

COVID-19 and remittances to Mexican states

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Abstract

With the onset of the COVID-19 pandemic and its negative effect on economic activity, a decrease in remittances was expected. However, on the contrary, remittances have increased in countries like Mexico. Using a fixed-effect model with information at the state level, this study finds evidence that the increase in COVID-19 cases was associated with a higher level of remittances to Mexican states, allowing some degree of insurance against the pandemic. However, remittances did not respond to the decrease in employment caused by the pandemic in local economies. A portion of the observed increases in remittances during the pandemic can be explained by factors at the national level.

Keywords: remittances; health shocks; COVID-19; poverty

JEL Classification Codes: D64, F24, I15

1. Introduction

With the emergence of COVID-19, a drastic decrease in remittance flows close to 6% was expected because of pandemic containment measures and its impact on economic activity (International Organization for Migration, 2020). However, although a decline was recorded globally towards May 2020, remittance flows had recovered and showed positive year-on-year growth rates at the end of that year. Among the possible causes of this resilience of remittances are altruistic motives of migrants, a change in sending pattern towards formal channels and fiscal stimulus in some countries where remittance originates (Kpodar, Mlachila, Quayyum and Gammadigbe, 2021). At the end of 2021 remittances were expected to grow 7.3 percent with the stronger increase in Latin American countries (World Bank, 2021)

Mexico is one of the main recipients of remittances and one of the countries with the highest number of deaths during the pandemic. In the case of Mexico, remittances increased in 2020 and 2021. This study aims to deepen the relationship between the COVID-19 crisis and the sending of remittances to Mexico at the subnational level. We incorporate the registered cases

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of the pandemic at the state level as an explanatory variable of remittances. Thus, we analyse the direct effects of health shocks on remittances. Our results indicate that a new case of COVID-19 has been associated with a \$490 increase in remittances. However, consistent with the results in previous literature, remittances did not increase in the face of the employment decline at the local level in Mexico during the pandemic crisis. Moreover, the robustness of the effect depends on the inclusion of quarter effects, showing a significant increase in remittances to all Mexican states during the pandemic.

The migration literature has emphasised the importance of remittances in reducing vulnerability to income risks. One reason for migration is to measure insurance against shocks in the origin regions (Rapoport and Docquier, 2006; Stark and Bloom, 1985). There is evidence that remittances can reduce consumption volatility in developing countries at the aggregate level (Combes and Ebeke, 2011). In particular, this is relevant to reducing the negative effects of changes in terms of trade or natural disasters (Bettin, Presbitero and Spatafora, 2017; Mbaye and Drabo, 2017). However, the recent COVID-19 crisis was a shock not specific for single country or region. Both, the regions of origin and reception of remittances were affected by this aggregate shock. For example, in Kenya, at the household level, a decrease in the receipt of remittances was observed in the first few months following the implementation of pandemic containment measures, despite a significant decrease in household income. This suggests that COVID-19 has reduced informal coverage against risk and social support (Janssens et al., 2021). Meanwhile, in the cases of Tajikistan and Nigeria, remittances served as a form of insurance for recipient households in the face of adverse shocks due to COVID-19 (Akim, Ayivodji and Kouton, 2021; Shimizutani and Yamada, 2021).

In the case of Mexico, although remittances serve as a partial insurance mechanism against job loss, their effectiveness was drastically reduced during the global shock of 2008 that affected the economies of Mexico and its main source of remittances, the United States (Lara, 2016). The limited effect of remittances on employment at the subnational level in the recent COVID-19 shock has also been documented (Ambrosius, Campos Vázquez and Esquivel, 2021). Additionally, border closure limited to essential travel made it impossible for migrants to travel regularly between Mexico and the United States; in these travels, they take the opportunity to remit in cash or in-kind, which are not registered because the transactions are not conducted through the financial system. This type of travel occurs more frequently with shorter distance to the border. Ongoing research shows that in the first months of the implementation of border closure mechanisms, remittances increased the most near the border (Dinarte, Jaume, Medina-Cortina and Winkler, 2021). Therefore, the increase in remittances recorded in formal channels could only be due to an informal channel replacement. However, the impact on employment or the closure of borders was not the only source of disruption to households during the pandemic. Additionally, the development of the pandemic could incur health expenses that needed coverage. Thus, to determine whether remittances responded to the health expenses caused by the pandemic, we must include the positive COVID-19 cases in our estimations.

The remainder of this paper is structured as follows. Section 2 presents the empirical strategy. Section 3 establishes data sources, and Section 4 presents results of the econometric model. Finally, Section 5 concludes the paper.

2. Methods

This study covers the period from January 2019 to June 2021, 1 year before the pandemic and six quarters after the first reported COVID-19 case in Mexico. To establish the relationship between the pandemic course, the effects on employment in both Mexico and the United States and remittances to Mexican states we estimate the following model:

$$REM_{i,t} = \beta_1 CC_{it} + \beta_2 EmplMx_{it} + \beta_3 EmplUS_{it} + \beta_4 Covid_t * Dist_i + \delta_t + \alpha_i + u_{it} \quad (1)$$

where REM represents remittances received by state i in quarter t . CC represents the number of COVID-19 cases in state i and quarter t . $EmplMx$ is the total employment in state i and quarter t , and $EmplUS$ is the sum of employment in the United States. Here each US state's employment in the destination economy is weighted with the proportion of migrants from the state of origin in Mexico. δ_t and α_i are quarter and fixed effects by Mexican state, respectively. $Covid$ is a dummy variable with 1 after the quarter with the first registered case of COVID-19, and $Dist$ is the mean distance of the Mexican state to the border. Our goal is to determine whether a higher number of COVID-19 cases is associated with an increase in remittance flow (i.e. $\beta_1 > 0$). We also expect that, if remittances have a component of altruism due to shocks in the economy of origin, an increase in employment in Mexico will reduce remittances (i.e. $\beta_2 < 0$). On the contrary, we expect that a greater economic activity in the destination economy will increase remittances (i.e. $\beta_3 > 0$). Finally, if formal remittances tended to replace informal ones, we expect a smaller increase when moving away from the border after the onset of COVID-19 and travel restrictions at the border (i.e. $\beta_4 < 0$). We consider that errors are grouped by Mexican state. Our basic specification is in levels, but our results also present specifications using logarithms.

3. Data

Quarterly remittance data are obtained from the Bank of Mexico's balance of payments¹. For the COVID-19 data, we use the information published by the federal government². To recover total employment data by each of 32 Mexican states, we use the National Survey of Occupation and Employment, a survey by the National Institute of Statistics and Geography (INEGI)³. In the second quarter of 2020, a representative sample was not raised at state level because of the face-to-face contact restrictions. Thus, to obtain total employment in each Mexican state in that quarter, we used the results at the state level estimated by INEGI on the proportions of economically active population and employed population⁴. Meanwhile, the data on quarterly employment for each state in the United States are obtained from the US Bureau of Labor Statistics⁵. Moreover, information on the proportion of migrants originating from Mexican states in US states was obtained from the database on Consular Matrícula of the Ministry of Foreign Affairs⁶.

Figure 1 shows the evolution of the variables 1 year before the first quarter with a confirmed case of COVID-19 and the subsequent six quarters of the pandemic. In panel A, we observed that remittances grew after the quarter with the first recorded case of the pandemic (2020Q1), with the most significant increase in the last quarter (2021Q2). Although the first case of the pandemic was recorded in the first quarter of 2020, the number of COVID-19 cases in Mexico started to increase significantly in the second quarter of that year, reaching a maximum in the first quarter of 2021. After that period, which coincided with the increased availability of vaccines, cases decreased significantly. On the employment side, both in Mexico and the United States, a profound decrease in total employment was recorded in the second quarter of 2020. Subsequently, a gradual recovery is observed, already reaching the levels before the pandemic

¹ <https://www.banxico.org.mx/SieInternet/consultarDirectorioInternetAction.do?sector=1&accion=consultarDirectorioCuadros&locale=es>

² <https://datos.covid-19.conacyt.mx/#DownZCSV>

³ <https://www.inegi.org.mx/programas/enoe/15ymas/#Tabulados>

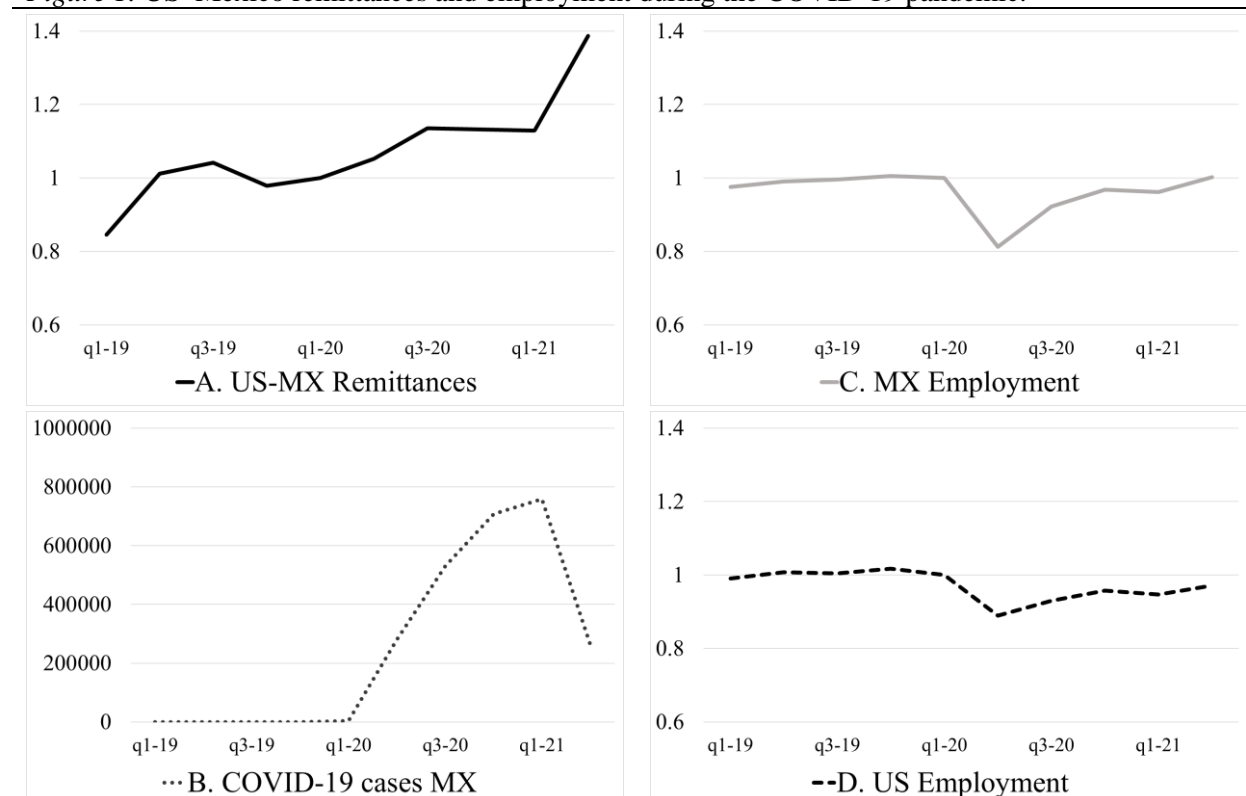
⁴ https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2021/especiales/IndLablesEntiFed2020_06.pdf

⁵ <https://www.bls.gov/cew/>

⁶ https://ime.gob.mx/estadisticas/usa/historico/h_2017/historico_2017_pruebas.html

in the last quarter of observation (2021Q2) in the case of Mexico. National patterns have variations at the state level. For example, the increase in remittances between 2019 and the periods after the beginning of the pandemic ranged from a figure almost zero percent in the state of Tlaxcala and an increase of 37 percent in the state of Quintana Roo. Also, the COVID-19 figures had a differentiated effect on the national territory, with lags in the arrival of each wave by state.

Figure 1. US–Mexico remittances and employment during the COVID-19 pandemic.



Notes: Remittances and employment normalised (2020Q1) = 1. COVID-19 cases in MX in absolute numbers.

4. Results

To establish whether an association exists between the course of the pandemic or employment in both countries and the increase in remittances observed in Figure 1A, we present the results of equation (1) in Table 1. In panel A, the equation was estimated in levels. The first column notes that each recorded case of COVID-19 was associated with a \$581 increase in remittance receipt. Similar increments are observed in columns 2 and 3, that is, 479 and 490, respectively. Employment variables are not significant in the estimation in levels of panel A, Table 1. In the post-COVID-19 period, 2020Q1–2021Q2, the increase in remittances is more profound for Mexican states far from the border with the United States, but only in the specification without temporal effects. Therefore, the expectation that this parameter would be negative when informal remittances were replaced by formal ones is not met.

To conduct the estimation of equation (1) in logarithms of panel B, Table 1, we considered that each Mexican state had a case of COVID in the periods in which it had zero cases. Then, the logarithm of COVID-19 cases in all periods can be calculated. In panel B of Table 1, the logarithm of COVID-19 cases is significant, but only without considering quarterly effects. Employment in the United States also has a positive and significant effect on this specification.

To verify the robustness of our results we carry out different tests. In first instance, because Mexicans have a different sectoral distribution than the U.S. population, with higher participation in sectors like construction, the evolution of their employment may differ from the general population (Villarreal, 2014). To take into account this, we use data from the Current Population Survey, which includes information about place of birth, and we recalculated the population employed in US in each quarter only with those born in Mexico. There was no relevant qualitative modification in magnitude or statistical significance following specifications in Table 1. As a second test, we consider that the effects on remittances could occur after some months after shocks in health or employment. For this, we use the explanatory variables lagged a quarter. In this case the magnitude of the estimators in Panel A on COVID-19 cases increased, being greater than 700 dollars per case in the previous quarter in all the specifications. The behavior of the other variables was similar, without being significant in the estimates with fixed effects. When using logarithms with the lagged variables, the estimators were not significantly modified from those in Panel B of Table 1. Finally, instead of cases, we use recorded deaths. The parameter on COVID-19 deaths increased in all similar specifications of panel A, Table 1, being statistically significant in column 3. For the rest of the variables and in Panel B of Table 1 there were no important modifications.

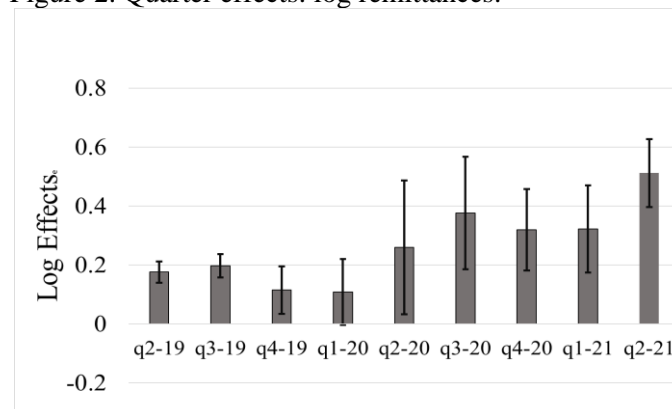
Table 1. COVID-19 Cases, Employment and Remittances.

| <i>A. Remittance Levels</i> | | | | | |
|--------------------------------------|------------|------------|------------|----------|----------|
| | (1) | (2) | (3) | (4) | (5) |
| COVID-19 cases | 581.035*** | 478.550*** | 490.476*** | | |
| | [151.926] | [118.204] | [64.295] | | |
| US employment | 7.036 | -35.396 | | -33.550 | |
| | [9.222] | [25.921] | | [31.342] | |
| MX employment | 2.154 | 1.316 | | | 2.949 |
| | [11.835] | [11.487] | | | [12.036] |
| COVID-19 period × Distance to border | 0.060*** | 0.004 | 0.008 | 0.002 | 0.007 |
| | [0.015] | [0.017] | [0.019] | [0.017] | [0.019] |
| Observations | 320 | 320 | 320 | 320 | 320 |
| State-fixed effects | Yes | Yes | Yes | Yes | Yes |
| Quarter effects | | Yes | Yes | Yes | Yes |
| <i>B. Log Remittances</i> | | | | | |
| Log COVID-19 cases | 0.035*** | -0.006 | -0.005 | | |
| | [0.003] | [0.011] | [0.011] | | |
| Log US employment | 1.809*** | 0.006 | | 0.035 | |
| | [0.219] | [1.386] | | [1.380] | |
| Log MX employment | -0.008 | 0.007 | | | 0.004 |
| | [0.015] | [0.015] | | | [0.015] |
| COVID-19 period × Distance to border | -0.035 | 0.016 | 0.017 | 0.015 | 0.014 |
| | [0.040] | [0.037] | [0.030] | [0.036] | [0.031] |
| Observations | 320 | 320 | 320 | 320 | 320 |
| State-fixed effects | Yes | Yes | Yes | Yes | Yes |
| Quarter effects | | Yes | Yes | Yes | Yes |

Notes: Quarterly data for 32 Mexican states over the period 2019Q1–2021Q2. COVID-19 period covers 2020Q1–2021Q2. US employment denotes the US state's occupation weighted by the proportion of migrants from each Mexican state using Matrícula Consular data in 2017. MX employment is the occupation in each Mexican state. Panel A shows the remittances, COVID-19 cases and employment in levels. Panel B presents the remittances, COVID-19 cases and employment in logs * $p < .01$, ** $p < .05$, $p < .10$.

Specifications with logarithms in columns 2–5 in panel B of Table 1 suggest that state-level variations in remittances were not related to health and employment aspects of COVID-19, with our robustness test showing almost the same pattern. However, this does not mean that local economies did not receive more remittances during the pandemic. Figure 2 shows the quarter effects of the estimates in Table 1 (panel B, column 2). The specification in logarithms shows a significant increase in the reception of remittances from 2020Q2 until the most recent period, suggesting that all states have been receiving more remittances in the pandemic period, as can be seen from panel A of Figure 1. This holds even without considering the exchange rate effect that increased the purchasing power of every dollar received in the initial quarters of the pandemic.

Figure 2. Quarter effects: log remittances.



Notes: Quarter effects with respect to 2019Q1. Remittances, COVID-19 cases and employment in logs. This specification include quarter and state-fixed effects and the interaction between the period after the first case of COVID-19 and distance to the border.

5. Concluding remarks

COVID-19 was associated with an increase in remittances to Mexico. However, this association could only be found in specifications for the number of COVID-19 cases and not for job losses at the local level. The majority of observed increases in remittances in Mexico come from a pattern of widespread increase at the national level when using logarithms. Remittances could serve as an insurance mechanism for some recipient households and can be considered countercyclical in more aggregate terms. However, results show that remittances as an insurance mechanism could face difficulties identifying the most affected regions, particularly for employment shocks. Therefore, remittances cannot be considered a close substitute for public policies for COVID-19 shocks at the local level. Migrants may have responded by sending remittances due to negative news at the national level, not closely related to the evolution of the pandemic in regions or households of origin. Future studies attempting to explain the flow at the national level could reveal whether factors such as exchange rate or US fiscal stimulus during the pandemic explain these flows to a greater extent. We find the puzzling fact that remittances were unaffected by evolution of employment in the US, but this could be a specific fact of the pandemic times and due that income from fiscal stimulus substituted income from employment. More research is also needed at the household level in Mexico to understand the extent in which remittance-receiving households could deal with the pandemic, our estimations suggest that they received more remittances but with time lags after shocks.

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