

Frisancho Robles, Verónica; Parrado, Eric

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International remittances to Latin America and the Caribbean amid the Covid-19 crisis: A push for digitalization?

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International Remittances to Latin America and the Caribbean amid the Covid-19 Crisis:

A Push for Digitalization?

Verónica Frisancho
Eric Parrado

Inter-American Development Bank
Department of Research and Chief Economist

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Abstract¹

Remittances constitute a significant safety net for millions of households in Latin America and the Caribbean (LAC). Consequently, changes in international transfers can be a crucial agent of transmission of the COVID-19 induced economic crisis from richer to poorer nations and from urban to rural areas. Relying on data on queries to the search engine Google between December 2018 and July 2021, this study looks at the evolution of demand for in-person versus digital international transfer services and evaluates if take-up rates of different types of service providers trace the initial drop and subsequent rebound of remittances. The recovery of remittances was accompanied by a modest and temporary increase in the interest in digital mechanisms for sending money to home countries, which is accompanied by lower demand for brick-and-mortar service providers.

JEL classifications: F24, G2, G5

Keywords: Remittances, COVID-19, Digital payments, Financial inclusion

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1 Introduction

Drops in remittance flows can be a crucial agent of transmission of the COVID-19 induced economic crisis from richer to poorer nations and from urban to rural areas. Containment measures to reduce the fatality rate and rates of contagion around the world can certainly affect the size and frequency of remittance flows, as well as the channels used to transfer them to the country of origin. On one hand, economy-wide strict closures affected labor earnings and migrants' ability to set money aside for their families back home. On the other hand, shutdowns also interrupted the activities of remittance service providers, as they were not classified as essential services. Thus, the shutdown of economies and travel bans in both sending and recipient countries restricted the availability of cash payment channels through shadow banking services, especially during the initial months of the lockdowns. Moreover, travel limitations imposed restrictions on the use of informal means such as sending cash through friends and contacts or through the migrants themselves when they visit home.

Indeed, at the onset of the COVID-19 crisis, remittances to Latin American countries fell sharply. According to central bank data, remittances recorded a sharp drop in April 2020, though the magnitude of the impact varied across countries (Caruso et al., 2021). El Salvador and Colombia were among the hardest hit (a 40% decline relative to April 2019), while Mexico experienced the smallest drop.² However, more recent records exhibit a quick rebound in international transfers to LAC starting in May, and an increasing trend afterwards.³ While there are several factors that could explain the resilience of remittances to the region, this study focuses on the potential role of the adoption of digital services as a way to circumvent the mobility restrictions imposed around the globe.

Relying on data on queries to the search engine Google in the United States between December 2018 and July 2021, this paper studies the demand for in-person versus digital international transfer services and evaluates if the evolution in the take-up rates of different types of service providers traces the initial drop and subsequent rebound of remittances. Since most of the international transfers to Latin America and the Caribbean (LAC) come from the United States, this study constitutes an important contribution to the understanding of the evolution of remittances during the COVID-19 pandemic.

A few analysts have put forward a number of potential factors that may explain the resilience of remittances during the pandemic.⁴ First, migrants' large participation in essential sectors such as farming, the food supply chain, and low-skill jobs in health care facilities in the United

² See PEW Research's post.

³ For 2020, personal remittances received in Latin America and the Caribbean amounted to approximately \$104 million, which represents an increase of 6 % with respect to 2019 (World Bank, 2021).

⁴ See World Bank (2020a) and articles at UNDP and The Conversation.

States may have contained the impact of the crisis on their employment rates and wages. Second, the receipt of large government income support payments can probably explain some resilience observed in remittances trends. However, this support was not massively available to all migrants, but only to naturalized foreign-born citizens and green card holders. According to estimates from the Pew Research Center, only half of the U.S. population born in Mexico, Central America, and the Dominican Republic satisfy these eligibility requirements.⁵ Third, the behavior of international transfer flows is consistent with the counter-cyclical nature of remittances. Once it became clear that the crisis was going to last longer than initially expected, and as COVID-19 started to massively hit the region, migrants saw their families in their countries of origin experience relatively worse economic hardship than the migrants themselves did in their host countries and therefore kept sending money.

This paper provides a complementary explanation for the rebound of remittances that puts forward important implications for the future of remittances in the region. The results indicate that the drop and subsequent rebound of remittances is accompanied by a modest and temporary increase in the demand for digital payment options in the United States, which is mirrored by a decline in the use of in-person services right after the implementation of mobility restrictions in the country. This pattern is consistent with a switch from brick-and-mortar service providers to digital payment mechanisms amid the COVID-19 shock.

The temporary substitution effect in the United States is likely to hit particularly hard providers who exclusively offered in-person services. Traditional service providers such as MoneyGram, which offers both cash and digital services, may have experienced limitations in operating early on as the remittances sent to a local MoneyGram office at the destination country could not be paid out due to closures. As the crisis endured and additional sectors of the economy started to operate, MoneyGram could probably adapt to the demand for digital services. However, providers who specialized in cash services were partially substituted by digital providers that guaranteed greater speed and lower transaction costs and that made it easier to cash out the transfer even under mobility restrictions. These providers usually rely on bank networks to cash out the remittances and have well-functioning digital payment platforms that could easily accommodate increased demand for their services.

While the COVID-19 pandemic represented a modest push for the digitalization of international transfers, the substitution of in-person for digital services is short-lived and may reflect temporary adaptation to mobility restrictions as opposed to increased adoption of the latter. Our results highlight the urgency seizing the big push that COVID-19 provides to financial inclusion efforts. The pandemic and the new normality that it has produced are game-changers that should be rapidly acknowledged by financial markets and regulators. The process of adapting to mobility

⁵ See article by Federal Reserve Bank of New York.

restrictions may bring good news in terms of accelerating the process of bancarization and digitalization in our economies, but this transition process should be accompanied by solid financial education strategies and a very agile and effective consumer protection agenda.

More generally, our study also contributes to the bulk of recent studies that investigate the economic impacts of the pandemic. Aggregate health shocks may accelerate technological trends and shift consumer choices following changes in the way individuals and societies interact. In particular, this study contributes to a recent strand of the literature that focuses on the impact of the pandemic on financial technology usage (Saka et al., 2021, Sahay et al., 2020).

2 Context and Data

2.1 Context

Remittances constitute a significant safety net for millions of households in Latin America and the Caribbean (LAC), with the bulk of these funds coming from the United States. They also constitute an important source of foreign currency (FX) that improves a country's balance of payments position. Remittance flows to low- and middle-income countries had reached record levels prior to the pandemic. Indeed, in 2019 remittance flows to these countries became larger than foreign direct investment, amounting to approximately \$97.8 million (World Bank, 2020*b*). Between 2016 and 2021 the total cost of a digital international transfer has been steadily decreasing, while that of in-person transactions has remained more or less constant. These patterns have widened the cost gap between both types of services over time, as shown in Figure 3.

According to central bank data, remittances to Latin American countries sharply fell in April 2020, following the strict mobility restrictions imposed in both sending and receiving countries. Irrespective of the exchange rate used, Figure 2 records this drop, but it also highlights heterogeneity in the magnitude of the impact. While Guatemala and Mexico experienced relatively small dips, countries such as Colombia and El Salvador were among the hardest hit. This sharp decline led to initial estimates of a 20% drop in remittance flows to low and middle-income countries (World Bank, 2020*b*). However, the evolution of remittances in the following months has signaled their resilience and has led to updates on initial predictions: the drop will be more gradual and prolonged, with a 7.2% decline in 2020 and a further decline of around 7.5% in 2021 (World Bank, 2020*a*).

One of the most common ways to explain the agile recovery of remittances to LAC is the disbursement of U.S. government stimulus spending announced in late March 2020. However, two counterarguments suggest that this is not the only channel driving the evolution of remittances. First, the immediate U.S. fiscal response was provided in early April, while we see remittances flows rise starting in May, with delays in the recovery in some countries. Second, not all foreign-born residents in the United States were eligible for a stimulus payment under the CARES Act.

Except for California, where government support was also extended to undocumented immigrants, only U.S. citizens and documented migrants were eligible to receive stimulus payments. Non-U.S. citizens were only eligible if they fell under the category of “resident aliens”, which includes green card holders and workers using visas such as H-1B and H-2A. Indeed, our own estimates based on the American Community Survey between 2015 and 2019 show that only two-thirds of the foreign-born persons from LAC in the United States are legal U.S. residents.⁶ Figure 3 shows that there is some heterogeneity across metropolitan areas, with the mode share at 0.3. While these figures do not include the share of LAC-born resident aliens, they certainly provide an idea of the CARES Act’s coverage among migrants in the United States.

An alternative (partial) explanation is related to changes in the demand for in-person and digital international transfer services. Since the mobility restrictions limit migrants’ use of in-person services, the evolution of remittances around the implementation of containment measures may respond to a progressive substitution of traditional services providers for digital payment options in the United States.

2.2 Data

To approximate the demand for international transfer services, we rely on Google Trends data that capture interest in a particular type of provider at a given point in time and location. We construct a panel database at the local market level that records the index of search activity for both in-person and digital service providers.

Using Google Trends data to approximate demand clearly poses limitations as search activity is not perfectly correlated with actual usage of international transfer services. However, these data are particularly useful to evaluate short-term changes in demand in a timely manner. In this study, the focus is placed on trend changes over a relatively short period of time (i.e., 30 months), which makes this data source particularly suitable.

According to the information provided by Stephens-Davidowitz and Varian (2015), Google Trends reports an index of search activity that measures the share of queries that include a term (e.g., “MoneyGram hours of operation”) in a given geographical area and on a specific date, relative to the total number of queries in that date. The maximum value of the index is set to be 100. The scaling is done separately for each request, but the Google Trends tool allows us to compare up to five items per request. This feature is useful for searches that are not too broad in their scope, but it imposes a limitation on more massive queries. In each request, the tool makes it possible to compare requests from different geographical areas.

To obtain the records relevant for the analysis, we used the R package called “gtrendsR”, which consists of an interface for retrieving and displaying the information returned online by

⁶ This average is obtained from a weighted average of the share of legal U.S. residents among individuals born in LAC across metropolitan areas, using total population as a weight.

Google Trends. We generated queries to obtain information on internet searches related to different remittances service providers in the United States, the main destination of Latin American migrants. The data cover the period between December 30, 2018 and July 31, 2021. The search indexes have a weekly frequency and were focused on the most disaggregated geographic units available in Google Trends for the United States, which consist of 210 Designated Market Areas (DMAs).⁷ Google Trends only display data for popular search terms. Therefore, terms with low search volume are displayed as “0”.

First, the most relevant players in the remittances market in the United States and the different services that each of these providers offer were identified. An initial list of providers was based on a prior report made at the IDB focusing on how remittances are made Xavier et al. (2019). This document offers insights from a large cross-sectional survey on remittances sent by 2,145 migrants from several Latin American countries living in three major cities in the United States. This list of providers was extended and deepened through the analysis of recent news articles and popular search terms.

Based on this list, we jointly searched for all providers of each type, both in-person and digital providers. Specifically, we searched for the name of a given provider next to a keyword that explicitly indicated that the user was interested in sending remittances in person (e.g., “Money-Gram near”). In all cases, the selection of the keywords that were combined with the firms’ names were based on the most popular related Google searches so as to meet the minimum search threshold required by Google. This allows us to target searches more precisely, particularly for cases in which the firm offers both in-person and digital services. Table A.1 in Appendix A presents the final search protocol implemented for the queries.

We also use the U.S. Census Bureau’s pooled 2015-2019 American Community Survey population size estimates for heterogeneity analysis purposes. These data allow us to observe total population by county, as well as the percentage of the foreign-born and those who were born in LAC countries. We can also capture the percentage of U.S. citizens in each county according to place of birth. We aggregate the data at the DMA level.⁸

2.3 Making Google Trends Searches Comparable

As mentioned above, Google Trends searches performed in different moments of time are not strictly comparable. The Google Trends tool has a particular feature that allows us to compare searches, but it is limited to five searches per request. When the researcher wants to compare more than five combinations of searches and geographical areas, she can select a particular combination

⁷ It is important to note that the DMAs used in the Google Trends tool may differ from the Metropolitan Areas designated by the U.S. Census Bureau.

⁸ DMAs are a group of counties and zip codes. We thus match each county to its DMA identifier and aggregate the data at the DMA level. The correspondence between county identifiers and DMAs is obtained from the Harvard Dataverse repository, available upon request here.

of search terms and location that is common to all searches and that can later serve as an indexer. We follow previous studies relying on Google Trends data (Narita et al., 2018) and choose as a benchmark the names of the three main money transfer companies in the United States (i.e., Ria, MoneyGram, and Western Union).

We conduct the searches in two steps. First, we pull up data for the United States focusing on the reference search joint with four more searches that include a combination of the keywords and DMAs. We do this until we cover the complete list of queries for all areas. From this step, we get the average level of queries in the period of interest (December 30, 2018 - July 31, 2021). Since all the searches were made relative to the reference search, we can make comparisons across keywords and geographical locations.

Second, for each combination of search terms and location, we carry out an individual search that allows us to capture the variability of the search activity index for the sample period. The average level of these series was adjusted according to the averages obtained in the first step using the reference search. In this way, we obtain comparable series that maintain the variability of the indices over time. As a final step, we re-normalize the data so that all values fluctuate between 0 and 100.

2.4 Event Definition

The definition of the event of interest is of crucial importance in any panel event study. To proxy the effects of COVID-19, we focus on the mobility restrictions imposed through stay-at-home orders that became effective in different counties of the United States beginning in March 2020.⁹ Each jurisdiction in the United States issued different types of orders, which differed in terms of their degree of enforceability and geographic coverage. Due to each government jurisdiction's sovereignty at the county level, there is great variability in terms of those orders' effective dates and their degree of restrictiveness.

Moreland et al. (2020)¹⁰ collected qualitative data on state and territorial stay-at-home orders using records from official websites containing executive or administrative orders, as well as press releases in each county. These authors classified these orders into five mutually exclusive categories: mandatory for all persons; mandatory only for persons in some regions of the jurisdiction; mandatory only for the highest-risk persons in the jurisdiction; mandatory only for the highest-risk persons in some regions of the jurisdiction; and advisory orders.

Additionally, the Oxford Covid-19 Government Response Tracker¹¹ collects systematic information on policy measures that governments have taken to tackle COVID-19. We have avail-

⁹ As an alternative to this event, we could use the first cases or deaths related to SARS-CoV-2 (COVID-19) in the United States. However, it is still difficult to access accurate data to determine prevalence rates, even worse at a disaggregated geographical level.

¹⁰ Moreland et al. (2020) data and sources are publicly available here.

¹¹ Oxford COVID-19 Tracker data and sources are publicly available here.

able, for the United States, a state-level panel dataset that includes the indicator “Stay at home requirement”, which sorts the stay-at-home restrictions into two types: “recommend not leaving house”, and “require not leaving house with exceptions for daily exercise, grocery shopping and essential trips”.

To define the event of interest, this study relies on Moreland et al. (2020) as the main data source. We define that a lockdown is in place (i.e., the event) at the earliest date in which a given DMA made effective a “mandatory for all” stay-at-home order. The Oxford Covid-19 Tracker data is used for robustness checks. In this case, the date of the event is set at the earliest date in which a given state made effective a state-wide “require not leaving house with exceptions for daily exercise, grocery shopping and essential trips” type of order. Robustness checks using the Oxford data will be presented in Appendix A.

We choose Moreland et al. (2020)’s data to define the date of the event as it offers county-level information. This feature will capture more precisely the date of the event at the DMA level, which is the unit of measure of the Google Trends’ search activity index panel. Moreover, Moreland et al. (2020)’s data also offers the possibility of defining alternative event dates based on the announcement of the restriction, as opposed to the date on which the mandate becomes effective. This allows us to conduct additional robustness checks to test whether U.S. consumers’ demand for remittances services starts to change in anticipation to the restrictions.

3 Estimation Strategy

Beginning in March 2020, most U.S. jurisdictions issued stay-at-home orders to contain the spread of SARS-CoV-2 (COVID-19). Studies such as Jacobsen and Jacobsen (2020) find that U.S. states with stay-at-home orders experienced a decrease in the rate of visits to public places of up to 40 percent compared to previous months. These orders and the closures imposed could directly affect migrants’ chosen channels to send money back home. This study performs a panel event study in order to capture the potential effect of COVID-related closures on the usage of in-person and digital services to transfer remittances.

We rely on panel data on weekly Google searches at the DMA level. We estimate the impact of the enforcement of stay-at-home orders implemented across DMAs in the United States on the interest in different types of international remittances service providers. We consider the variability of internet searches in the periods right before and right after the event and compare it to a baseline reference period. Under the assumption of ex ante parallel trends, the change in searches after the event, relative to the week prior to the event, captures the event’s causal impact at that point in time.

In each DMA, let w index time in terms of weeks, where w is measured in relation to the week in which the event occurs. We center the weeks’ index within each DMA because enactment

date of the restrictions varied across them. If the event is causing an effect, we should see that differences between the units emerge only after the event, while in all the weeks prior to the event the evolution of searches should remain similar.

Formally, we rely on internet searches conducted in DMA m during week w . Let E_m denote the week \bar{w} in which the event (i.e., stay-at-home order) became effective in area m . Moreover, define the baseline reference period as the week following the event, $w = E_m - 1$. Following Freyaldenhoven et al. (2019) and Clarke and Schythe (2020), we estimate the impact of the event on Google searches indexes G_{mw} using the following regression model:

$$G_{mw} = \rho + \phi_{sw} + \phi_s + \phi_w + \sum_{i=2}^I \alpha_i \times \mathbb{1}[w = E_m - i]_{mw} + \sum_{j=1}^J \gamma_j \times \mathbb{1}[w = E_m + j]_{mw} + \varepsilon_{mw} \quad (1)$$

where ϕ_{sw} , ϕ_s and ϕ_w are state-time, state, and time fixed effects, and ε_{mw} denotes the unobserved error term. I and J are the most distant periods away from the event; in other words, I corresponds to the first week of January 2019, while J denotes the last week of July 2021. The indicator functions within the summations capture if a DMA m was i or j weeks away from the event of interest, depending on the location of the week around the event date. That is, during the period prior to the event, α_i captures the relative change in searches over week i relative to the baseline. Note that the period preceding the event is the omitted category. In turn, γ_j measures the causal impact of stay-at-home orders as time passes after the event.

Event studies are commonly used to estimate treatment effects when *all* units in a panel experienced a given event, but at different points in time. However, an emerging literature (Borusyak and Jaravel, 2017, Schmidheiny and Siegloch, 2019) has shown that this model can be under-identified, or identified only up to a linear trend when all units adopt the treatment.¹² Therefore, units where the event never occurs could act as pure controls or counterfactual DMAs, relative to which the impact of the event is estimated. Differences across these pure controls and the units where the event occurs are anchored at zero in the missing baseline period. In our sample of analysis, 20 DMAs never implemented an strict stay-at-home order, and these serve as a control group.

4 Results

To conduct an initial check of the salience of the event, we first look at the trends capturing interest in different type of providers both in 2019 and 2020. Figure 4 shows the average Google search

¹² Broadly, long-term effects are difficult to identify in event studies without a control group, and extrapolation is likely to be unstable. If a control group is available, its inclusion in the estimation sample helps to solve identification problems since that group can be used to estimate time effects, regardless of the causal effect of the event.

index for in-person and digital services, comparing 2019 calendar weeks to their corresponding weeks in 2020. The vertical lines indicate the earliest and latest week in which stay at home orders were effective in the United States. The trends in panels (a) and (b) show that interest in remittance service providers in 2019 and 2020 was very similar in the period that preceded the weeks in which stay-at-home mandates became effective. However, interest in each type of provider starts to diverge in the weeks following the announcement of mobility restrictions. Indeed, panel (a) shows a declining interest in providers that offered in-person services during 2020 compared to the analog period in the preceding year. Panel (b) instead registers an abrupt early jump in the average number of searches of digital services in 2020 relative to 2019, and this change takes place right after the mandates start to be enacted (weeks 11-15). However, interest in digital providers soon winds down and catches up with the trends recorded in 2019.

Figure 5 presents the results of the panel event study analysis. Panel (a) shows that there is significant decline in the usage of in-person services in the weeks following the event. This decline is not sudden, but progressively starts to emerge three weeks after the enactment of a lockdown. In turn, panel (b) shows that there is a significant increase in the interest for digital providers right after stay-at-home orders were implemented. However, this increase is not sustained and starts to vanish nine weeks after the implementation of mobility restrictions. Results based on the Oxford dataset to define the event at the state level provide similar but noisier results (see Figure A.1) as the merge between the search index and the event is done at the state level.

But what if the modest effects we identified are explained by anticipation effects? Migrants may have started to change their demand for remittances services when the mobility restrictions were *announced*, which sometimes happened several days before the enactment of the stay-at-home orders. Figure 6 tests this hypothesis. We find that, when the event is defined based on the announcement of the restrictions, the increased preference for digital services is slightly more robust. It seems that migrant households start to switch to digital mechanisms in anticipation of the restrictions, while the move away from in-person services occurs later.

Overall, the modest and transitory increase in the usage of digital services reflects a wasted opportunity in terms of financial inclusion efforts. While certain migrants seemed to be more inclined to try out these services when the use of brick-and-mortar services was limited, the short-lived effect on take-up is disappointing. The window of opportunity to foster the adoption of digital services was not capitalized on when the time was right.

The use of digital as compared to in-person services requires the sender to have a bank account in the United States. This may limit the reach of these platforms, as a large share of migrants lack the documentation to open a bank account or they simply prefer to manage their financial transactions outside the financial system.

4.1 Heterogeneous Effects by Migrants' Country of Origin

While the switch to digital means seems to modestly contribute to the resilience of remittances to LAC amid the COVID-19 pandemic, one can still wonder if this effect is more marked for certain sending countries. For instance, the patterns exhibited in Figure 2 clearly show that Mexico was an outlier as remittances only experienced a short dip before returning to pre-event levels.

Panel (b) in Figure 7 shows that areas with a higher share of Mexican migrants experienced a stronger transition toward digital services in the early days of the lockdown. However, this difference quickly vanishes as time goes on. Moreover, there is no difference in the preference for in-person service by the share of Mexican migrants in the DMA.

These results suggest that the quick switch to digital platforms experienced by remittance senders to Mexico may play a role in the quick recovery of international transfer flows to Mexico.

5 Conclusions

Remittances constitute a significant safety net for millions of households in LAC. Consequently, changes in international transfers can be a crucial agent of transmission of the COVID-19 induced economic crisis from richer to poorer nations and from urban to rural areas. Containment measures to reduce the fatality rate and rates of contagion of COVID-19 around the world can certainly affect the size and frequency of remittance flows as well as the channels used to transfer them to the country of origin. On one hand, economy-wide strict closures affected labor earnings and migrants' ability to set money aside for their families back home. On the other hand, shutdowns also interrupted normal activities of remittance service providers, while travel limitations restricted the use of informal means such as sending cash through friends or through migrants' visits to the home country.

At the onset of the COVID-19 crisis, remittances to Latin American countries sharply fell, but soon proved resilient. Relying on data on queries to the search engine Google between December 2018 and July 2021, this study focuses on the potential role of the adoption of digital services as a way to circumvent the mobility restrictions imposed around the globe. We study the demand for in-person versus digital international transfer services and evaluate if the evolution in the take-up rates of different types of service providers traces the initial drop and subsequent rebound of remittances.

The results indicate that the drop and later rebound of remittances is accompanied by a modest and temporary increase in the demand for digital payment options that mirrors reduced usage of in-person services right after the COVID-19 shock. This pattern is consistent with a switch from brick-and-mortar means to digital payment mechanisms immediately after the implementation of mobility restrictions in the United States.

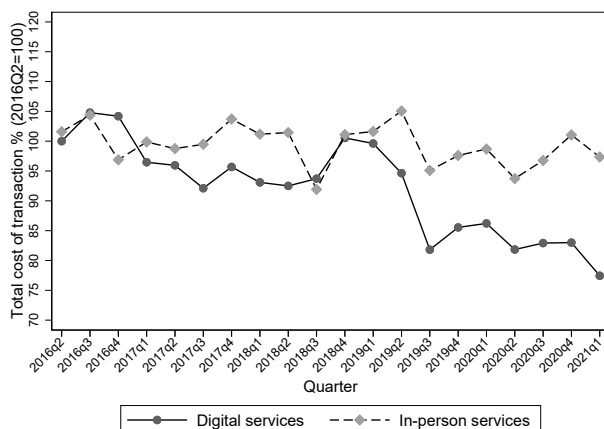
The short-lived increase in the usage of digital services may reflect temporary adaptation to mobility restrictions as opposed to increased adoption of these services. While digital providers were momentarily able to capture operations from new users who could no longer conduct their transactions in-person, this effect quickly vanishes, despite relatively lower transaction costs and fees. Thus, the results point to a missed opportunity to promote adoption and persistent usage of digital financial services. While the COVID-19 crisis has generated a push to accelerate the process of digitalization of our economies, more has to be done on the fronts of financial education and consumer protection to effectively accompany this transition process.

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Figures and Tables

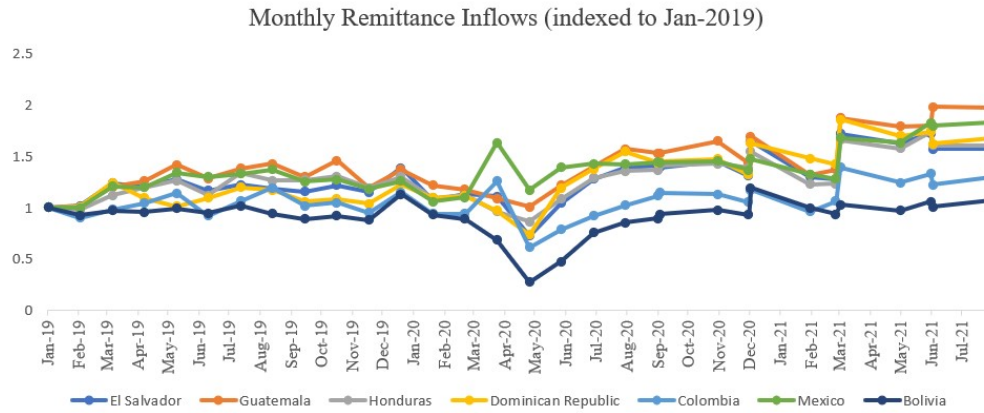
**Figure 1. Average Total Cost of Remittances Transactions from the United States to LAC
(%), by Type of Transaction**



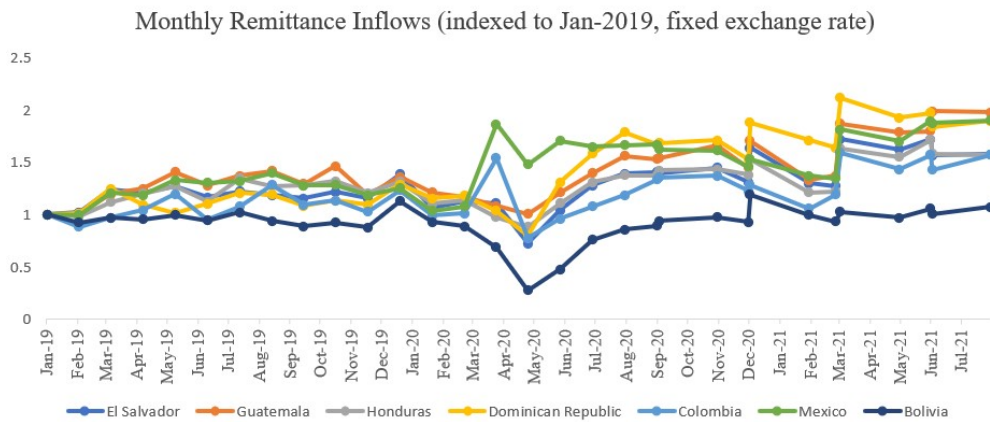
Note: The average total cost of remittances transactions by type of transaction is estimated as the average fee charged to send US\$200 (as a percentage of the amount sent), adjusted by the foreign currency exchange rate margin. The data reflect the cost of sending remittances from the United States to Latin American countries, excluding Cuba.

Source: World Bank, Remittance Prices Worldwide, available [here](#).

Figure 2. Remittances to Selected LAC Countries



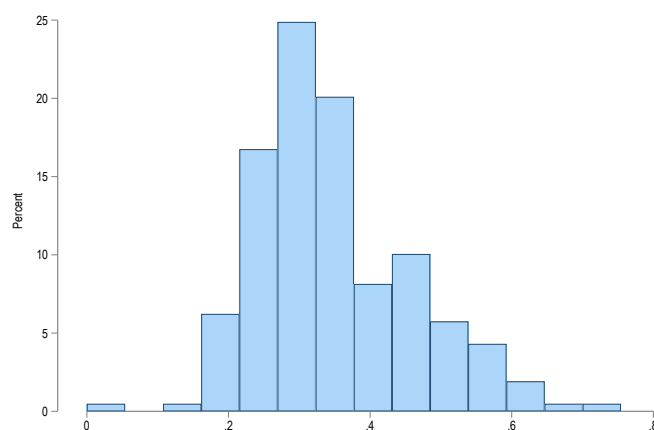
(a) Nominal exchange rate



(b) Fixed exchange rate

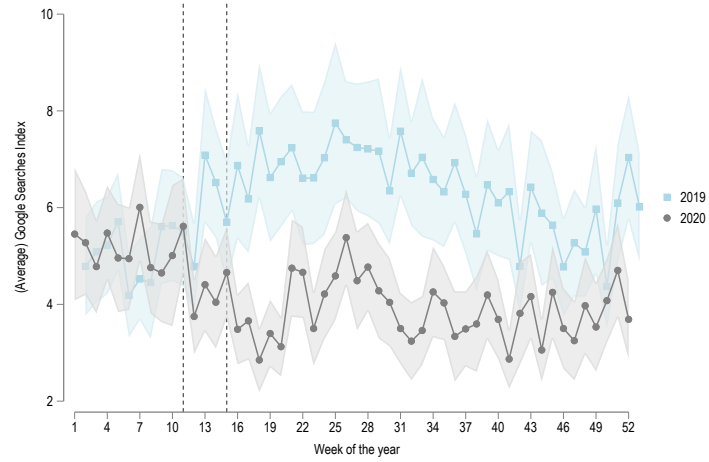
Source: Data on Monthly Remittance Inflows come from the central banks of the countries listed, which are countries that publish these flows on a monthly basis. Exchange rates also come from central banks.

Figure 3. Distribution of US Citizens Born in LAC as a Percentage of Each Metropolitan Area's LAC-Born Population

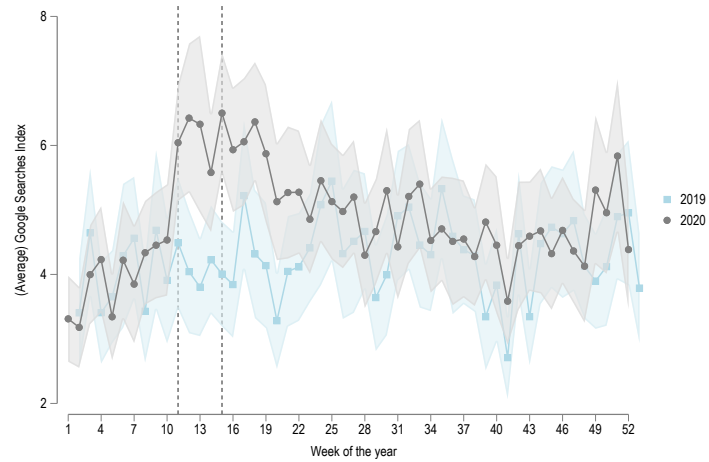


Source: Author's compilation based on data from the U.S. Census Bureau's pooled 2015-2019 American Community Survey.

Figure 4. Trends in Interest for In-Person and Digital Service Providers



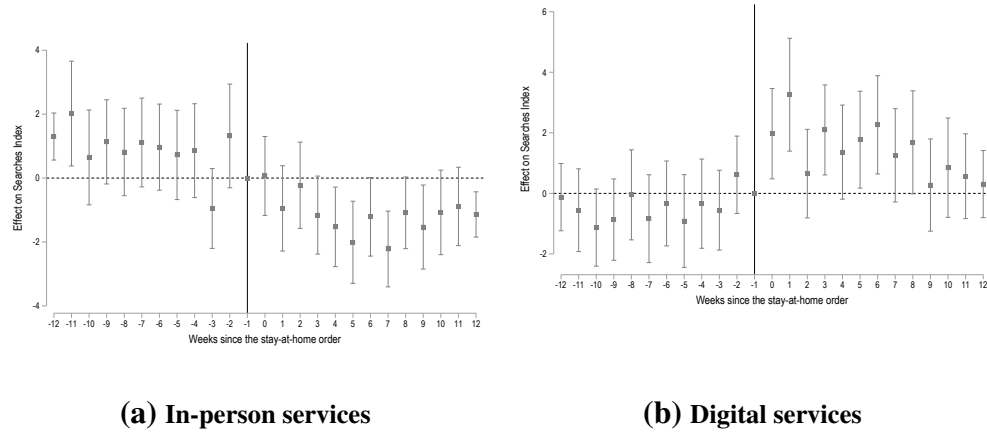
(a) In-person services



(b) Digital services

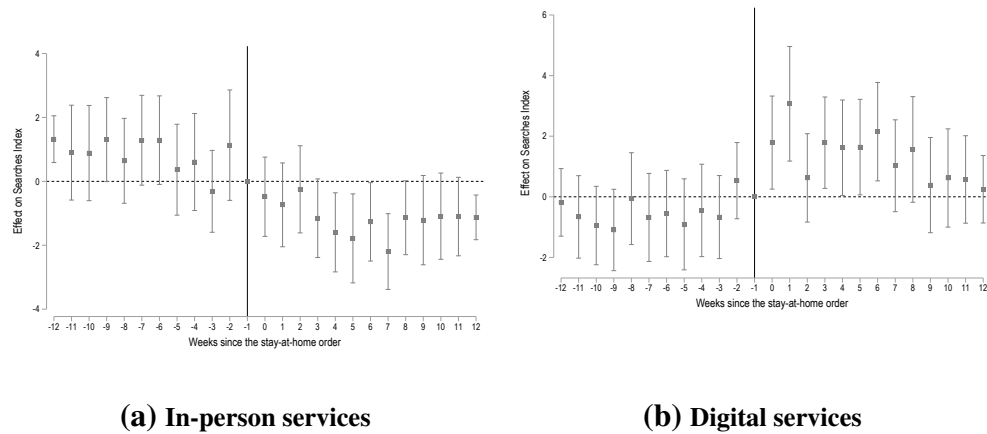
Note: Gray and blue lines report the average Google searches index for the weeks of 2020 and 2019, respectively. Shaded areas represent 95% confidence intervals. The first dashed vertical line represents the earliest week in which stay-at-home orders begin to be executed (March 15) and the second represents the latest week (April 7) in which they emerge.

Figure 5. Effect of COVID-19 Mobility Restrictions on Interest for In-Person and Digital Service Providers



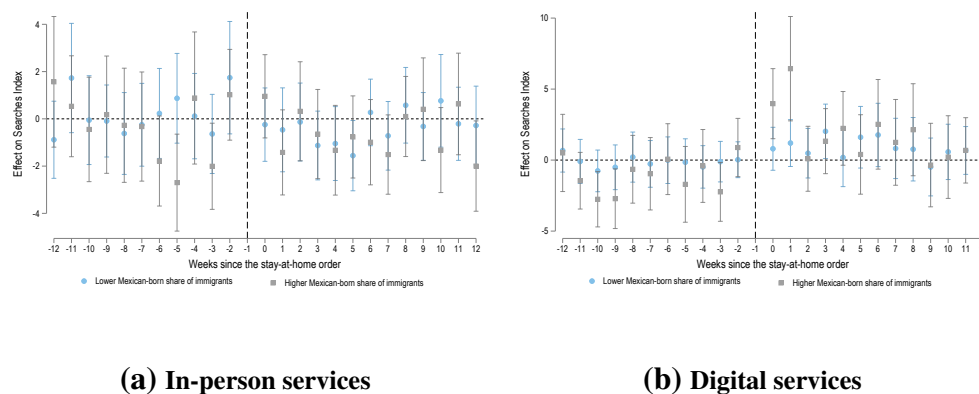
Note: Calendar dates are re-centered so that zero is the week of the event. The reference period is set as -1: the week prior to the effective implementation of each county's stay-at-home order. The gray squares display the estimated coefficients of a regression on the Google searches index, while the vertical lines around each marker reflect confidence intervals at the 95% level (calculated using robust standard errors clustered at the DMA level). All regressions include state-week, state, and week of the year fixed effects. Event defined following Moreland et al. (2020).

Figure 6. Effect of the Announcement of COVID-19 Mobility Restrictions on Interest for In-Person and Digital Service Providers



Note: Calendar dates are re-centered so that zero is the week of the event. The reference period is set as -1: the week prior to the announcement of each county's stay-at-home order. The gray squares display the estimated coefficients of a regression on the Google searches index while the vertical lines around each marker reflect confidence intervals at the 95% level (calculated using robust standard errors clustered at the DMA level). All regressions include state-week, state, and week of the year fixed effects. Event defined following Moreland et al. (2020).

Figure 7. Effect of COVID-19 Mobility Restrictions on Interest for In-Person and Digital Service Providers, Heterogeneous Effects by Share of Mexican Immigrants



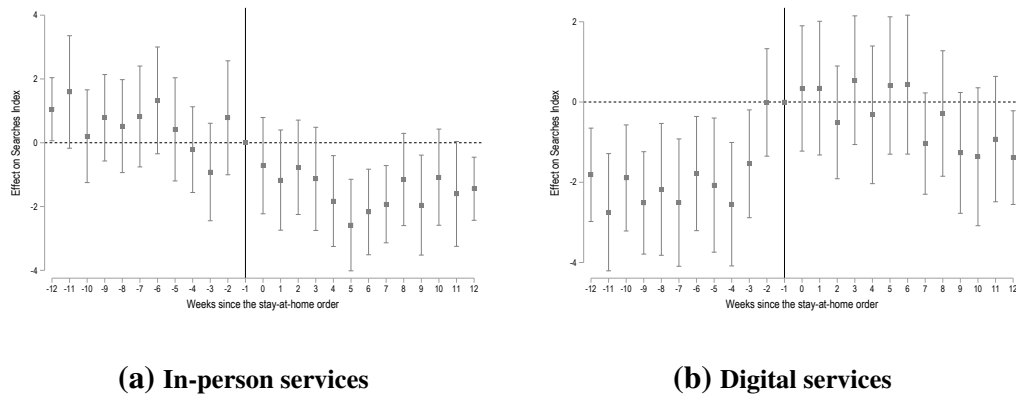
Note: Calendar dates are re-centered so that zero is the week of the event. The reference period is set as -1: the week prior to the effective implementation of each county's stay-at-home order. "Higher share of people born in Mexico" for each DMA is constructed as a dummy that equals 1 when the area has a share of Mexican immigrants in the top tercile. The gray and blue squares display the estimated coefficients of a regression on the Google searches index while the vertical lines around each marker reflect confidence intervals at the 95% level (calculated using robust standard errors clustered at the DMA level). All regressions include state-week, state, and week of the year fixed effects. Event defined following Moreland et al. (2020).

A Additional Figures and Tables

Table A.1. Global Queries Protocol

Global queries (Strategy 2)		
	Search	N. MAs found
In-person services	moneygram walmart + ria near + western union walmart + moneygram near + western union near	157
Online services	remitly + xoom + transferwise + worldremit + western union online + instarem + moneygram on- line	159

Figure A.1. Effect of COVID-19 Mobility Restrictions on Interest for In-Person and Digital Service Providers (Definition of the Event Based on Oxford Data)



Note: Calendar dates are re-centered so that zero is the week of the event. The reference period is set as -1: the week prior to the effective implementation of each state's stay-at-home order. The gray squares display the estimated coefficients of a regression on the Google searches index while the vertical lines around each marker reflect confidence intervals at the 95% level (calculated using robust standard errors clustered at the DMA level). All regressions include state-week, state, and week of the year fixed effects. Event defined following the Oxford COVID-19 Government Response Tracker.