemic. Alternatively, remittances could increase if host countries experienced a positive income shock, for instance through the CARES Act in the US. Finally, the appreciation of the host country's currency could also trigger the inflow of remittances (Yang, 2008; McKenzie, 2003).

In this paper, we explore these different reasons for the upsurge in remittances during the Covid-19 pandemic in Nicaragua using administrative data from BanPro, the largest commercial bank, for the period between 2017 and February 2021. We also use the results of a household level phone survey on remittances in four departments of the country, although we show that the survey data suffers from misreporting and other biases (e.g., households previously reporting having received remittances later denied it). However, the combination of the different data sources yields a sufficiently comprehensive picture to draw robust conclusions.

Our main result is that the increase in remittances was fueled by new senders, that is, migrants that responded to the severity of the pandemic by sending remittances to their relatives in Nicaragua for the first time. Put differently, we find an increase in the number of migrants remitting (extensive margin) rather than an increase in the amount sent per migrant (intensive margin). This novel result is consistent with the altruism hypothesis but at odds with a shift from informal to formal channels to send remittances.

We believe that understanding the flow of remittances during the COVID-19 pandemic is important because remittances can contribute to higher levels of consumption and possibly even the welfare of recipients. If linked to strategies for asset building – particularly local savings formalization and mobilization through financial education and credit, they can be leveraged to build both human and economic capital (Orozco, 2021). In addition, from

BanPro's perspective, this increase in new clients may trigger an increase in account openings and financial inclusion.

The paper contributes to the literature that explains the pattern of remittances (Ashraf et al. 2015, Ambler et al. 2015, Yang and Choi, 2007, Yang 2008a, 2008b and 2011). Perhaps closest to ours, using Mexican aggregate data, Dinarte et al. (2022) find a rise in registered inflows, particularly among municipalities that were closer to the US border crossing. Since migrants in these municipalities tend to have their relatives located in adjacent municipalites on the other side of the border, the authors argue that before the pandemic, migrants carried cash or gifts during their many border crossings. Once the lockdown measures took effect, these migrants switched to using formal channels. These municipalities experienced a disproportionate increase in the number of bank accounts opened since lockdown measures took effect.

In contrast to Dinarte et al. (2022), since most migrants from Nicaragua live in the US or Spain, the use of informal channels before and during the pandemic was rarely used. More generally, studies that rely on household survey data tend to find evidence consistent with a decline in remittances (Miguel and Mobarak, 2021), whereas studies relying on aggregate central bank data report the opposite (Kpodar et al., 2021).

This paper also relates to a larger literature on the impacts of remittances, especially concerning the use of the formal banking system (e.g., Anzoategui et al., 2014; Ambrosius and Cuecuecha, 2016; Freund and Spatafora, 2008).

The remainder of the paper is organized as follows: Section 2 describes the Nicaraguan context in greater detail. Section 3 describes the data and details the empirical strategy used to assess the evolution and drivers of remittances going into Nicaragua during the pandemic. Section 3 presents the main findings. Section 4 briefly discusses their policy implications.

2. Context

The contribution of remittances to the Nicaraguan economy is substantive. In 2021, remittances accounted for 15.3% of the country's GDP, up from 11.5% in 2018 (Central Bank of

Nicaragua). These flows are the second largest source of foreign exchange and generate disposable income for at least 635,000 households, in a country with 1.6 million households (Orozco, 2021b).

In Nicaragua, all segments of the population receive remittances. According to a recent household survey conducted in four departments of rural Nicaragua, while the share of households receiving foreign monetary transfers is twice as large in the top quintile compared to the bottom quintile, remittances represent one tenth of the total expenditures within the bottom quintile (see Appendix Table 3).

Remittances tend to go to smaller households with fewer children and more elderly members and to families with more permanent migrants (Orozco, 2021b). By far, the primary migrants are children that tend to leave while unmarried to look for work, mainly to Costa Rica, the United States and Spain (see Maps 1 and 2 in Appendix).

Nicaraguan migrants have been sending money to their relatives for decades. Largely due to insufficient economic growth and adequate social protection policies, people have migrated to look after their families and themselves (Orozco, 2021; Sabates-Wheeler and Feldman, 2011; Hagen-Zanker and Himmelstine, 2013).

Remittances have in fact kept growing amid an extremely challenging and changing environment in which three separate shocks and crises —a socio-political crisis, the COVID-19 pandemic and two hurricanes— have conflated. In April 2018, a series of pension reforms announced by the Government triggered social protests. The socio-political crisis that arose adversely affected Nicaragua's economic activity and, coupled with external sanctions imposed on the government and specific individuals, reduced Nicaragua's access to external financing. The fourth re-election of Daniel Ortega in November 2020 contributed further to the uncertainty. Another blow to the economy and welfare came around that time, when two major hurricanes, Eta and Iota, hit the Caribbean Coast in rapid succession. Coming ashore within 15 kilometers of each other in a two-week period in November, the storms caused total damages

and losses of $US742.6 million, or approximately 6.2 percent of Nicaragua's Gross Domestic Product (GDP), with widespread effects across sectors.[2] (World Bank, 2022).

The COVID-19 pandemic has wreaked further havoc on the economy. Although Nicaragua has not closed its economy at any point, the fear of contagion, preventive behaviors by the population, and the imported effects from trading partners have meant that Nicaragua is experiencing substantial economic impacts from the pandemic in addition to the direct health impacts. The strength and global nature of the economic contraction spurred by the Covid-19 pandemic posed a particular challenge to remittances as the main host countries of Nicaraguan migrants were severely affected, particularly the U.S. economy, which is the main source of expatriate remittances.

2 Data & Methodology

2.1 Data

This paper uses three sources of data to understand the flows and drivers of remittances from abroad into Nicaragua. The main data source is transaction-level administrative records from Banco de la Producción (BanPro) of all remittances sent or received from 2017 to February 2021. BanPro is the largest financial institution in Nicaragua both in terms of volume and clients (The Banker, 2019). Individuals could send or receive remittances through their BanPro accounts or using a specialized platform called Express Remittances (ER) if they did not have an account. The remittance transactions through ER represent only 3% (281,000) of all transactions. The inclusion of this data gives a more complete picture of the population sending or receiving remittances in Nicaragua, since not all individuals are bank clients.[3] In addition to the individual transactions, BanPro also provided a few characteristics about the clients sending and receiving remittances, such as the gender and municipality where they lived (see Appendix Table 4). In total, we have 8 million transactions received by around 955,000 recipients across all municipalities.

2 Government estimates as of December 2020.

3 Although all of the individual level variables and transactions are identified with a clientID in the data from BanPro, RE clients did not need to open an account or go through the same registration process as the usual client. They could also receive their remittances using a bank's agent instead of directly going to the office, making it a more accessible service than traditional transfers.

Our second source of information is a household survey conducted by phone on a sample of rural households living in four districts of Nicaragua (Boaco, Jinotega, Matagalpa and one autonomous region of Nicaragua – RACCS). All respondents had participated in a field experiment looking at the impact of opening a BanPro savings account and had reported having received at least one international remittance in the last 5 years. Of the 3,092 original households in the midline survey conducted in mid-2021, 300 reported having receiving remittances and of those, our data collection team was able to reach 202 households. The survey was conducted in November 2021 and asked if the household had received any type of support (cash, food, clothing, or work) in the last month, from friends and relatives abroad. The survey also collected data on their relationship to the household head; the amount of remittances and sending method, and self-reported reasons on change in amounts received after the pandemic started. We were particularly interested on the different methods used to receive remittances. However, given the political instability in the country at the time of the survey, 25 percent of respondents who had previously reported receiving remittances denied having done so during the survey, especially from the US.[4] This can be attributed to mistrust and fear of reprisal. The original field experiment from which the sample of remittance-recipient households was drawn, was fielded in-person. There is ground to believe the respondents placed higher trust in those interviewers while our later phone survey was affected by misreporting.[5]

Lastly, we rely on various administrative data sources from Nicaragua and the top three host countries of Nicaraguan migrants: United States (US), Spain and Costa Rica, hosting a combined 93.6% percent of migrants. Map 1 shows the host country with the largest amount of remittances sent to each municipality during 2020. To proxy for **economic shocks** abroad we used monthly and quarterly total unemployment rates from the main cities hosting Nicaraguan migrants abroad reported by the respective National Statistical Offices. For Spain, the data came from the Instituto Nacional de Estadística (INE). For the US, our source was the Population Survey from the Bureau of Labor Statistics (BLS). For Costa Rica, the quarterly

4 Most of the households selected for this study had confirmed being recipients of remittances in the RCT midline, only two months prior to this data collection on average. Out of the 131 households that belonged to the remittances sample according to midline, only 101 confirmed receiving remittances in our phone survey.

5 According to our talks to BanPro's personnel, phone fraud cases reported to the bank have increased in the last months of 2021 by 400%. Furthermore, at the time that this article is being written, the bank is in the midst of a campaign to prevent clients from sharing any type of personal information on the phone. Our suspicion was that families were not being honest about the number and amount of remittances received, and instead underreported both numbers to protect themselves from possible fraud.

unemployment index was reported by the Instituto Nacional de Estadística y Censos. We also collected average monthly exchange rates between the Nicaraguan *córdoba* and the currencies in each of our three host countries (see figure 3 in Appendix). To proxy for **health and social shocks,** we collected Covid-19 cases and the Social Unrest Index from the Fundacion Nicaraguense para el Desarrollo Economico y Social. The Index of Social Unrest (IPP in Spanish) reports the number of protests and demonstrations at municipal level since 2016 up to present day based on news reports (Cabrales et al. 2020). The Covid-19 cases come from Nicaragua's COVID observatory, which is an independent consortium of NGOs and think thanks in Nicaragua.

2.2 Methodology

Given our interest in capturing the effects of the pandemic on remittances across time and space, we aggregated the individual transaction data from BanPro into month-municipality observations to estimate the following specification:

$$y_{it} = a_i + d_t + m_t + \beta_p P_t + X'_{it}\beta_x + e_{it}$$

where y_{it} is a logarithmic transformation for three outcomes related to: (i) the mean amount or number of remittances received by household *i* in period *t*, (ii) the number of households receiving remittances and (iii) the number of new households receiving remittances. a_i is a municipality fixed effect, m_t is a month fixed effect, and d_t is a trend variable that takes value 1 in the first month of data, 2 for the second month etc. Our explanatory variable P_t is a dummy variable that takes value 1 on April 2020 and in later months to reflect the pandemic period and 0 otherwise. X'_{it} is a vector of control variables containing the administrative data we collected to account for economic and health shocks: average monthly unemployment rate in the sending country with largest volume of remittances, the average monthly exchange rate between the top sending country's currency and the Nicaraguan cordoba (NIO), the monthly index of social unrest in Nicaragua and the monthly severity of COVID in Nicaragua measured by cases over 000s in month. The term e_{it} is a mean-zero error term. Time is monthly, from January 2018 to February 2021, and we use robust standard errors.

The main coefficient of interest is β_P on the pandemic dummy P_t. Specifically, it measures the effect of the pandemic shock on the relevant outcomes.

3 Results and Discussion

Table 1 reports our preferred specification. Column 3 confirms that the onset of the Covid-19 pandemic did cause an increase in the overall volume of remittances sent into Nicaragua. In particular, the total number of remittances received during the pandemic rises by 8.7%. This is in line with Figure 1.

Columns 2 and 3 shed light into the drives for this surge in remittances during the pandemic. After all, this upsurge could be driven by new clients sending money or by existing clients sending more money. Column 2 reports an increase in the number of monthly recipients of remittances of 7.3%. Column 3 reports a similar increase of 10.3% in the number of new clients after the pandemic, defined as clients that first appears in the dataset in a given month.

According to columns 5 and 6, the average amount per remittance did not change after the pandemic, nor did the number of remittances that a household received. As a result, we conclude that the surge in the amount of remittances into Nicaragua was primarily driven by the extensive margin, that is, by new clients sending money rather than existing clients sending larger or more frequent remittances.

Transnational support networks are one of the most important safety nets that households use to cope with income fluctuations by providing insurance in the absence of formal credit and insurance markets. These results are consistent with migrants being altruistic towards their relatives and friends in Nicaragua during the pandemic. Migrants in the US, Spain and Costa Rica who had not felt compelled to provide support in the past may have felt the need to act as a result of the severity of the pandemic. By the same token, households who had been receiving transfers before (referred here as regular clients) receive higher amounts after April 2019. Between April-December 2021, regular clients did increase their average transfer by 18 USD per transfer relative to the previous 6 months. According to Table 1, an increase in the number of Covid-19 cases in the country for every 100 inhabitants is associated with an increase in four out of the five outcomes of interest and significant at the 95% confidence level.

As migrants were sending remittances, higher local unemployment rates where they lived negatively impacted both the number of recipients, amount, and number of remittances sent to Nicaragua. The magnitude of these effects though was outweighed by the positive effect triggered by the entrance of new clients into the remittances market.

Finally, Table 1 shows that the Nicaragua Index of Social Unrest, which proxies the level of protests in the country, is correlated with increases in the number of recipients and remittances received. The rapid spread of an infectious disease in a community can result in higher unrest (Cordell, Wright, and Wood; 2020). Figure 2 shows that before the pandemic the IPP tracked closely the number of new clients, as households facing unrest decided to migrate abroad and started to send remittances back home. However, the surge of new BanPro clients after the pandemic, especially in April and May of 2020 is not preceded by higher social unrest, lending support to the hypothesis that the pandemic is driving the observed increase in remittances as migrants already abroad started sending remittances to Nicaragua for the first time.

The administrative data from BanPro shows an increase in the number of new clients sending remittances and the amount of remittances sent during the pandemic. This could well reflect a shift from persont-to-person transactions to more formal channels of transactions due to the border and airport closures. In other words, migrants that appear as new clients of BanPro, could have been already sending remittances through other informal means. To assess whether these new clients started sending remittances during the pandemic or merely changed the delivery method to BanPro, we resort to household surveys.

In our sample, the shift from informal to formal channels to remit money is negligible. Table 2 shows the results from the 101 households that confirmed receiving remittances in the last two years. Only 12 households reportedly changed the way they received the transfers during the pandemic: Half switched from BanPro to a different method (mainly transfer carriers such as Western Union); the other half became new users of BanPro. Additionally, we observe that more than one-third of the sample used BanPro in both periods, suggesting that by analysing BanPro's data we are indeed obtaining information about a large proportion of the recipients of remittances in the country.

4 Conclusion

Ever since the pandemic started and against all odds, remittances have continued to exhibit significant growth in Nicaragua and elsewhere in Central America. Our analysis shows that the surge in remittances is mainly driven by new clients sending money (spurred by migration or

dormant migrants). An increase in the amount remitted among regular clients also expressed the surge in remittances, but to a lesser extent.

These dynamics signal empathy among migrants to their relatives and friends due to the economic deterioration and lack of good health related protection against Covid-19 in their homelands.

The economic contraction experienced by Nicaraguan migrants in their host communities following the pandemic did not reduce their capacity to send higher amounts of money, but did reduce their frequency. Such conditions combined with lower migration of Nicaraguans, particulary to the US, could eventually lead to declines in remittances or the exit of clients from the Banpro banking system.

It is important to retain existing clients by formalizing the savings of remittance recipients. This is all the more relevant given that the surge in remittances is not explained by a shift from informal to formal channels to remit. Some research and work in the Central America region shows that financial advising can help formalize at least 20% of savings among remittance recipients (Orozco, 2021). Banpro is already working to integrate the economic contributions of migrants into local savings formalization. This is a step in the right direction.

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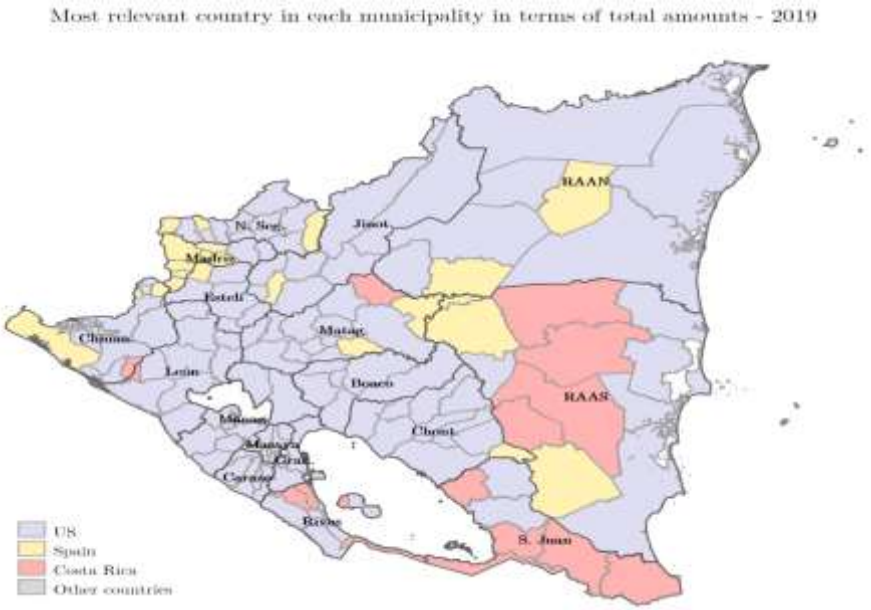
Appendix

Map 1 – Country of origin of remittances by municipality in 2019



Map 2 – Remittances per municipality, by amount (000s USD)

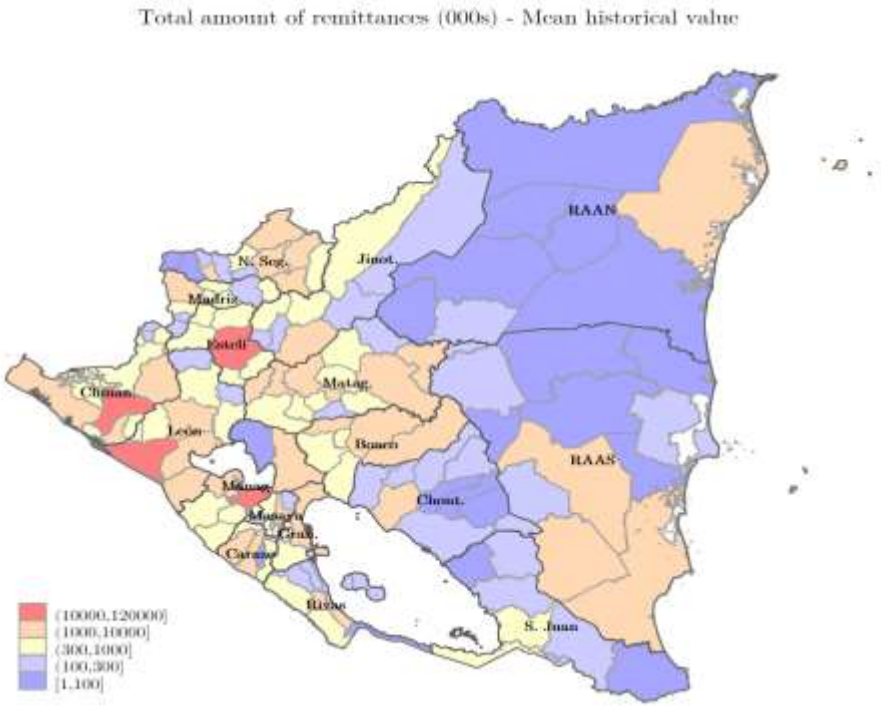
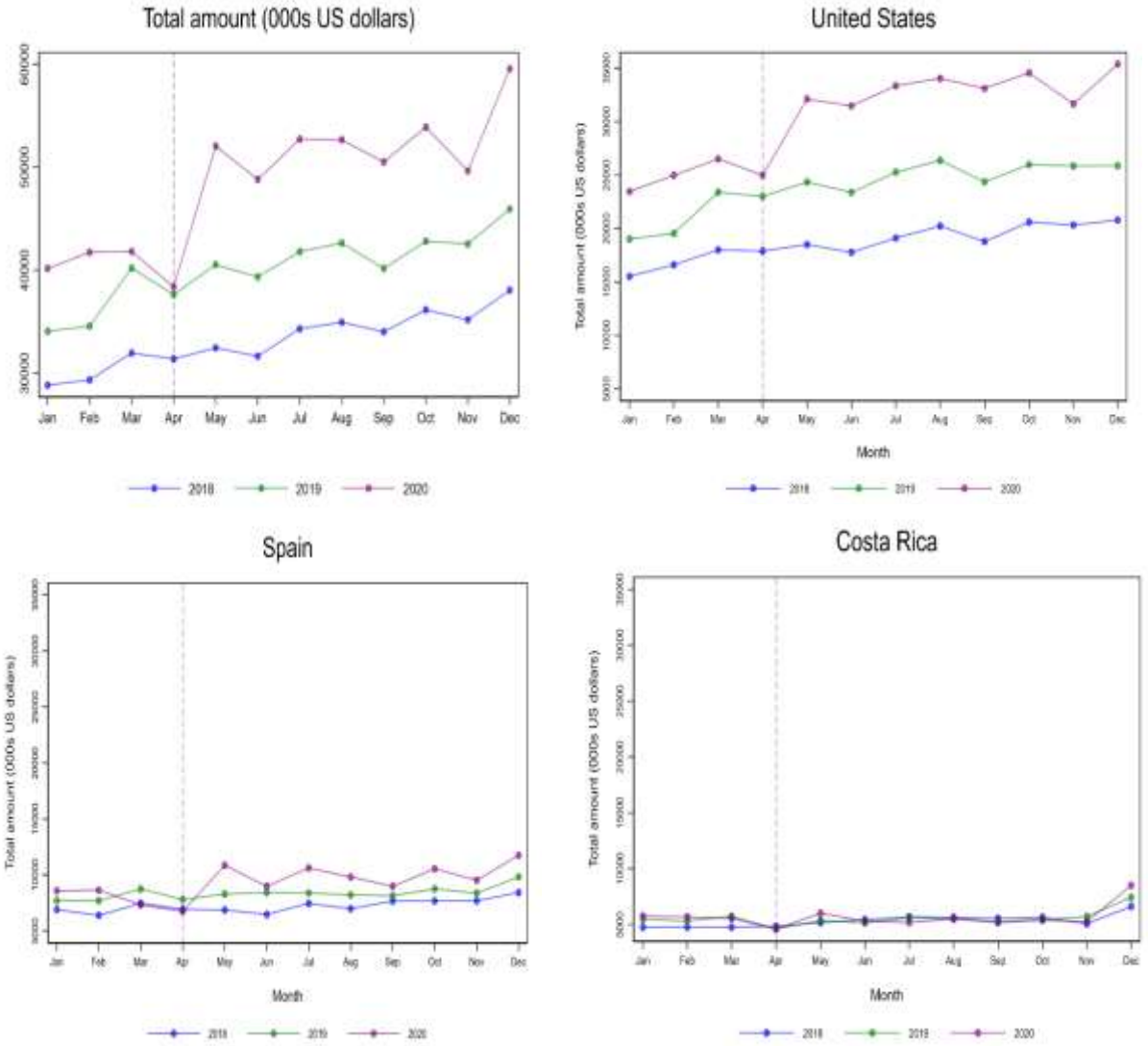
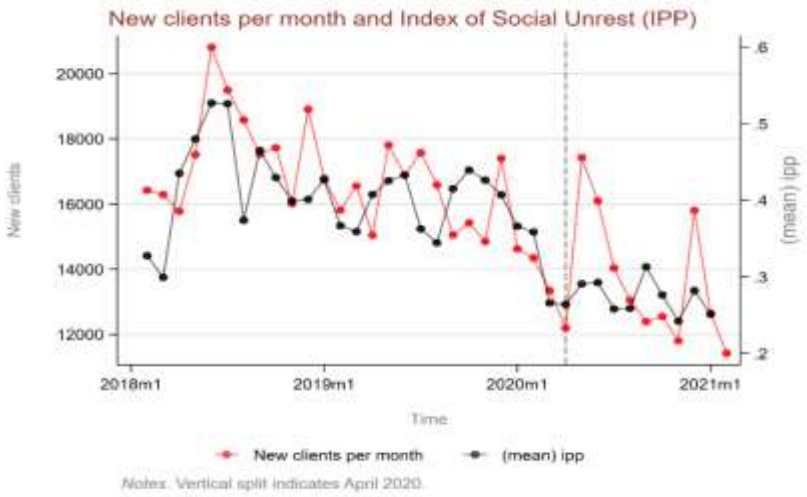


Figure 1 – Total amount of remittances received in Nicaragua overall and by main destination country for Nicaraguan migrants (000s USD)



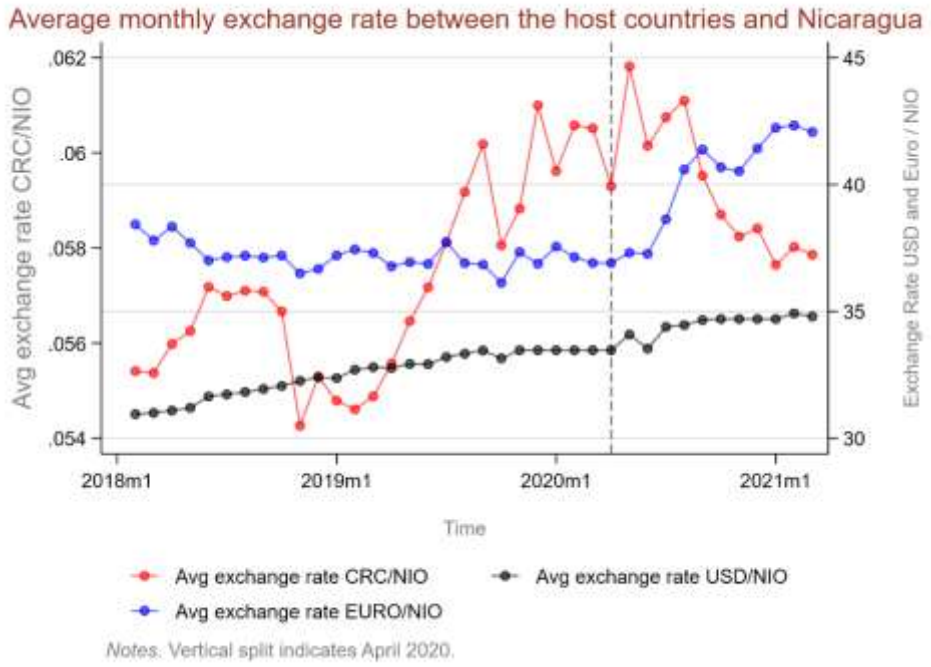
Source: Authors based on Banpro data.

Figure 2 – New clients per month sending remittances to Nicaragua and Index of Social Unrest



Source: Authors based on Banpro records and IPP data provided by Fundacion Nicaraguense para el Desarrollo Economico y Social (FUNIDES).

Figure 3 – Average monthly exchange rate of main host countries of Nicaraguan migrants



Source: Central Bank of Nicaragua.

Table 1. Results on selected remittance outcomes

	(1) **Total number of remittances**	(2) **Total Clients**	(3) **New Clients**	(4) **Mean amount per remittance**	(5) **Mean number of remittances by household**
Trend	0.026***	0.024***	0.026***	-0.001***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Pandemic time period (Yes=1)	0.084***	0.071***	0.098***	0.027	0.014
	(0.021)	(0.019)	(0.037)	(0.017)	(0.010)
Avg monthly exchange rate	0.000	-0.000	-0.002**	0.003***	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Avg monthly unemployment rate in sending country	-0.007***	-0.004***	-0.007***	-0.001	-0.003***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Avg Covid-19 cases per every 100 in sending country	0.005***	0.005***	0.010***	0.003***	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.000)
Social unrest index	0.278***	0.378***	1.151***	-0.370***	-0.100**
	(0.103)	(0.092)	(0.192)	(0.090)	(0.043)
Observations	5,636	5,636	5,503	5,636	5,636
R-squared	0.978	0.980	0.902	0.747	0.535
Mean dep. var.	5.186	4.753	2.902	5.507	0.434
SD dep. var.	1.713	1.649	1.473	0.404	0.147

Notes: Month dummy control variables are not displayed. All variables reported in logarithms. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2. Transition matrix on channels of transmission of remittances

	April 2020 - November 2021			
January 2019 - April 2020	(1) **(Did not receive)**	(2) **Received via other method**	(3) **Received via Banpro**	(4) **Observations (HHs receiving)**
(Did not receive)	3	4	1	8
Received via other method	2	40	6	48
Received via Banpro	3	6	36	45
Observations (households receiving)	8	50	43	101

Notes: Other methods includes informal transfers such as personal visits with cash, and other formal transfers such as Western Union. Data come from telephone household survey conducted on remittance recipients in November 2021.

Table 3. Selected Characteristics on Remittance Households and Senders

		Do not receive remittances	Receives remittances
Consumption quintiles	1st quintile	97.3%	2.7%
	2nd quintile	95.8%	4.2%
	3rd quintile	94.8%	5.2%
	4th quintile	97.6%	2.4%
	5th quintile	95.4%	4.6%
Share of total consumption	1st quintile	-	9.2%
	2nd quintile	-	4.6%
	3rd quintile	-	3.9%
	4th quintile	-	6.6%
	5th quintile	-	2.7%
Household size	1-4 members	81.5%	18.5%
	5-8 members	80.5%	19.5%
	more than 8	94.4%	5.6%
Dependency ratios	Child dependency ratio	0.6163	0.6671
	Elderly dependency ratio	0.1433	0.2482
Migrant's relationship	Head	-	2.4%
	Spouse	-	11.4%
	Offspring	-	68.3%
	Parents/in-laws	-	3.0%
	Son in law	-	1.8%
	Grandchildren	-	7.8%
	Sibblings/brother in law	-	4.2%
	Without relationship	-	0.6%
Reasons to migrate	To work	-	63.7%
	Health/education	-	5.0%
	Family issues	-	6.5%
	Marriage	-	22.7%
	Natural disasters/insecurity	-	0.1%
	Others	-	2.0%
Destination country	Costa Rica	-	65.9%
	Nicaragua	-	2.3%
	Panama	-	2.3%
	Spain	-	5.8%
	U.K.	-	0.8%
	U.S.	-	21.8%

Source: Household survey conducted among rural households in three departments (Boaco, Jinotega, Matagalpa) and one autonomous region of Nicaragua (RACCS).

Table 4. Selected Characteristics on BanPro's sample of recipients

Characteristic	Recipients in BanPro	
	(1) Percentage	(2) N (recipients)
Gender		*510,820*
Male	36%	224,003
Female	**64%**	**286,817**
Relationship of sender		*696,389*
Friend	**19%**	**130,616**
Sibling	15%	104,185
Uncle/Aunt	11%	73,803
Child	9%	63,212
Cousin	9%	61,785
Parent	7%	51,718
Spouse	8%	53,667
Other relationships	23%	157,403
Dependent family members		*10,027*
0	**48%**	**4,838**
1	20%	2,011
2	17%	1,737
3	9%	881
More than 3	6%	560

Notes: The variables are available for only a selection of the total 955 thousands clients in the database. For the Relationship of Sender variable, when not available for all of the clients' recepcions, the mode of the most common sender was used.