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Remittances and Social Safety Nets during COVID-19: Evidence from Georgia and the Kyrgyz Republic

Nordine Abidi, Mehdi Akhbari, Bashar Hlayhel, and Sahra Sakha
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Prepared by Nordine Abidi, Mehdi Akhbari, Bashar Hlayhel, and Sahra Sakha *

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ABSTRACT: Remittance flows in emerging market and developing economies were surprisingly resilient during the COVID-19 crisis, providing much-needed income support for remittance-receiving households. However, households were impacted differently across income distributions. Using novel high-frequency household panel data for Georgia and the Kyrgyz Republic and a difference-in-differences approach, we find that as household income fell during the pandemic, remittance-receiving households were more affected than non-remittance-receiving households. Importantly, we find that the incomes of poor, remittance-receiving households in the Kyrgyz Republic were more adversely affected than their non-remittance-receiving counterparts. In contrast, in Georgia, affluent remittance-receiving households experienced more significant income declines than poor remittance-receiving households. This heterogeneous impact can largely be explained by variations in the effectiveness of social safety nets in the two countries. Our results have important policy implications. Although remittances remained resilient during the pandemic, they affected households differently. As such, policymakers should prioritize addressing gaps in social safety nets to support the most vulnerable.

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WORKING PAPERS

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Introduction

Remittances—money sent home by migrant workers in foreign countries—provide a financial lifeline to millions worldwide. These funds represent a critical source of income for low-income developing countries and emerging market economies, often exceeding the amount of official development assistance and foreign direct investment.¹

Despite the COVID-19 pandemic, global remittance flows remained resilient in 2020, registering a smaller decline than initially projected (Kpodar and others 2021; World Bank 2021) due to better-than-expected economic conditions in host countries, a shift in flows from cash to digital and from informal to formal channels, and cyclical movements in oil prices and currency exchange rates (World Bank 2021).

Still, the strength of aggregate remittances during the pandemic could mask important differences in flows across households. For example, there may be significant heterogeneity among the types of immigrants sending remittances. Furthermore, the policy response of the host country to contain the health crisis (containment measures or policy support) could have affected remittance flows during the pandemic. In fact, Kpodar and others (2021) found a more pronounced drop in remittances from countries with stricter containment measures.

Most studies on the behavior of remittances during the pandemic rely on balance of payments data and do not consider the distributional impact of remittances on household incomes. Dinarte and others (2021) and Jyoti (2021) observed a significant increase in formal remittances to Mexico and Bangladesh, respectively, despite record unemployment in remittance-sending economies during the pandemic. Similarly, Kpodar and others (2021) found that remittances showed signs of resilience after an initial decline. One of the few papers using household data, Shimizutani and Yamada (2021), found a significant but transitory drop in remittances to Tajikistan. While all this evidence suggests aggregate remittances were resilient early in the pandemic, some remittance-receiving households may have been more susceptible to declining remittances, and social policies may have played a stabilization role. Our paper aims to fill these gaps.

We use novel high-frequency panel household data for Georgia and the Kyrgyz Republic to assess the impact of remittances on household incomes in the immediate aftermath of the onset of the COVID-19 pandemic. The pandemic affected the two countries differently due to their diverse characteristics. Although both rely heavily on remittances (31 percent of GDP in the Kyrgyz Republic and 13 percent in Georgia), remittances from Russia account for a significantly higher share (84 percent) in the Kyrgyz Republic than in Georgia (25 percent).² Furthermore, more poor Kyrgyz households receive remittances than Georgian ones. In addition, Kyrgyz migrant workers tend to come from households with lower education levels than those from Georgia. The coverage and design of the two countries' social safety nets also differ, with implications for mitigating the adverse effects of remittance declines during the pandemic.

¹ For instance, remittance flows in 2018 to low-income and fragile states reached about \$350 billion, surpassing foreign direct investment, portfolio investment, and foreign aid (World Bank Indicators 2022).

² The Kyrgyz Republic's heavy reliance on remittances from Russia is likely to exacerbate a fall in remittances and its impact on welfare. A simulation exercise shows that the potential decline in remittances from Russia in the medium term will worsen poverty and inequality in both the Kyrgyz Republic and Georgia, with a more significant effect on the Kyrgyz Republic due to its greater reliance on remittances (IMF 2022).

To the best of our knowledge, this study is the first to utilize panel household datasets to provide a detailed picture of the impact of the decline in remittances due to the COVID-19 pandemic on households across income distributions. Our dataset has several advantages. First, using national household survey data (instead of aggregate balance of payments data) allows us to measure the economic well-being of households and identify potential risks (Dinarte and others 2021; Jyoti 2021). Additionally, national household survey datasets, although prone to potential underreporting of remittances, are more likely to provide a clear picture of the behavior of remittances during economic shocks (Roberts 2004; Acosta 2006; Acosta and others 2006; Freund and Spatafora 2008). Our longitudinal dataset also allows us to use an empirical approach to establish a relationship between remittances and household incomes in a more rigorous way by allowing us to correct for unobserved factors and address important endogeneity issues. Finally, while recent research (for example, Shimizutani and Yamada 2021) examines household incomes qualitatively, our datasets allow us to quantitatively explore the pandemic's impact at the household level and across different income groups.

The empirical strategy relies on a difference-in-differences approach that identifies the effect of the pandemic shock across households (similar to Shimizutani and Yamada 2021). Like other studies, we find that the COVID-19 pandemic led to a decrease in remittance flows but the impact of the shock was short-lived. We also find that remittance receivers were more severely affected, irrespective of their position in the income distribution. Poor remittance-receiving households in the Kyrgyz Republic were affected worse than their non-remittance-receiving counterparts. In contrast—and mainly reflecting the mitigating impact of social transfers to the poor—affluent remittance-receiving households in Georgia experienced more significant income declines than their poor counterparts, underscoring the critical role of social transfers in mitigating adverse shocks.

From a policy perspective, the unexpected resilience of remittance flows during the COVID-19 crisis underscores the importance of timely high-frequency data to assess the impact of economic developments on vulnerable populations. Our results suggest that efforts to strengthen social protection through better-targeted support are important to mitigate risks. If migration and remittances unexpectedly decline, well-targeted cash transfers can support remittance-receiving and vulnerable households. Returning migrants can benefit from training to reenter domestic labor markets. Reducing the cost of money transfers through digitalization efforts can facilitate remittance flows. Adequate and timely policy responses from both remittance-sending and remittance-receiving countries are critical to helping migrant workers improve the resilience of remittance flows.

This paper is organized as follows. Section II presents a brief overview of the data. Section III details the sources of remittance flows and the socioeconomic characteristics of households receiving remittances. Section IV describes the empirical model, and sections V and VI present the results and robustness checks. Section VII concludes with policy implications.

Data

Our analysis employs 2019 and 2020 household survey data for the Kyrgyz Republic and Georgia. These data contain detailed information on income sources³, family characteristics (number of family members, their age, employment, education), places of residence (urban, rural), and consumption (food, services).

The three main variables we use are total income, remittances, and social transfers. The datasets for both countries include detailed information on income sources⁴. Remittances are defined in the Georgia survey as the average amount of remittances received from abroad over the past three months. In case of the Kyrgyz Republic, remittances correspond to the sum of two survey questions: (1) “*What income did your family earn from income activities outside the Kyrgyz Republic?*” and (2) “*What income has your family received from relatives and friends living outside of the Kyrgyz Republic?*”.

The two countries define social transfers slightly differently. For the Kyrgyz Republic, the social transfers variable comes from the survey question: “*What income did your family receive from standard monthly benefits for low-income families and individuals?*”. For Georgia, the social transfer variable includes all government-provided social transfers (for example, pensions, low-income assistance programs, and scholarships). While the definition of social transfers for Georgia includes more than just low-income assistance programs, we assume that this variable is a good proxy for low-income transfers since our analysis only covers poor households.⁵

Each household has a unique identifier in both datasets, allowing us to track them over time. For Georgia, our datasets include information on each household every other quarter for two years (a total of four observations). For the Kyrgyz Republic, we have monthly income data for each household. We perform our analysis at quarterly frequencies and aggregate data for both countries accordingly. Data on household characteristics are annual. In total, we have data for 11,636 households in Georgia and 5,270 households in the Kyrgyz Republic; 4,161 and 4,739 households form a balanced panel, respectively.

All nominal variables are converted to 2011 PPP US dollars to ensure comparability. Following the World Bank’s methodology to compute poverty and inequality statistics, we convert all nominal variables to 2011 local currency using data from the IMF’s World Economic Outlook database and then convert them to PPP dollars using data from the World Bank’s International Comparison Program.

³ Underreporting of income is a persistent challenge in many countries and is not unique to the COVID-19 pandemic. Our differences-in-differences identification strategy eliminates the effect of income underreporting of our results if it follows the same pattern before and after the pandemic.

⁴ Data on consumption is not available for both countries on a quarterly frequency, which is why we focus the impact on income rather than consumption.

⁵ Pensions do not constitute a significant share of income at the lower end of the income distribution. Moreover, they are relatively stable over time, so time trends will not adversely affect our difference-in-differences identification strategy.

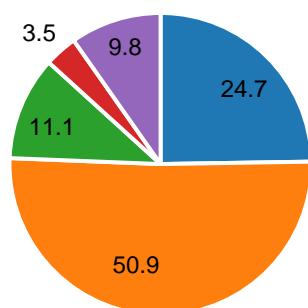
Descriptive Statistics

Heterogeneity in Sources of Remittances

Figure 1 shows the sources of remittances for Georgia and the Kyrgyz Republic in 2019. Whereas 84.2 percent of remittances in the Kyrgyz Republic originate from Russia, the share is below 25 percent in Georgia. Other European countries are Georgia's primary sources of remittances (50.9 percent). Georgia also receives a significant share of remittances from North America.

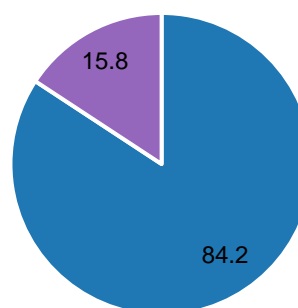
Figure 1. Sources of Remittances: Georgia and Kyrgyz Republic, 2019

1. Sources of Remittances in Georgia
(Percent of total remittances)



■ Russia ■ Europe ■ North America ■ CCA ■ Other

2. Source of Remittances in the Kyrgyz Republic
(Percent of total remittances)



■ Russia ■ Other

Sources: IMF Balance of Payments and International Investment Position Statistics Database; Central Bank of the Russian Federation; National Bank of Georgia; IMF staff calculations.

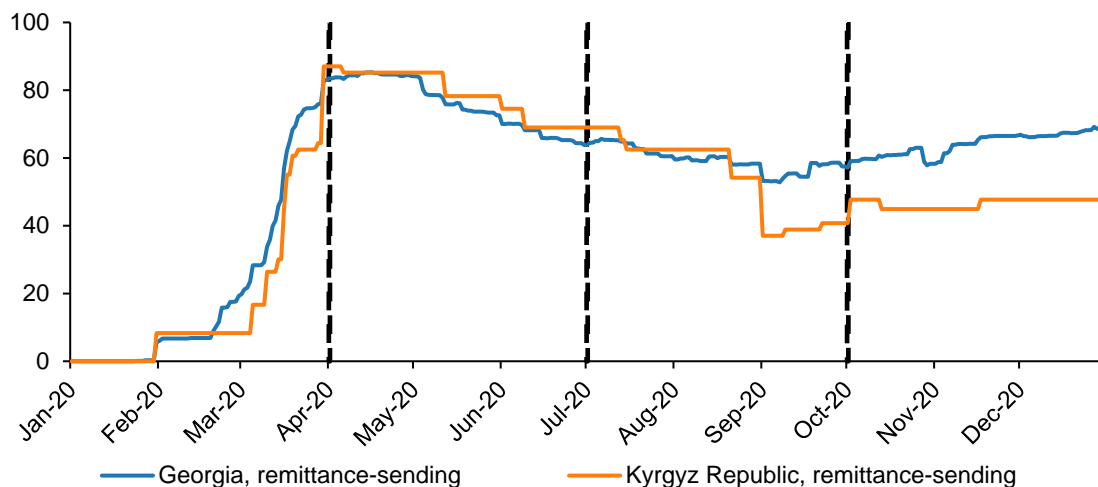
Note: European countries in order of significance are Italy, Greece, Israel, Turkey, Germany, Ukraine, Spain, France, the United Kingdom, and Ireland. North American countries are the United States and Canada, and other CCA countries are Kazakhstan, Azerbaijan, and Armenia in order of significance. The countries indicated by "Other" are unknown. CCA = Caucasus and Central Asia.

Stringency Index for Remittance-Sending Countries

Figure 2 depicts the weighted average of the Oxford Stringency Index—a measure of the tightness of COVID-19-related policy restrictions—for the countries that send remittances to Georgia and the Kyrgyz Republic.⁶ This variable evolved similarly for both countries in the first two quarters of 2020. However, in the third quarter of 2020, it declined for the Kyrgyz Republic while in the last quarter it increased for Georgia. This divergence resulted from tighter restrictions in European countries (Georgia's primary source of remittances) and a relaxation of restrictions in Russia (the Kyrgyz Republic's primary source of remittances).

⁶ The weights for each sending country are their shares of remittances to the destination country. The calculations ignore unknown sources of remittances.

Figure 2. Average Oxford Stringency Index for Remittance-Sending Countries to Georgia and Kyrgyz Republic, 2020

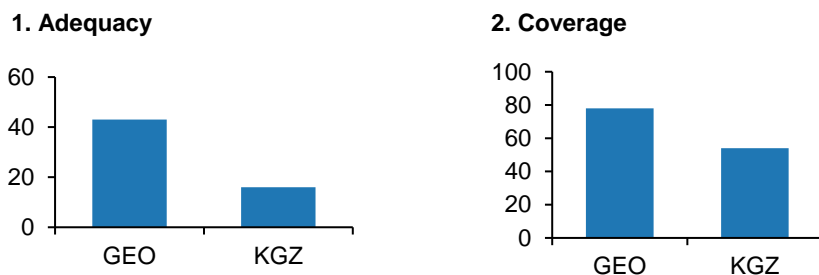


Sources: Authors' calculations using data from www.ourworldindata.org; National Bank of Georgia; IMF Balance of Payments and International Investment Position Statistics Database; Central Bank of the Russian Federation.
 Note: The weights for each source country are their shares of remittances to the destination country. Unknown countries are ignored in the calculations. Dashed vertical lines indicate the beginnings of quarters.

Differences in Social Safety Nets

Significant differences exist between Georgia and the Kyrgyz Republic in the adequacy and coverage of social transfers. Georgia does significantly better than the Kyrgyz Republic in terms of adequacy (the total transfer amount received by beneficiaries in the bottom quintile as a share of total income), and coverage (the share of the population in the bottom quintile receiving social transfers) of social transfers. About 78 percent of Georgians in the bottom quintile of the income distribution receive social transfers. In contrast, only 54 percent of the bottom quintile in the Kyrgyz Republic receive social transfers. Georgia's social transfer system is thus more efficient on aggregate, making it more likely to mitigate the impact of a decrease in remittances on incomes for remittance-receiving households.

Figure 3. Coverage and Adequacy of Social Transfers: Georgia and Kyrgyz Republic



Source: Authors' calculations based on household survey data for each country.
 Note: The data correspond to the latest available year for each country. Coverage is the share of the population in the bottom quintile receiving a social transfer; adequacy is the total transfer amount received by beneficiaries in the bottom quintile as a share of the total income or expenditure of beneficiaries. Country abbreviations are International Organization for Standardization country codes.

Comparing the sources of income in Georgia and the Kyrgyz Republic highlights the important role that social transfers played in mitigating the pandemic's impact (Table 1).⁷ While most income categories for all income groups across the two countries declined, social transfers increased for all income groups in Georgia. However, they remained relatively stable in the Kyrgyz Republic, which translated into a greater decrease in household income in the Kyrgyz Republic than in Georgia, particularly for the poor⁸.

Table 1. Sources of Income: Georgia and Kyrgyz Republic, 2019–20

1. Georgia		Total Income	Employment	Self Employment	Remittances	Social Transfers	Other Income
2019	Poor	108.57	27.76	9.80	2.39	43.80	24.82
2020	Poor	107.51	25.58	8.77	2.56	44.29	26.31
2019	Medium	238.98	99.72	26.28	7.96	58.01	47.00
2020	Medium	230.68	88.35	20.99	5.61	67.51	48.21
2019	Rich	556.31	288.13	60.65	30.27	54.19	123.06
2020	Rich	506.87	267.26	44.00	22.96	67.25	105.41
2. Kyrgyz Republic		Total Income	Employment	Self Employment	Remittances	Social Transfers	Other Income
2019	Poor	140.58	47.47	23.15	3.93	20.99	20.44
2020	Poor	133.45	47.52	22.25	2.93	19.20	18.36
2019	Medium	233.93	95.33	41.34	5.57	31.19	38.86
2020	Medium	221.78	89.58	37.82	5.06	30.47	36.01
2019	Rich	476.50	185.10	64.31	31.07	72.21	106.34
2020	Rich	446.64	177.46	55.15	24.16	72.24	98.94

Source: Authors' calculations based on household survey data for each country.
Note: Variables are expressed in 2011 PPP US dollars.

Socioeconomic Characteristics of Households

Remittance flows constitute a significant share of income for many households and help to alleviate poverty. The share of poor households that receive remittances is higher in the Kyrgyz Republic than in Georgia, with shares in the bottom half of the income distribution ranging from about 8.5 percent in the Kyrgyz Republic to

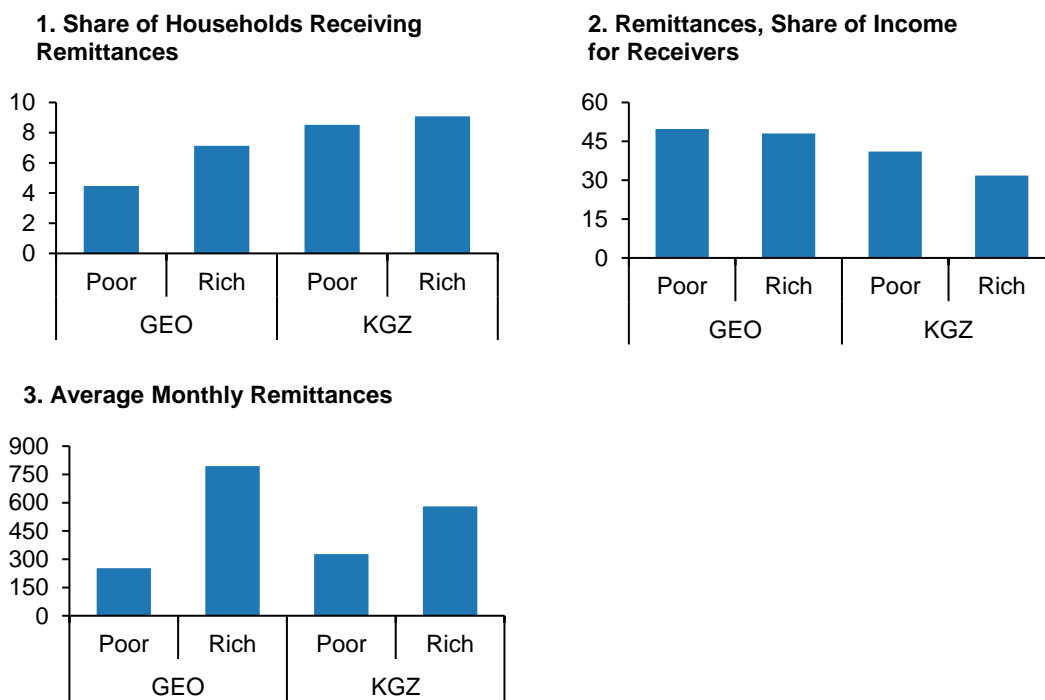
⁷ According to the 2022 IMF Article IV on Georgia, the authorities are “*continuing to improve Targeted Social Assistance—the primary mechanism for supporting vulnerable families—by updating the proxy-means-testing formula and digitalizing the system to make it more efficient*”. Put differently, Georgia's SSN includes both means-tested and categorical programs, with means-tested programs primarily targeted at households with low income and assets, and categorical programs targeted at specific demographic groups such as the elderly, persons with disabilities, and children. In the 2022 report of the IMF called “*Social Safety Nets and Poverty in the Kyrgyz Republic in Selected Issues Paper*”, it was noted that “*Social assistance programs in the Kyrgyz Republic are mainly categorical and provide flat benefits, with a limited role for non-demographically targeted benefits*”. In other words, the country's categorical approach to social assistance may be more effective in reaching vulnerable groups but may also be less efficient compared to means-tested approaches. Indeed, the categorical approach has helped to target benefits to specific groups, such as the elderly, disabled, and children, who are more likely to be living in poverty. However, this approach can be less efficient in terms of reaching other groups who may also be in need of assistance but do not meet the specific demographic criteria for categorical benefits.

⁸ We acknowledge that social transfers are prone to considerable underestimation, especially for the Kyrgyz Republic (IMF 2022, World Bank 2022). This is because surveys may not capture all the categorical transfers that benefit specific categories of people and may also underestimate the impact of the means-testing program for low-income families with children. However, our differences-in-differences identification strategy can mitigate this issue to the extent that the actual social transfers and those observed in the survey data follow a similar trend.

less than 5 percent in Georgia (Figure 4, panel 1).⁹ The average value of remittances received is higher for more affluent households in both countries. However, remittances make up a larger share of income for poor remittance-receiving households, ranging from about 50 percent in Georgia to 41 percent in the Kyrgyz Republic in 2020 (Figures 4, panels 2 and 3).

The characteristics of remittance-receiving and non-remittance-receiving households in Georgia and the Kyrgyz Republic also differ (Table 2). For example, remittance-receiving households in Georgia tend to have larger families—and household heads are less likely to be employed—than those in the Kyrgyz Republic. Also, non-remittance-receiving households in the Kyrgyz Republic tend to have a greater share of self-employed members than remittance-receiving households (the latter also has a lower level of educational attainment than other households). In contrast, educational differences are relatively small in Georgia between remittance-receiving and other households. In both countries, remittance-receiving households are more likely to live in urban areas.

Figure 4. Remittances: Georgia and Kyrgyz Republic, 2020



Source: Authors' calculations based on household survey data for each country.
 Note: Poor and rich are defined as the bottom and top half of the income distribution in 2020, respectively. Panels 2 and 3 consider only remittance-receiving households. Panel 3 measures remittances in 2011 PPP US dollars. Panel 4 depicts the annual percent change in remittance relative to 2019.

⁹ Income groups are calculated based on income. Households in the bottom half of the distribution are considered to be poor and households in the top half of the distribution are considered to be rich.

Table 2. Characteristics of Remittance-Receiving and Non-Remittance-Receiving Households

	Georgia 2020				Kyrgyz Republic 2020			
	Remittance-receiving households		Non-remittance-receiving households		Remittance-receiving households		Non-remittance-receiving households	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Per capita income	6.69	2.78	5.84	2.87	5.80	2.93	5.59	2.88
Social Transfers	5.02	4.17	5.35	4.21	3.20	2.70	3.45	2.76
Family size	3.68	1.87	3.38	1.89	3.50	1.89	3.95	1.98
Number of children	0.90	1.02	0.64	1.00	1.48	1.42	1.51	1.45
HH Employed	0.35	0.48	0.47	0.5	1.48	1.42	1.51	1.45
HH Self-employed	0.13	0.34	0.14	0.35	0.56	0.50	0.65	0.48
HH Male	0.36	0.48	0.33	0.47	0.23	0.42	0.31	0.46
HH Primary education	0.02	0.12	0.02	0.15	0.12	0.32	0.07	0.25
HH Secondary education	0.76	0.43	0.75	0.44	0.70	0.46	0.73	0.44
HH Tertiary education	0.23	0.42	0.23	0.42	0.18	0.38	0.19	0.39
HH Marital Status	0.65	0.48	0.60	0.49	0.54	0.50	0.65	0.48
HH Age	58.56	16.03	61.88	14.14	51.64	12.88	53.69	12.72
HH lives in Urban Area	0.56	0.50	0.42	0.49	0.60	0.49	0.58	0.49

Source: Authors' calculations based on household survey data for each country.

Note: All income variables are monthly and in 2011 PPP US dollars. Marital status is a binary variable, which is 1 if the household head is married and 0 otherwise. The household head's education and age are used. HH is the abbreviation for household head.

Empirical Framework

Following Shimizutani and Yamada (2021), we use a differences-in-differences estimator to study the effect of COVID-19 on remittance-receiving households. When using quarterly data, our baseline regression specification is:

$$y_{jt} = \sum_{\tau \in \{1,2,3\}} \beta_{\tau}^D (Remittance_j * Q_{\tau}) + \sum_{\tau \in \{1,2,3\}} \gamma_{\tau} Q_{\tau} + \delta Remittance_j + \eta X_{jt} + Q_t + \mu_j + \epsilon_{jt}$$

(1)

where y_{jt} is the outcome variable (e.g., log income of household j), $Remittance_j$ is a dummy variable that indicates whether a household receives remittances, and Q_{τ} (used in our quarterly analyses) is a binary variable for observations in τ quarters after the beginning of COVID-19. Since our data covers three quarters after the beginning of the pandemic, we have three indicator variables Q_1 (which is 1 for observations from April–June 2020 and zero otherwise), Q_2 (which is 1 from July–September 2020 and zero otherwise), and Q_3 (which is 1 from October–December 2020 and zero otherwise). X_{jt} includes the household-level controls, Q_t is the quarter fixed effect (used to capture seasonality), and μ_j is the household fixed effect, which takes unobservable and time-invariant household idiosyncrasies, such as the number of household members working both domestically and abroad as well as their education level, into account.

γ_{τ} measures the average effect of the pandemic on outcome variables across households that did not receive remittances in quarter τ after the beginning of the pandemic. Our main coefficients of interest are β_{τ}^D (i.e., the interaction coefficients). These coefficients represent the differential impact of the pandemic on remittance-receiving households relative to other households in year 2020 and τ quarters after the onset of the COVID-19 pandemic, respectively. Finally, in all regressions, standard errors are clustered at the household level, and household weights are used to preserve representativeness

Results

Effects of COVID-19 on Household Income: Quarterly Specification

We study the effects of the COVID-19 pandemic on household income using our quarterly data. The estimates for regression (2) are presented in Table 3.

In all specifications, income in both countries dropped significantly in the first two quarters following the onset of the pandemic. Although the estimated decrease in income is larger in Georgia in these two quarters, the changes are insignificant in the third quarter. On the other hand, the changes in income remain significantly negative for the Kyrgyz Republic in the third quarter. The results suggest that Georgian households were able to recover faster from the initial shock than households in the Kyrgyz Republic.

The interaction coefficients indicate the average difference in the effect of COVID-19 on incomes between remittance-receiving and non-remittance-receiving households. After controlling for household observables and fixed effects, we find that remittance-receiving households were more severely impacted in both countries in the first quarter following the start of the pandemic. The incomes of remittance-receiving households in Georgia and the Kyrgyz Republic decreased by 13.1 percent and 4 percent more than non-remittance-receiving households during this period. Annual results suggest that remittance-receiving households in Georgia experienced an additional 8 percent drop in incomes as a result of the pandemic relative to non-remittance receiving households. In contrast, no significant changes in income are observed between remittance-receiving and non-remittance receiving households in the Kyrgyz Republic (Annex, Table A.1).

Measures to contain the virus in remittance-sending countries during this period could be leading to the differential results across the two countries.¹⁰ In the second quarter after the onset of the pandemic (third quarter of 2020), when restrictions were relaxed, the interaction coefficient becomes insignificant for both countries. In the third quarter after the pandemic's onset (the fourth quarter of 2020), remittance-receiving households in Georgia had an additional 6.7 percent decrease in incomes relative to other households, although not significant. The difference in the interaction coefficient across the two countries could be due to stricter lockdown measures in Georgia's remittance-sending countries and less strict measures in the Kyrgyz Republic's remittance-sending countries in the fourth quarter of 2020. In Russia—the Kyrgyz Republic's main source of remittances—many restrictions were lifted in the second and third quarters after the onset of the pandemic. In contrast, most remittances to Georgia originate from European countries, which tended to have more severe restrictions in the fourth quarter of 2020.

¹⁰ The robustness section provides empirical evidence that higher stringency in containment measures in host countries can partly explain the difference in household recovery between the two countries.

Table 3. Effect of COVID-19 on Quarterly Income: Georgia and Kyrgyz Republic

VARIABLES	(1) GEO	(2) GEO	(3) GEO	(4) KGZ	(5) KGZ	(6) KGZ
Q1	-0.131*** (0.026)	-0.126*** (0.023)	-0.146*** (0.028)	-0.100*** (0.010)	-0.085*** (0.008)	-0.080*** (0.008)
Q2	-0.078*** (0.022)	-0.081*** (0.019)	-0.095*** (0.024)	-0.077*** (0.009)	-0.067*** (0.008)	-0.060*** (0.008)
Q3	0.096*** (0.020)	0.029 (0.020)	-0.018 (0.028)	-0.049*** (0.009)	-0.044*** (0.008)	-0.036*** (0.007)
Remittance	0.117** (0.047)	0.218*** (0.038)		-0.077*** (0.026)	0.044** (0.022)	
Q1#Remittance	-0.148** (0.069)	-0.099* (0.057)	-0.131** (0.054)	-0.021 (0.017)	-0.024 (0.015)	-0.040*** (0.013)
Q2#Remittance	-0.035 (0.060)	0.005 (0.055)	-0.055 (0.051)	-0.009 (0.018)	-0.010 (0.016)	-0.012 (0.015)
Q3#Remittance	-0.103 (0.067)	-0.050 (0.056)	-0.067 (0.054)	-0.001 (0.020)	-0.012 (0.018)	-0.016 (0.015)
Observations	11,547	11,435	11,402	38,005	37,664	37,664
R-squared	0.017	0.419	0.841	0.012	0.328	0.861
Quarter FE	YES	YES	YES	YES	YES	YES
HH Controls	NO	YES	YES	NO	YES	YES
HH FE	NO	NO	YES	NO	NO	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data each country.
Note: The dependent variable is the log of quarterly household income. All nominal variables are in 2011 PPP US dollars. Q1, Q2, and Q3 indicate the first, second, and third quarters after the onset of the pandemic, respectively (quarters 2, 3, and 4 of 2020). Remittance is a dummy for remittance-receiving households. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Standard errors are clustered at the level of the household.

Distributional Effects of COVID-19 on Remittance-Receiving Households

At the onset of the pandemic, remittance-receiving household incomes were affected more strongly than non-remittance-receiving households. In this section, we study the impact of COVID-19 and the decrease in remittances that followed on three different income groups (poor, middle, and rich).

The pandemic impacted the poor and the rich differently in the two countries (Table 4). In Georgia, the pandemic reduced the incomes of the rich and middle groups more than the poor. In contrast, the poor in Georgia saw a significant increase in incomes in the second and third quarters of the pandemic, mainly due to an increase in social transfers. Thus, it appears that the pandemic contributed to reducing inequality in Georgia. However, in the Kyrgyz Republic, the pandemic had a significant negative impact on income across all income groups in all quarters.

Looking at the interaction term, we find that affluent remittance-receiving households in Georgia were more affected than affluent non-remittance-receiving households up to the third quarter of 2020, with the incomes of the former impacted by 11 to 14 percent more than those of the latter. This is also confirmed looking at the

annual results (Annex, Table A.2.)¹¹. On the other hand, the impact on poor remittance-receiving households is no more adverse than that estimated for poor non-remittance-receiving households. This finding contrasts sharply with the Kyrgyz Republic, where poor remittance-receiving households were more affected than their non-remittance-receiving counterparts in the first quarter after the onset of the pandemic. This could be due to differences in the strength and effectiveness of social safety nets in each country which we investigate in the next section.

Table 4. Effect of COVID-19 on Quarterly Income by Income Group: Georgia and Kyrgyz Republic

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	GEO Poor	GEO Middle	GEO Rich	KGZ Poor	KGZ Middle	KGZ Rich
Q1	0.0397 (0.0358)	-0.200*** (0.0437)	-0.249*** (0.0566)	-0.071*** (0.013)	-0.083*** (0.013)	-0.074*** (0.013)
Q2	0.158*** (0.0405)	-0.170*** (0.0340)	-0.241*** (0.0499)	-0.045*** (0.014)	-0.050*** (0.010)	-0.082*** (0.016)
Q3	0.240*** (0.0552)	-0.0893** (0.0366)	-0.172*** (0.0514)	-0.028* (0.015)	-0.039*** (0.009)	-0.032*** (0.012)
Q1#Remittance	0.0159 (0.0977)	-0.206** (0.0800)	-0.150* (0.0808)	-0.041** (0.020)	-0.069*** (0.021)	-0.011 (0.024)
Q2#Remittance	0.0792 (0.107)	0.0147 (0.0758)	-0.128* (0.0691)	0.002 (0.026)	-0.040* (0.022)	-0.002 (0.028)
Q3#Remittance	0.0377 (0.0714)	-0.0604 (0.115)	-0.105 (0.0646)	-0.013 (0.026)	-0.018 (0.023)	-0.028 (0.027)
Observations	4,732	4,240	2,430	14,195	14,896	8,554
R-squared	0.727	0.615	0.638	0.732	0.662	0.697
Quarter FE	YES	YES	YES	YES	YES	YES
HH Controls	YES	YES	YES	YES	YES	YES
HH FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data for each country.

Note: The dependent variable is the log of quarterly household income. Q1, Q2, and Q3 indicate the first, second, and third quarters after the onset of the pandemic, respectively (quarters 2, 3, and 4 of 2020). Remittance is a dummy for remittance-receiving households. All nominal variables are in 2011 PPP US dollars. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Poor, middle, and rich households are classified based on their average prepandemic income and correspond to the three lowest deciles of income (poor), deciles 4 to 7 (middle), and the three highest deciles of income (rich). Standard errors are clustered at the level of the household.

Role of Social Transfers in Mitigating Adverse Income Effects

To examine whether social transfers played a role in mitigating the impact of COVID-19 on incomes by offsetting declines in remittances, we estimate regression (2) using social transfers as the dependent variable instead of total income. Since social transfers are expected to be largely directed toward poor households, we only estimate the regression for the bottom three deciles of the income distribution. The results are shown in Table 5.

¹¹ We do not have the data to answer precisely what has caused these results. One possible explanation for the income decline among richer Georgians could be that they are more likely to be involved in small and medium-sized businesses abroad (i.e. in Eurozone), which may have been adversely affected by lockdowns and other pandemic-related measures. This may have led to reduced income and fewer remittances being sent back home, which could have contributed to the income decline among richer Georgians. However, our data does not allow to control for this. Having said that, it is also important to consider other factors that may have contributed to the income decline in Georgia, such as changes in employment patterns, changes in consumer behavior, and changes in policies. It is likely that a combination of variables contributed to the income decline in Georgia, and a more detailed analysis would be needed to fully understand the causes. However, this is beyond the scope of our paper.

In Georgia, households receiving remittances benefited from a 31 percent increase in social transfers relative to non-remittance receivers in the first quarter after the pandemic began, and a 39 percent in two quarters. This could help to explain the resilience of the income for poor remittance-receiving households. As households lost income from remittances due to containment measures in host countries, they likely became eligible for social transfers. These results support our findings (Table 4) that there was no statistically significant drop in the incomes of poor remittance-receiving households in Georgia, even in the first quarter after the pandemic. However, our findings do not show an increase in overall social transfers to the poor in the first quarter. This could be partly explained by the fact that around 80 percent of the bottom quintile already received social transfers before the pandemic. Alternatively, social transfers may only have increased to those that previously did not rely on governmental transfers but experienced a more negative income shock after the onset of the pandemic (that is, remittance receivers).

For the Kyrgyz Republic, the results show no significant difference between remittance- and non-remittance-receiving households. There is a statistically significant increase in social transfers only in the first quarter for poor households and no difference between remittance-receiving and non-remittance-receiving households in any quarter. Thus, social transfers in the Kyrgyz Republic do not appear to have played a significant role in mitigating the impact of the decrease in remittances and contributed to the persistence of the negative income shock for poor households.

Table 5. Effect of COVID-19 on Social Transfers to Poor Households: Georgia and Kyrgyz Republic

VARIABLES	KGZ Poor	GEO Poor
Q1	0.043* (0.023)	-0.004 (0.035)
Q2	0.040 (0.030)	-0.036 (0.039)
Q3	0.017 (0.024)	0.194*** (0.068)
Q1#Remittance	0.043 (0.033)	0.318*** (0.120)
Q2#Remittance	-0.054 (0.059)	0.394*** (0.141)
Q3#Remittance	0.060 (0.038)	0.239 (0.223)
Observations	15,422	4,804
R-squared	0.988	0.947
Quarter FE	YES	YES
HH Controls	YES	YES
HH FE	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data for each country.

Note: The dependent variable is the log of quarterly social transfers. Q1, Q2, and Q3 indicate the first, second, and third quarters after the onset of the pandemic, respectively (quarters 2, 3, and 4 of 2020). Remittance is a dummy for remittance-receiving households. All nominal variables are in 2011 PPP US dollars. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Poor households are classified based on their average income before the pandemic and correspond to the lowest three deciles of income. Standard errors are clustered at the level of the household.

The Effect of Stringency in Remittance-Sending Countries on Receiving Countries

To study the effect on remittance-receiving countries of COVID-19 restrictions in remittance-sending countries, we estimate the following regression:

$$y_{jt} = \beta(D_j * Stringency_{kt}) + \gamma Stringency_{kt} + \delta Remittance_j + \eta X_{jt} + \mu_j + \epsilon_{jt}$$

(2)

where y_{jt} is the log of household income in each quarter, $Remittance_j$ is the dummy for remittance-receiving households as defined above, $Stringency_{kt}$ is the weighted average of the *Oxford Stringency Index* for countries that send remittances to country k . X_{jt} and μ_j are household-level controls and household fixed effects.

We estimate (3) for the three income groups introduced earlier. In the Kyrgyz Republic, stringency in remittance-sending countries has similar effects across remittance-receiving and non-remittance-receiving poor households (Table 6). On the other hand, poor remittance-receiving households were not affected by the increase in the stringency index in remittance-sending countries which again can be explained by the effectiveness of the social safety nets in Georgia in protecting the incomes of the poor. By contrast, increased stringency in remittance-sending countries makes rich remittance-receiving households in Georgia worse off compared to rich households not-receiving remittances. In particular, a 10-point increase in the stringency index in remittance-sending countries lowers the income for wealthy remittance-receiving households by 2 percent more than their non-remittance-receiving counterparts.

Table 6. Effect of Oxford Stringency Index in Host Country on Income in Destination Country Across Income Groups

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	GEO Poor	GEO Middle	GEO Rich	KGZ Poor	KGZ Middle	KGZ Rich
stringency#Remittance	-0.001 (0.001)	-0.001 (0.001)	-0.002*** (0.001)	-0.001** (0.000)	-0.000 (0.000)	-0.0001 (0.0004)
Observations	5,175	4,279	2,694	16,954	12,770	7,903
R-squared	0.824	0.745	0.769	0.843	0.847	0.8604
HH Controls	YES	YES	YES	YES	YES	YES
HH FE	YES	YES	YES	YES	YES	YES
Quarter FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data for each country.

Note: The dependent variable is the log of quarterly income. All nominal variables are in 2011 PPP US dollars. Remittance is a dummy for remittance-receiving households. Stringency is the weighted average of quarterly averages of the Oxford Stringency Index for countries that send remittances to each country. Country weights are the share of their contribution to each country's remittances. Own stringency is the quarterly average of the Oxford Stringency Index for Georgia or the Kyrgyz Republic. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, values of social transfers, and urban/rural. Standard errors are clustered at the level of the household. Oxford Stringency Indices are used, which have values between 0 and 100. Poor, middle, and rich households are classified based on their average consumption before the pandemic and correspond to the lowest three deciles, the middle four deciles, and the upper three deciles of the consumption distribution.

Robustness

We run two main sets of robustness checks, presented below.

Dividing Households into Poor and Rich (Using Median)

As a robustness check, we divide our sample for each country into two subsamples instead of three: the poor and the rich. The poor are the households with income below the median before the pandemic, and the rich are those who received more income than the median in the same period.

The results in Table 7 are similar to those in Table 4 regarding the sign and significance of the estimated coefficients. Also, their magnitudes follow the same pattern as coefficients in Table 4 across the poor and rich.

VARIABLES	(1) GEO – Poor	(2) GEO – Rich	(3) KGZ – Poor	(4) KGZ – Rich
Q1	-0.112*** (0.0349)	-0.197*** (0.0358)	-0.0745*** (0.0115)	-0.0828*** (0.0107)
Q2	0.0257 (0.0321)	-0.224*** (0.0348)	-0.0452*** (0.0102)	-0.0715*** (0.0113)
Q3	0.0886** (0.0406)	-0.129*** (0.0362)	-0.0394*** (0.0106)	-0.0286*** (0.00854)
Q1#Remittance	-0.0630 (0.0798)	-0.151*** (0.0577)	-0.0444** (0.0175)	-0.0341* (0.0187)
Q2#Remittance	0.0678 (0.0803)	-0.122** (0.0571)	-0.0123 (0.0196)	-0.0152 (0.0214)
Q3#Remittance	-0.0251 (0.0832)	-0.123** (0.0620)	0.000697 (0.0217)	-0.0375* (0.0196)
Observations	8,003	5,051	21,944	15,701
R-squared	0.748	0.711	0.767	0.724
Quarter FE	YES	YES	YES	YES
HH Controls	YES	YES	YES	YES
HH FE	YES	YES	YES	YES
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				
Source: Authors' calculations based on household survey data for each country.				
Note: The dependent variable is the log of quarterly household income. Q1, Q2, and Q3 indicate the first, second and third quarter after the onset of the pandemic, respectively (quarters 2, 3, and 4 of 2020). Remittance is a dummy for remittance-receiving households. All nominal variables are in 2011 PPP US dollars. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Standard errors are clustered at the level of the household. Poor and rich households are classified based on their average income before the pandemic and correspond to the lower and upper half of the income distribution, respectively.				

Using Consumption instead of Income to Define Poor, Middle-income, and Rich

To verify that our classification of households into different income groups does not suffer from income misreporting, we use average household consumption before the onset of the pandemic to classify our sample into different subsamples. We define households in the lowest three deciles of the consumption distribution as poor, in the middle four consumption deciles as middle-income, and the highest three deciles as rich.

The results for the impact of the pandemic on quarterly income (Table 8) are very similar to those shown in Table 4. In the first and second quarters following the onset of the pandemic, poor Georgians were the only

group whose income was not impacted. In the third quarter, the poor in Georgia experienced an increase in income, while the rich were still worse off. In the Kyrgyz Republic, both the poor and the rich experienced a decrease in income in the third quarter after the onset of the pandemic in all specifications.

The interaction coefficient is significant and negative in both specifications for poor households in the Kyrgyz Republic in the first and third quarters; however, it is insignificant for other groups in all quarters. Similar to Table 4, in Georgia, the interaction term is negative and most significant for the rich.

Table 8. Effect of COVID-19 on Quarterly Income (Consumption Instead of Income): Georgia and Kyrgyz Republic

VARIABLES	(1) GEO Poor	(2) GEO Middle	(3) GEO Rich	(4) KGZ Poor	(5) KGZ Middle	(6) KGZ Rich
Q1	0.024 (0.029)	-0.169*** (0.045)	-0.313*** (0.052)	-0.056*** (0.014)	-0.078*** (0.014)	-0.093*** (0.013)
Q2	0.009 (0.038)	-0.115*** (0.037)	-0.278*** (0.054)	-0.038*** (0.012)	-0.047*** (0.015)	-0.083*** (0.013)
Q3	0.092** (0.047)	-0.008 (0.041)	-0.161*** (0.053)	-0.041*** (0.012)	-0.010 (0.013)	-0.052*** (0.013)
Q1#Remittance	-0.176* (0.102)	-0.034 (0.085)	-0.140* (0.073)	-0.059*** (0.022)	-0.037 (0.023)	-0.037 (0.023)
Q2#Remittance	0.096 (0.128)	-0.040 (0.080)	-0.124* (0.068)	-0.023 (0.023)	-0.025 (0.025)	0.000 (0.029)
Q3#Remittance	0.037 (0.063)	-0.049 (0.096)	-0.166** (0.080)	-0.041* (0.025)	-0.020 (0.027)	0.005 (0.024)
Observations	5,175	4,279	2,694	16,954	12,770	7,903
R-squared	0.825	0.745	0.769	0.844	0.847	0.860
Quarter FE	YES	YES	YES	YES	YES	YES
HH Controls	YES	YES	YES	YES	YES	YES
HH FE	YES	YES	YES	YES	YES	YES
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						
Source: Authors' calculations based on household survey data for each country.						
Note: The dependent variable is the log of quarterly household income. Q1, Q2, and Q3 indicate the first, second, and third quarters after the onset of the pandemic, respectively (quarters 2, 3, and 4 of 2020). Remittance is a dummy for remittance-receiving households. All nominal variables are in 2011 PPP US dollars. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Standard errors are clustered at the level of the household. Poor, middle, and rich households are classified based on their average consumption prior to the pandemic and correspond to the lowest three deciles, the middle four deciles, and the upper three deciles of the consumption distribution, respectively.						

Conclusion and Policy Implications

In this paper, we investigate whether the global recession brought about by the COVID-19 pandemic led to a decline in remittances in the Kyrgyz Republic and Georgia and how different households across income distributions were impacted. We employ a novel longitudinal dataset to estimate the dynamics of remittances before and after the onset of the pandemic and its heterogeneous impact on household groups. The analysis shows that after an initial fall at the start of the pandemic, remittances recovered in Georgia but not in the Kyrgyz Republic. Moreover, distinguishing between rich and poor remittance-receiving households, we found that the incomes of affluent remittance-receiving households were more adversely affected than affluent non-receiving households in Georgia; the opposite was the case in the Kyrgyz Republic, where poor remittance-receiving households were impacted more. We also found evidence suggesting that differences in social transfer systems can help to explain differences in the resilience of poor remittance-receiving households in Georgia in comparison to the the Kyrgyz Republic.

Understanding how the pandemic impacted remittance flows has important policy implications. A persistent decline in remittances may require additional targeted support to protect vulnerable households. To the extent that remittances act as a buffer against rising prices and other adverse shocks, social safety nets may need to be expanded to help fill this gap if remittances decline permanently. While social protection generally compares favorably to other emerging economies, particularly in Georgia and, to a lesser extent, the Kyrgyz Republic, there is room to improve the coverage, targeting, adequacy, and efficiency of social safety nets (October 2022 *Regional Economic Outlook: Middle East and Central Asia*). Integrating different social programs into a single social registry would increase efficiency and reduce administrative costs. Building stronger systems to identify those eligible for social benefits and collecting timely and granular data is essential. Efforts to identify citizens who are eligible but are not receiving social benefits should be strengthened, which will require coordination among government agencies to streamline application procedures. Returning migrants may also need training to be reabsorbed into domestic labor markets.

Finally, a key lever for facilitating remittance flows during the crisis is reducing the cost of sending money. Lowering the burden of sending remittances can maximize these important flows of financing for income support and development. Policymakers must work to reduce barriers facing remittance service providers in partnering with correspondent banks. Indeed, opening money transfer operators' access to partnerships with national post offices, banks, and telecommunications companies could help remove entry barriers and increase competition in remittance markets. Digitalization is also an important policy lever and can strengthen resilience (Abidi and others 2022). Moreover, these remittance channels can also be used to mobilize diaspora investments through diaspora bonds and bond financing through securitization of future flows of remittances.

References

- Abdih, M. Y., Barajas, M. A., Chami, M. R., & Ebeke, M. C. (2012). Remittances channel and fiscal impact in the Middle East, North Africa, and Central Asia. International Monetary Fund.
- Abidi, N., El-Herradi, M., Sakha, S. (2022). Digitalization and Resilience: Firm-Level Evidence During the COVID-19 Pandemic. IMF Working Paper No. 2022/034
- Acosta, P. (2006). Labor supply, school attendance, and remittances from international migration: the case of El Salvador. World Bank Policy Research Working Paper, (3903).
- Acosta, P., Calderón, C., Fajnzylber, P., & López, H. (2006). Remittances and development in Latin America. *World Economy*, 29(7), 957-987.
- Adams Jr, R. H. (2011). Evaluating the economic impact of international remittances on developing countries using household surveys: A literature review. *Journal of Development Studies*, 47(6), 809-828.
- Amuedo-Dorantes, C., & Pozo, S. (2006). Migration, remittances, and male and female employment patterns. *American Economic Review*, 96(2), 222-226.
- Barajas, M. A., Chami, M. R., Ebeke, M. C., & Tapsoba, M. S. J. A. (2012). Workers' Remittances: An Overlooked Channel of International Business Cycle Transmission?. International Monetary Fund.
- Batista, C., & Umblijs, J. (2016). Do migrants send remittances as a way of self-insurance?. *Oxford Economic Papers*, 68(1), 108-130.
- Brown, R. P., Connell, J., & Jimenez-Soto, E. V. (2014). Migrants' remittances, poverty and social protection in the South Pacific: Fiji and Tonga. *Population, Space and Place*, 20(5), 434-454.
- Sayeh, A., & Chami, R. (2020). Lifelines in Danger: The COVID-19 pandemic threatens to dry up a vital source of income for poor and fragile countries. *Finance & Development*, 57(002).
- Combes, J. L., & Ebeke, C. (2011). Remittances and household consumption instability in developing countries. *World Development*, 39(7), 1076-1089.
- Dinarte, L., Jaume, D., Medina-Cortina, E., & Winkler, H. (2021). Neither by Land nor by Sea: The Rise of Electronic Remittances during COVID-19. The World Bank.
- Freund, C., & Spatafora, N. (2008). Remittances, transaction costs, and informality. *Journal of development economics*, 86(2), 356-366. International Monetary Fund (IMF). 2022. Regional Economic Outlook: Middle East and Central Asia. Washington, DC, October.
- International Monetary Fund (2022), Article IV: Georgia
- International Monetary Fund, Selected Issues Paper (2022) Social Safety Nets and Poverty in the Kyrgyz Republic
- Jyoti, J. F. (2021). Impact of Covid-19 on the migrant remittance flow of Bangladesh (Doctoral dissertation, Brac University).
- Kóczán, Z., & Loyola, F. (2021). How do migration and remittances affect inequality? A case study of Mexico. *Journal of International Development*, 33(2), 360-381.

- Kpodar, M. K. R., Mlachila, M. M., Quayyum, M. S. N., & Gammadigbe, V. (2021). Defying the odds: Remittances during the Covid-19 pandemic. International Monetary Fund.
- Poghosyan, T., & Blancher, N. R. (2020). Remittances in Russia and Caucasus and Central Asia: the Gravity Model. IMF Working Papers, 2020(128).
- Roberts, B. W., & Banaian, K. (2004). Remittances in Armenia: Size, Impacts, and Measures to enhance their contribution to development.
- Shimizutani, S., & Yamada, E. (2021). Resilience against the pandemic: The impact of COVID-19 on migration and household welfare in Tajikistan. PLoS One, 16(9), e0257469.
- Vargas-Silva, C., Jha, S., & Sugiyarto, G. (2009). Remittances in Asia: Implications for the fight against poverty and the pursuit of economic growth. Asian Development Bank Economics Working Paper Series, (182).
- World Bank. (2021). Resilience: COVID-19 Crisis Through a Migration Lens. Migration and Development Brief 34.

Annex

The Effects of COVID-19 on Households Income: Annual specification

The results for regression specification (1) are presented in Table A.2. Also, to study the heterogeneity of the effect over different income groups, we divide our sample into three income groups: the poor, the middle-income, and the rich. These groups correspond to households in the bottom three, middle four, and top three deciles of the income distribution, respectively. We use the pre-pandemic average income of households to classify households into these three groups.

Table A.1. The effect of COVID-19 on annual income in Georgia and the Kyrgyz Republic

VARIABLES	(1) GEO	(2) GEO	(3) GEO	(4) KGZ	(5) KGZ	(6) KGZ
2020.year	-0.063*** (0.014)	-0.073*** (0.013)	0.002 (0.024)	-0.066*** (0.007)	-0.061*** (0.006)	-0.055*** (0.005)
2020.year# Remittance	-0.069* (0.039)	-0.037 (0.039)	-0.081** (0.036)	0.006 (0.016)	0.002 (0.016)	0.006 (0.013)
Observations	7,348	7,209	6,236	9,654	9,587	9,306
R-squared	0.005	0.406	0.909	0.009	0.327	0.949
HH Controls	NO	YES	YES	NO	YES	YES
HH FE	NO	NO	YES	NO	NO	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data for the countries.

Note: The dependent variable is the log of annual household 2019 and 2020. All nominal variables are in 2011 PPP USD. The variable 2020.year is 1 for observations in 2020 and zero for observations in 2019. Remittance is a dummy for remittance-receiving households. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Standard errors are clustered at the level of the household.

Controlling for household fixed effects (column 3), the results suggest remittance-receiving households in Georgia experienced an additional 8 percent drop in incomes as a result of the pandemic relative to non-remittance receiving households. In contrast, no significant changes in income are observed between remittance-receiving and non-remittance receiving households in the Kyrgyz Republic.

The effects of the pandemic on different income groups are presented in Table A.2. We find a statistically significant difference in income changes for rich remittance-receiving households compared to and non-remittance receiving counterparts in Georgia. We do not find any differential result for remittance-receiving and non-remittance households across various income groups for the Kyrgyz Republic .

Table A.2. The effect of COVID-19 on annual income in Georgia and the Kyrgyz Republic across different income groups

VARIABLES	(1) GEO Poor	(2) GEO Middle	(3) GEO Rich	(4) KGZ Poor	(5) KGZ Middle	(6) KGZ Rich
2020.year	-0.001 (0.055)	0.003 (0.033)	-0.003 (0.040)	-0.070*** (0.011)	-0.060*** (0.008)	-0.047*** (0.010)
2020.year# Remittance	-0.058 (0.067)	-0.077 (0.067)	-0.092** (0.053)	-0.022 (0.024)	0.012 (0.019)	0.029 (0.021)
Observations	3,852	3,326	2,384	3,514	3,660	2,132
R-squared	0.834	0.801	0.806	0.877	0.845	0.858
HH Controls	YES	YES	YES	YES	YES	YES
HH FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculations based on household survey data for the countries.

Note: The dependent variable is the log of annual household income. All nominal variables are in 2011 PPP USD. The variable 2020.year is 1 for observations in 2020 and zero for observations in 2019. Remittance is a dummy for remittance-receiving households. Household controls are family size, household head's employment, self-employment, gender, education level, marital status, the value of social transfers, and urban/rural. Standard errors are clustered at the level of the household. Poor, middle, and rich households are classified based on their average income prior to the pandemic, and correspond to lowest 3 deciles of income, deciles 4 to 7, and 3 highest deciles of income, respectively.



PUBLICATIONS

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