DISCUSSION PAPER / 2022.04

The influence of COVID-19 on remittances - potential development outcomes

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Abstract

Recent years have witnessed a growing importance of remittances with remittance flows to low and middle income countries in particular surpassing both Official Development Assistance (ODA) and Foreign Direct Investment (FDI). However, the very recent developments associated with the unprecedented COVID-19 pandemic had a major impact on various fronts including remittances, particularly in some countries and regions, thus resulting in potential negative economic and social effects. Against this background, the paper contributes to the growing recent literature on the impact of the pandemic in developing countries by trying to examine the influence of COVID-19 on remittances and provide insights into the potential developmental effects this could have in recipient countries. In particular the paper tries to address the following research questions: (1) In what way has the pandemic influenced trends in remittances? and (2) what potential influence does the COVID-19-induced drop in remittances have on development? To address the above questions we discuss the insights emerging from global studies on the economic and social impacts of remittances and we also use some new data currently available to demonstrate the potential impact of the pandemic on development outcomes. We found that both the annual remittance data and the survey data from the World Bank provide evidence that remittance inflows in a substantial number of countries decreased in 2020. Our simple empirical analysis based on the limited data currently available suggests a non-existent or, at best, weak positive relationship between the decline in remittances and food insecurity. In addition, we found a moderate positive correlation between these remittance reductions and households' inability to pay for medical care. A moderate negative correlation was also found to exist between COVID-19-induced changes in remittances and educational activity. Needless to say, in view of the various data limitations, the reported findings are only tentative and they should be treated as such. Hopefully, as better and more data become available in the near future, researchers will be able to address these important research questions in more detail so we can delve deeper into the overall impact of the pandemic on remittances at the global, regional and country level.

Keywords: Remittances, COVID-19, potential development outcomes

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1. Introduction

Over the past decades, both international migrant flows and money flows from migrants to their home country (remittances) intensified a lot (McAuliffe et al., 2019; Sirkeci et al., 2012; UN-DESA, 2020; Lean Lim et al., 2003). Remittances towards low- and middle-income countries became larger than both Official Development Assistance (ODA) and Foreign Direct Investment (FDI) (McAuliffe et al., 2019; Plaza et al., 2019). However, the COVID-19 crisis resulted in a decline in remittances. Fortunately, the drop turned out to be more modest than previously expected, as it only equaled 1.6% in 2020. There are large regional differences though. In particular continents' and countries' remittance inflows decreased a lot more than the average whilst other regions saw their remittances increase. For example, although Europe and Central Asia experienced a 10% decline in remittances in 2020, remittances towards Latin-America and the Caribbean increased by 6.5% the same year (Ratha et al., 2021).

The large drop in remittances inflows in some regions is problematic, since several studies have shown that remittance flows have important economic and social impacts (see for example Adams & Page, 2005a; Azizi, 2018; Nsiah and Fayissa, 2013; Pradhan et al., 2008; Ustubici and Irdam, 2012 among others). Furthermore, remittances are important for the survival of receiving households and individuals (Sørensen, 2005). The substantial decline in remittance flows in some regions due to COVID-19 could thus have negative economic and social effects. Food security, medical care and educational activity for instance could be negatively affected by the decline.

Against this background, the main aim of this paper is to examine the influence of COVID-19 on remittances and to provide insights into the potential developmental effects this could have in recipient countries. In particular the paper will try to address the following research questions: (1) In what way has COVID-19 influenced trends in remittances? Both a literature review and a descriptive analysis of the limited data currently available was conducted to address this research question; and (2) what potential influence does the COVID-19-induced drop in remittances have on development? To address this research question, we discuss insights emerging from global studies on the economic and social impacts of remittances since this provides some clarity on the potential influences; furthermore, a correlation analysis was performed to analyze the link between COVID-19-induced drops in remittances and changes in development indicators in recipient countries. Needless to say, the important data limitations we encountered, suggest that the findings of this paper are only tentative and thus they need to be interpreted with some degree of caution. However, the insights emanating from this study reveal some important potential problems that can result from the COVID-19-induced remittance reductions.

The remainder of the paper is as follows: Section two summarizes the developmental implications of remittances, provides insights into past trends in remittances and discusses details regarding the influence of COVID-19 on these trends. In sections three and four we provide an overview of our data sources and the methodology employed in the paper, respectively. Section five presents our empirical results on the potential influence of the COVID-19-induced drop in remittances on development outcomes. Section six concludes the paper.

2. Remittances and Development: The Nexus

2.1. Developmental implications of remittances

There is quite a lot of evidence pointing to a positive influence of remittances on development and there seems to be a consensus in the literature regarding the poverty-alleviating potential of remittances (Azizi, 2021; Barajas et al., 2009). Numerous global and regional studies have assessed the relationship between remittances and poverty, looking at various poverty indicators1. Several studies have found that remittances reduce poverty in countries of origin (see for instance Adams and Page, 2005a; Spatafora, 2005;

[1] These studies most often use the poverty headcount ratio as a poverty incidence indicator. This is a measure for poverty incidence, as it calculates the share of people in a country that are living under a certain poverty line. The poverty gap is another indicator that is used. This indicator measures the depth of poverty as it measures the difference between the poverty line and the income of the average poor. Another indicator used by the authors is the squared poverty gap index, which is an indicator for the severity of poverty (Adams & Page, 2005a; Anyanwu and Erhijakpor, 2010; Azizi, 2021; Butkus et al., 2020; Das et al., 2011; Gupta et al. 2009; Huay and Bani, 2018; Pekovic, 2017).

Das et al., 2011; Azam et al., 2016; and Azizi, 2021). However, Das et al. (2011) have shown that reported coefficients are quite sensitive to the size and composition of the sample. Das et al. (2011) analyzed a group of 77 developing countries. The results showed that a 10% rise in international remittances (as a share in GDP) leads to a drop of 0.9% in the share of poor people but no significant change in the poverty gap. By subsequently using data from only 29 countries for which remittances represent over 5% of total GDP, they found that the poverty headcount ratio falls by approximately 3% and that the poverty gap decreases with 3%-5% when remittances as a share of GDP rise by 10% (Das et al., 2011). The importance of the chosen sample is also shown by Azam et al. (2016) who found differing results for high income, upper middle-income and lower middle-income countries. Given the significance of the used sample, contextual factors in countries of origin seem to be quite important, as was shown by Majeed (2015) and Akobeng (2016), who found that the presence of a developed financial system enables countries to benefit from remittances and thus to decrease poverty. In addition, Huay and Bani (2018) found that the higher the human capital, the smaller the poverty-reducing influence of remittances.

Remittances do not only have the potential to contribute to poverty reduction but they are also most often used for meeting basic needs, and thus enhancing households' education levels, quality of housing and nutritional intake (Barajas et al., 2009; Ustubici and Irdam, 2012; Shafiq and Gillani, 2018; Ogunniyi et al., 2020). Educational level can be enhanced by remittances because remittances increase household budgets and decrease incentives for child labor (and thus for not attending school). Studies by Askarov and Doucouliagos (2020); Chappell et al. (2010); and Zhunio et al. (2012) for instance found a positive relationship between remittances and indicators of educational level2. However, the relationship is not that apparent. Askarov and Doucouliagos (2020) for example found large regional differences and that the effect of remittances on education is the largest in Latin-America (remittance reception there results in a rise of approximately 50% in education expenditure) but it is absent in East Asia and Eastern Europe. Chappell et al. (2010) found that remittances positively influence educational expenditure (and thus quality of education), but that overall, school attendance is unaffected.

Furthermore, remittances can positively affect nutritional intake. A study by Ogunniyi et al. (2020) on fifteen countries in Sub-Saharan Africa has shown that remittances enhance food and nutrition security, and that the presence of good governance enlarges this effect. This finding seems to confirm earlier results on this front. Terrelonge (2014) found that remittances reduce overall depth of hunger and malnutrition amongst children, and Smith and Floro (2021) report empirical results which seem to suggest that remittances decrease food insecurity (especially in low-income countries). Furthermore, Thow et al. (2016), who qualitatively reviewed the results from 20 regional studies, confirm the positive relationship between remittances and food security, although the authors do not support the idea of remittances positively influencing nutritional intake. More recently, Cassimon et al. (2021, 2022) by using panel data for 25 Sub-Saharan African countries found that remittances enhance food and nutritional security, particularly in the presence of good governance in recipient countries.

Remittances can also affect housing quality. Chappell et al. (2010) for example have found that remittances positively affect house ownership in Colombia and Ghana. In addition, they find evidence that remittance-receiving rural households in Georgia have larger houses than households that do not receive remittances. Other country studies find similar results. Kagochi and Kiambigi (2012) found that remittances stimulate Kenyan housing construction demand in the long-run and the short-run. Shaw (2010) also argues that, although housing construction requires a lot of remittances, Sri Lankan migrant households generated improvements in the quality of their houses.

Finally, remittances can influence overall health outcomes since by improving diets, education and housing they affect people's health (Shafiq and Gillani, 2018). By performing a cross-country analysis on data from 84 countries Chauvet et al. (2009), found that a rise of 10% in remittances per capita results in a drop of 1% in infant mortality and a decrease of 1.2% in child mortality. However, when conducting intra-country analysis for a group of 46 developing countries, their previous result becomes more nuanced.

[2] Zhunio et al. (2012) found a positive relationship between remittances and enrollment rates/school completion. Askarov and Doucouliagos (2020) found a positive effect of remittances on education expenditures and Chappell et al. (2010) looked at both the effect on education expenditures and school attendance.

They still find that remittances significantly lower child and infant mortality, although mortality rates of infants and children drop most among the richest of society. Shafiq and Gillani (2018), Terrelonge (2014) and Zhunio et al. (2012), who provide evidence for 132, 138 and 69 countries, respectively, also confirm the negative influence of remittances on infant/child mortality. In addition, Zhunio et al. (2012) found that remittances positively influence life expectancy. Interestingly, Terrelonge (2014) has found that remittances do not influence household expenditures on health, and they argue that it is mainly the improvements in children's care and diets that cause declines in infant mortality rates.

Against this background, it is not surprising that various regional (Adenutsi, 2010; Borja, 2020; Sahoo and Sethi, 2020; Sahoo et al., 2020) and global level studies (Azizi, 2018; Huay et al., 2019; Ustubici and Irdam 2012) that focus on the relationship between Human Development Indicators (HDI) and remittances find a positive relationship. Ustubici and Irdam (2012) even find that remittances have a larger influence on human development than other sources of external capital flows (like ODA and FDI). However, multiple contextual factors seem also to play a role. Borja (2020) for example, finds that the influence of remittances on human development is larger in Latin-American countries that are associated with lower rates of corruption. An explanation for this finding is that corruption demotivates remittance-receiving households to use these for investments (Borja, 2020). Ustubici and Irdam (2012) have argued that the existence of entrepreneurial opportunities and entrepreneurial know-how among the population are important mediating factors. In addition, governmental provision of information on how best to use remittances would enhance the influence of remittances on human development. Finally, they argue that it is important that governments do not lower their investments in public provisions as a response to increasing household spending on these services (Ustubici and Irdam, 2012).

Less clarity exists, however, about the influence of remittances on economic growth. Some studies have found an insignificant or even negative relationship between remittances and economic growth (e.g. Barajas et al., 2009; Chami et al., 2005; and Spatafora, 2005). In contrary, other studies report a positive relationship. E.g. Pradhan et al. (2008) and Nsiah and Fayissa (2013) find that remittances have a small but significant positive influence on economic growth with contextual factors having an important influence on the relationship - Nsiah and Fayissa (2013) e.g. underline regional differences caused by differences in remittance usage and transaction costs. In addition, Eggoh et al. (2019), find a U-shaped relationship between economic growth and remittances and conclude that a country's share of remittances in total GDP is an influential factor in the overall relationship; they also find that remittances only positively influence GDP if they represent less than 4% of a country's GDP. Giuliano and Ruiz-Arranz (2009) show that the quality of financial systems has an influence on the relationship between remittances and economic growth. They conclude that remittances only positively influence economic growth in countries that have frivolous financial systems and that remittances can act as an alternative for lacking financial systems, attenuating liquidity constraints, and enabling investments. Ogunniyi et al. (2020) stress that the importance of contextual factors in the relationship between remittances and economic growth is still under-researched in the literature. However, contextual factors like the quality of governmental and financial institutions are very important and the absence of adequate credit markets and decent public services hampers people's ability to use remittances for investments in local development. Furthermore, underdeveloped financial and governmental institutions hamper remittances' potential to outset multiplier effects (Ahamada and Coulibaly, 2013; Chimhowu et al., 2005; Ogunniyi et al., 2020; Spatafora, 2005; Taylor, 1999). Taylor (1999) in particular concludes that "creating a fertile ground for migration and remittances to contribute to broad-based income growth in migrant sending areas is the key to promoting development from migration" (p. 81).

Another area of uncertainty is the influence of remittances on inequality. On this front, Stark et al. (1986) study on Mexico suggested that remittances can increase inequality in the early stages of migration, as at that stage, mostly richer villagers migrate. If more and more people migrate, migration becomes easier for all villagers, which can mitigate or reverse remittances' negative influence on inequality. Koechlin and Leon (2007), using a dataset covering 78 countries, test the hypothesis of Stark et al. (1986). By using multiple measures for inequality3 as dependent variables, they find an inverted U-shaped relationship

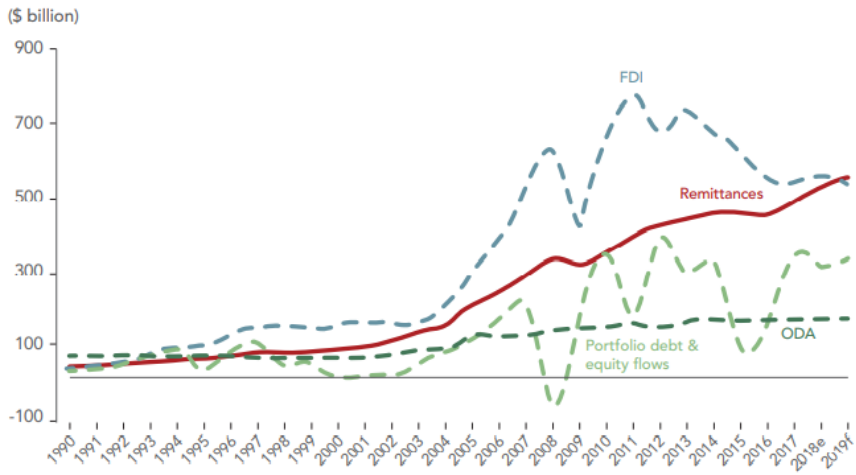
[3] The Gini coefficient and different income segments.

between inequality and remittances, and that in countries where remittances represent less than 1.42% of GDP, inequality increases because of remittance reception. However, more recent research work in this area by Azizi (2021) on 103 developing countries seems to suggest that on average the Gini coefficient drops by 0.3% when remittances per capita rise by 10%. The author finds that remittances' positive effects on income are the largest for the poorest income segments, while remittances negatively affect the income of the 20% richest of society. By using data from 80 developing countries, Ebeke and Le Goff (2009), find that multiple contextual factors4 influence the relationship between inequality and remittances. It is also important to stress that the above studies look at the short run influence5 of remittances on inequality. However, remittances can also have long-term impacts on inequality as shown by Taylor (1992), who found that increasing remittances to Mexican farmers in 1982 positively influenced farmer's livestock in 1988, which in turn led to a small but significant decrease in income inequality in the country. Moreover, several authors note that remittances can stimulate multiplier effects, where remittances benefit not only the direct receivers but also the wider community/society. This can, for instance, occur when investments in entrepreneurship stimulate the local economy and provide job opportunities for other community members. These types of transformations and multiplier effects in the local environment can stimulate changes at a larger level. E.g. by increasing employment remittances can positively influence governments' budgets for investment, and regional economic markets can positively influence each other (Chimhowu et al., 2005; Pfeiffer et al., 2008; Smith and Floro, 2021; Spatafora, 2005; Taylor et al., 1996; Zhunio et al., 2012).

2.2. Trends in Remittances and COVID-19 as a Fracture in the Overall Trend

Remittance flows have increased significantly over the past few decades (McAuliffe et al., 2019; Sirkeci et al., 2012). The large majority of international remittances (around 75%) flow towards low and middle income countries (LMICs) (IOM's Global Migration Data Analysis Centre (GMDAC), 2015; McAuliffe et al., 2019). **Figure 1** shows the trend of different sources of foreign capital flows (including remittances) towards LMICs over the period 1990-2019.

Figure 1: Trends in foreign capital flows towards Low-and Middle-Income Countries (LMICs) - 1990-2019



Source: Plaza et al., 2019, p.1

[4] The level of development, the rate of brain drain and the migration costs in a country are found to be important contextual factors (Ebeke and Le Goff, 2009).
[5] Remittances data of a certain year is used to assess the influence on inequality in that same year.

The growing importance of remittances over the period is clearly visible in Figure 1. Around 1995, remittance flows became larger than ODA and in 2019, they surpassed FDI and became the most important source of foreign income for LMICs (Plaza et al., 2019). It is also important to mention that the measurement of remittances is a very difficult exercise as migrants often use informal methods to send remittances. Therefore actual remittance flows are most likely even larger than what is shown in Figure 1 (Adams and Page, 2005b; McAuliffe et al., 2019; Pradhan et al., 2008; Taylor, 1999).

The recent COVID-19 pandemic is expected to have a vast impact on development finance in general. This impact is even expected to be larger than the impact of the global financial crisis of 2008 (Cassimon and Mavrotas, 2021; OECD, 2020; World Bank, 2020). Although remittances in the past have proven to be more stable than other sources of foreign income (Ratha et al.,2011; Sirkeci et al., 2012), the pandemic quickly raised concerns about possible decreases in remittance flows. Major reasons why remittances could be negatively affected by COVID-19 are that migrants as a group are most severely harmed by the pandemic and that a lot of major destination countries were hit by the pandemic. In addition, the significant drop in oil prices (also caused by the pandemic) negatively affected the many migrants living in countries dependent on oil production (Ajami, 2020; Albulescu, 2020; Bildirici et al., 2020; Guadagno, 2020; IOM, 2020; OECD, 2020; Ratha et al., 2020a; Takenaka et al., 2020; Withers et al., 2021). In April 2020, Ratha et al. (2020a) and Takenaka et al. (2020) estimated that remittances (to LMICs and globally) could drop by approximately 20% in 2020. In October 2020, updated estimates about the potential drop already became smaller. At that time, Ratha et al. (2020b) predicted that remittance flows to LMICs would drop by approximately 7% in both 2020 and 2021. In May 2021, however, it became clear that the influence of COVID-19 on remittances was less severe than previously expected. Further estimates from Ratha et al. (2021) showed that in 2020, remittances to LMICs only dropped by 1.6%. In addition, remittances towards LMICs were expected to increase by 2.6% in 2021 (Ratha et al., 2021). This means that COVID-19 had a smaller impact on remittances than the global financial crisis, which caused a fall in remittances by approximately 5% in 2009 (Ratha et al., 2011; Riester, 2012; Sirkeci et al., 2012). Again, remittances proved to be much more resilient than FDI, which decreased by 11% in 2020 (Ratha et al., 2021). However, it must be noted that remittance trends during the COVID-19 pandemic varied a lot across regions (Ratha et al., 2021), as **Figure 2** also shows.

Figure 2: Estimated and predicted remittance growth rates to different regions, 2009-2022

Region	2009	2015	2016	2017	2018	2019	2020e	2021f	2022f
	(Growth rate, percent)								
Low- and Middle-Income countries	**-4.8**	**0.5**	**-1.3**	**8.4**	**9.8**	**4.6**	**-1.6**	**2.6**	**2.2**
East Asia and Pacific	-4.8	3.7	-0.5	5.1	6.8	3.0	-7.9	2.1	2.1
Europe and Central Asia	-11.3	-15.3	2.1	21.0	12.9	4.6	-9.7	-3.2	-6.9
Latin America and Caribbean	-12.3	6.5	7.4	11.1	9.9	8.3	6.5	4.9	4.0
Middle East and North Africa	-6.0	-6.4	-1.2	5.3	2.3	3.4	2.3	2.6	3.1
South Asia	4.5	1.6	-5.9	6.0	12.3	6.1	5.2	3.5	4.0
Sub-Saharan Africa	-2.1	6.6	-8.3	10.8	17.4	-0.4	-12.5	2.6	1.6
World	**-5.0**	**-1.3**	**-0.8**	**7.1**	**8.5**	**3.7**	**-2.4**	**1.5**	**1.8**

Source: Ratha et al., 2021, p. 3
Note: f stands for forecast, e for estimate

As shown in Figure 2, remittance flows towards East Asia and the Pacific, Europe and Central Asia and Sub-Saharan Africa decreased a lot.6 The extent to which migrants are dispersed over the world seems to play a role, as well as the circumstances in the major destination countries. For example, the USA's measures to stimulate its economy have played an important role in Latin America's increase in remittances while the decreased value of the Russian currency influenced remittances towards Europe and Central Asia. In addition, there were vast differences between countries, even within the same region. For example, in East Asia and the Pacific, Indonesia's remittances dropped by approximately 17%, which is 9% more than the average. A second extreme example is provided by Sub-Saharan Africa, where the 12.5% drop in remittances is largely caused by an immense (approximately 30%) drop in remittances to Nigeria. When Nigeria is excluded from the Sub-Saharan Africa sample, a growth of 2.3% in remittances was estimated (Ratha et al., 2021). This large influence of the remittance decline in Nigeria is probably caused by the fact that Nigeria is one of the largest recipients of remittances among LMICs, and the largest remittance-recipient in SSA. Indeed, in 2020, more than 40% of the remittances flowing to the SSA region were directed towards Nigeria (Allen, 2021; Ratha et al., 2019; Ratha et al., 2021). One reason for the large decrease in remittances flowing towards Nigeria can be found in changes in policy. At the beginning of the COVID-19 crisis, Nigerian policymakers decided that all money transfer operators (MTOs) had to pay out remittances in US dollar instead of the Nigerian naira. In addition, in informal markets a 27-percent exchange rate premium was charged (Ratha et al., 2021).

3. Data

At the time of writing, very little information was available on global changes in poverty incidence rates, human development or inequality after the pandemic7. Thus, analyzing the influence of the COVID-19-induced remittance decline on development outcomes is rather a difficult task. However, very interesting data is available from the 'COVID-19 Household Monitoring Dashboard'. This dataset provides information about the impact of the pandemic on people's socioeconomic situation (World Bank, 2021b). This dataset can be used to perform a descriptive analysis of the influence of COVID-19 on remittances and the plausible implications for human development. In view of this, in the present paper we use this dataset in the analysis that follows. In addition, we use Annual Remittance Data (provided by the World Bank, 2021e) to provide additional insights into the impact of COVID-19 on remittance flows.

3.1. The COVID-19 Household Monitoring Dashboard

The World Bank constructed this dataset using High-Frequency Phone Surveys that were conducted in around 70 developing countries (World Bank, 2021c). Multiple waves of data collection were organized, with new data being collected every four to six weeks in most countries. However, the number of rounds of data collection varies among countries. In addition, since countries were free to adapt8 the provided questionnaire template according to the country context, data availability also varies from country to country (World Bank, 2021b; World Bank, n.d.-a). Data is available for approximately 15 social and economic topics (for example households' assets, education, health, food security, labor, safety nets and subjective wellbeing). Multiple indicators are present for each subject (World Bank, 2021b).

Data collection through Mobile Phone Surveys has some important disadvantages, however. First, selection bias can occur because only people who own a phone, are connected to a network and are willing to participate, are included in the analysis. The particular characteristics of people who commonly meet these requirements can influence the results. Second, mobile phone surveys are characterized by a high non-response bias and attrition, which can also negatively affect the results. Finally, the obtained information is not very detailed, and the reliability of respondents' answers cannot be controlled (World Bank, n.d.-a; World Bank, n.d.-b).

[6] The non-materialization of the earlier expectations of Ratha et al. (2020a) and Takenaka et al. (2020) about vast decreases in remittance flows was however confirmed by regional research in East Asia and the Pacific conducted by Ernst (2021).
[7] See HDR (n.d.-a), HDR, (n.d.-b), OECD (2021), World Bank (2021d), World Bank (2021f). No to very little data was available on human development, poverty and inequality after 2019. Worldpoverty (n.d.) provides data on global poverty until 2021. We did not use this data, however, as the post-pandemic data is based on expectations.
[8] This means that the questions asked in countries' specific surveys were not the same. However, the World Bank harmonized the data by reviewing and recoding the data obtained from countries (World Bank, n.d.-a).

3.2. Annual Remittances Data

The World Bank (2021e) provides annual data on remittance inflows and outflows. Balance of payment data from the International Monetary Fund (IMF), central banks, national statistical offices and World Bank country desks are used to construct these datasets. These organizations have data on 'compensation of employees' and 'personal transfers' at their disposition, which are used to construct estimates about remittance flows (Migration Data Portal, 2021; Ratha et al., 2017; World Bank, 2021e). 'Compensation of employees' comprises "the income of border, seasonal, and other short-term workers who work in an economy where they are not resident, and to the income of resident workers who are employed by a nonresident entity" (IMF, 2009, p. 19). 'Personal transfers' refer to money flows or in-kind transfers from (or received by) residents towards (from) non-residents (IMF, 2009; Ratha et al., 2017).

The World Bank's annual data on remittances has also some drawbacks. A first problem can be found in the definition of 'compensation of employees'. The income of short-term migrant workers is counted in this category, whether or not they remit. In addition, this category also includes the income of residents working for foreign companies, even though they are not migrants nor remit. This can lead to overestimation of remittance flows. Second, calculation of remittances is based on residency status. However, long-term migrants (who have been living in the host country for at least one year) are considered residents. In addition, some countries do not report data on remittances or its quality is uncertain. Finally, remittances sent through mail, mobile technology or through other informal methods are difficult to measure and insufficiently included in the data (IMF, 2009; Migration Data Portal, 2021; Ratha et al., 2017). Because of all the above data limitations, Migration Data Portal (2021) argues that "estimates are far from accurate, due to the methodological challenges". In addition, they argue that remittance surveys could be more suited to measure remittance flows at the local level (Migration Data Portal, 2021).9

4. Methodology

4.1. Analysis

As it is evident from the previous discussion on data issues, conducting an econometric analysis was not possible due to data limitations[10]. Therefore, in what follows, we analyze how remittance flows were influenced by COVID-19 by looking at the annual remittance data and the survey data from the COVID-19 Household Monitoring Dashboard. In addition, we compare the data from these two datasets. To assess how the COVID-19-induced remittance reductions are related to human development, we perform multiple correlation analysis. For the multiple correlation analysis only the data from the COVID-19 Household Monitoring Dashboard is used.

4.2. Variables

Table 1 provides an overview of all the variables that were used in the empirical analysis of this paper.

[9] Ratha et al. (2017) acknowledge the value of household surveys to provide more accurate information on remittance flows.
[10] See also footnote 7 on this.

Table 1: Variables used in empirical analysis

Variable name	Dataset	Description
Rem_%_change	Annual Remittance Data	Percentage change in remittance inflows from 2019 to 2020.
Inco_redremitt	COVID-19 Household Monitoring Dashboard	Percentage of remittance receiving households in which remittances decreased since the beginning of the pandemic.
FS_day	COVID-19 Household Monitoring Dashboard	Percentage of households that, in the last 30 days before the survey, did not eat for an entire day because they did not have the financial means to buy food.
FS_hungry	COVID-19 Household Monitoring Dashboard	Percentage of households that, in the last 30 days before the survey, were hungry but did not eat because they lacked the (financial) resources to buy food.
Heal_reason1	COVID-19 Household Monitoring Dashboard	Percentage of households that could not get medical care when needed because they lacked money.
Educ_any	COVID-19 Household Monitoring Dashboard	Percentage of households with schoolage children (who attended school before COVID) in which children engaged in any learning/education activities since the closure of the schools.

Source: World Bank, 2021b; World Bank, 2021e

Two variables on remittances were used. The first one was constructed by the authors using the World Bank's annual data on remittances. The dataset contained information on remittance inflows of 214 countries from 1980 to 2020 (World Bank, 2021e). This allowed us to calculate the percentage change in countries' remittance inflows from 2019 to 202011, a variable we named 'Rem_%_change'. A second variable on remittances was obtained directly from the COVID-19 Household Monitoring Dashboard data. This dataset contains information on remittance decreases 'in the past 12 months' (before the interview), 'since the last interview' and 'since the start of the pandemic' (World Bank, 2021b). In this paper we focus on the information about remittance decreases 'since the start of the pandemic' for multiple reasons. First, this variable contains information for most of countries. In addition, the variable on remittance decreases 'in the past 12 months' insufficiently captures the shock provided by COVID-19 and contains very little observations. Third, conducting between-country-comparisons on changing remittances 'since the last interview' seems inappropriate, since the timing and the number of data collections for this variable differs a lot among countries. Having said that, there are still some cautious remarks to be made about the information on remittance decreases 'since the start of the pandemic'. First, as the data for this variable was collected between April and August 202012, we only look at the short-term influence of COVID-19 on remittances13. Second, the data is still quite limited. At the time of the completion of the empirical analysis, it was only available for 28 countries. In addition, the samples of households that answered questions concerning remittances is quite low. More information is provided in Annex 1. When we look at this group of 28 countries, the average sample of respondents is 366. Only about 20% of the respondents that participated in the High-Frequency Phone Surveys in these countries answered questions on remittances, with the share dropping below 15% for several countries and below 2% for one country. There are less than 100 respondents in several countries (World Bank, 2021b). Obviously, these low sample sizes have an impact on the overall quality of our data. Furthermore, the fact that the time of data collection differs among countries also presents a problem regarding this variable. However, this presents a smaller problem than the one for the variable on remittance

[11] Data is available from the authors upon request.
[12] Most countries collected their data in May, June or July. Only three countries collected their data in April and one in August.
[13] We also considered using the variable on remittance decreases 'since the last interview' for further analysis about the long-term impact of COVID-19 on remittances and on development outcomes. However, not all countries that collected data on remittance decreases 'since the start of the pandemic' continued questioning remittance decreases 'since the last interview'. Furthermore, there was a large variety in the data on remittance decreases 'since the last interview'. Some countries only once collected data on this variable while others did several times. Moreover, the timing of data collection ranged from May 2020 to March 2021, which is a very large interval. Due to all the above data limitations, we decided to focus only on the short-term impact of COVID-19 on remittances and development outcomes.

decreases 'since the last interview'14.

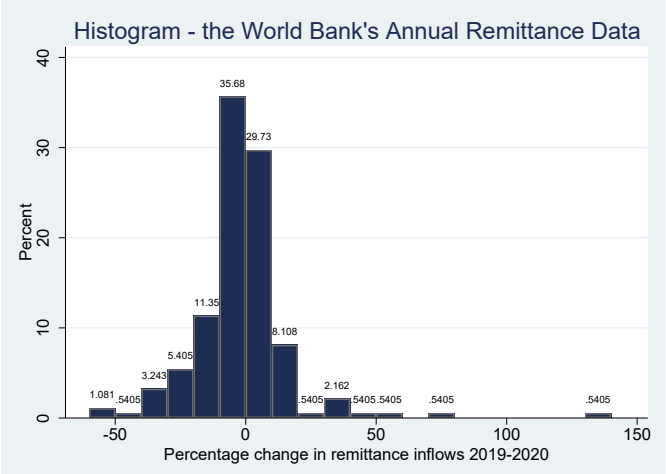
To assess the influence of the COVID-19-induced remittance reductions on development, we considered the variables that were available in the COVID-19 Household Monitoring Dashboard and picked four variables that were good indicators for human development. We based our choice on the description of the variables and the number of countries for which data was available. Variable 'Educ_any' was chosen as the best indicator for educational level, variable 'FS_day' and 'FS-hungry' for food security and 'Heal_reason1' for health.

5. Empirical Analysis

5.1. The impact of COVID-19 on remittances

Figure 3 presents estimates on changes in remittance inflows between 2019 and 2020 using World Bank's annual remittance data; the first bar starts at -60 and the width of the bars equals 9.9999 (percent). The figure shows that according to the World Bank's data, 36% of the 185 countries for which data exists, experienced a drop of approximately 0.001 to 10 percent. Another 11 percent of the countries experienced a decline between 10 and 20 percent. 30 percent of countries saw their remittances increase with 0 to 10 percent. Adding up all countries that experienced decreases in remittances gives 57%. Thus, most countries in the dataset saw their remittance inflows decrease in 2020. Within the group of countries that experienced decreases in remittance inflows, examples of extreme cases are Bulgaria (-59%), The Seychelles (-58%), Sao Tome and Principe (-46%) and Lithuania (-39%). Extreme cases within the group of countries that experienced increases in remittances are Bhutan (+47%), Timor-Leste (+55%), South-Sudan (+71%) and Angola (+134%). These extreme examples are important to note as some of them are outliers (values that are more than three standard deviations away from the mean), which can influence the analysis significantly (Neels, 2017). In the annual remittance data, outliers are values above 54.004 and lower than -58.850.

Figure 3: The World Bank's estimates on changes in remittance inflows between 2019 and 2020

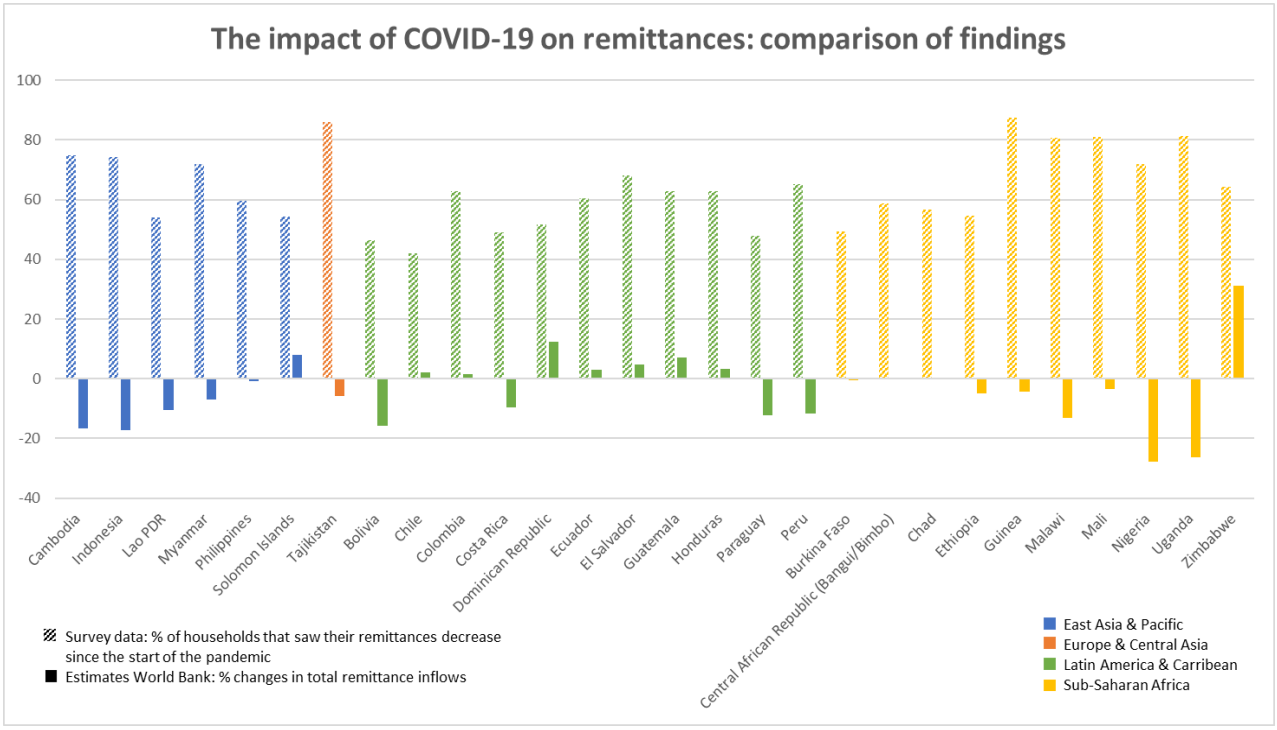


Source: Authors, based on data from the World Bank, 2021e

[14] See footnote 13 on this.

In **Figure 4** we report the findings from the COVID-19 Household Monitoring Dashboard, and compare them with the World Bank's estimates of annual remittance inflows. The non-striped bars refer to the World Bank's annual estimates of remittance inflows and thus show by how many percentage points a country's remittance inflows increased/decreased in 2020. Findings from the household surveys are illustrated by the striped bars. These bars, thus, show what share of remittance-receiving households experienced a decline in remittances since the start of the pandemic. The graph illustrates a large variation in the percentages of households that experienced declines in remittances. However, in 23 out of 28 countries, over 50 percent of remittance-receiving households experienced declines in remittances. In nine countries, over 70 percent of the surveyed remittance-receiving households even saw their remittances drop. The graph also shows regional differences. It is striking to see how many Sub-Saharan African households reported decreases in their remittances. In addition, in Central Asian Tajikistan, a very large number of households reported decreasing remittances. Unfortunately, this is the only country in Europe and Central Asia in which data was collected, thus we cannot argue whether this is an overall trend in the region.

Figure 4: Comparison of data on the impact of COVID-19 on remittances in 28 developing countries



Source: Authors, based on data from the World Bank (2021b and 2021e).

Comparing the data from the household surveys to those from balance of payments is difficult, as the interpretation of the data differs. The annual remittance data show us the percentage changes in remittance inflows, and as such is an indicator of the intensity of remittance reductions. By contrast, the survey data show us the percentages of households that experienced declining remittances. They, therefore, cannot say anything about the extent to which households' remittances decreased as a result of the pandemic.

However, performing a comparison of the data can yield some interesting insights. In some countries, findings from the survey data and the annual remittance data are quite consistent. This is, for instance, the case for Cambodia, Indonesia, Uganda and Nigeria. The World Bank estimated that these regions had experienced large remittance reductions in 2020, and household surveys confirm this. However, there are also interesting contradictory results. For example, Zimbabwe's remittance inflows were estimated to have increased by approximately 30 percent in 2020. However, 64 percent of the Zimbabwean households that took part in the surveys declared their remittances decreased. The same contradiction exists in Ecuador, El Salvador, Guatemala and Honduras. For these countries, however, the estimated increase in remittance inflows was less extreme. Furthermore, the household surveys report some extreme findings that do not match with the World Bank's calculations. In Tajikistan and Guinea, over 80 percent of the surveyed households experienced decreasing remittance inflows. However, the estimated drops in remittances by the World Bank only equals 6 and 4 percent, respectively. Finally, some countries that, according to the World Bank's calculations, had experienced (almost) no change in remittance inflows, contain considerable percentages of households that experienced drops in remittances. This is, for instance, the case in the Philippines, The Central African Republic, Burkina Faso and Chad. In these countries 60, 59, 49 and 57 percent of remittance-receiving households respectively declared a drop in their remittances. Again, however, we need to emphasize that the low sample sizes of the household surveys in some countries could have a large influence on the results. Therefore, this can potentially be a reason for the discrepancies in the results of the survey data and the annual remittance data.

The finding that the results of the annual remittance data sometimes contrast with those of the survey data confirms studies by Ratha et al. (2021) and Ernst (2021) who have noted that during the pandemic, official records of financial remittances have given biased impressions. For instance, the central banks of Mexico and the Dominican Republic observed increases in remittance inflows, while household surveys in these regions showed that total remittance reception decreased. They argue that this is caused by an increase in formal remittance sending (Ratha et al., 2021; Ernst, 2021). This can be a plausible explanation for the above contradictory results. In addition, we want to re-emphasize that the survey data does not say anything about the intensity with which remittances reduced. It is therefore possible that a lot of households may have experienced relatively small remittance reductions in some countries.

5.2. The correlation between COVID-19-induced reductions in remittances and human development indicators

In this sub-section, we will discuss whether COVID-19-induced reductions in remittances are correlated with food insecurity, access to healthcare, and educational participation. Only data from the COVID-19 Household Monitoring Dashboard will be used. However, we need to stress that the reported findings need to be interpreted with some degree of caution. A first important note to add is that we talk about correlation in this sub-section, and not about causation. In this context, although the reported findings can tell us something about (non-)existent correlations between COVID-19-induced remittance reductions and human development indicators, they cannot tell us anything about causation. Second, since the number of observations that is available is very small, we cannot provide firm evidence for the reported correlations.

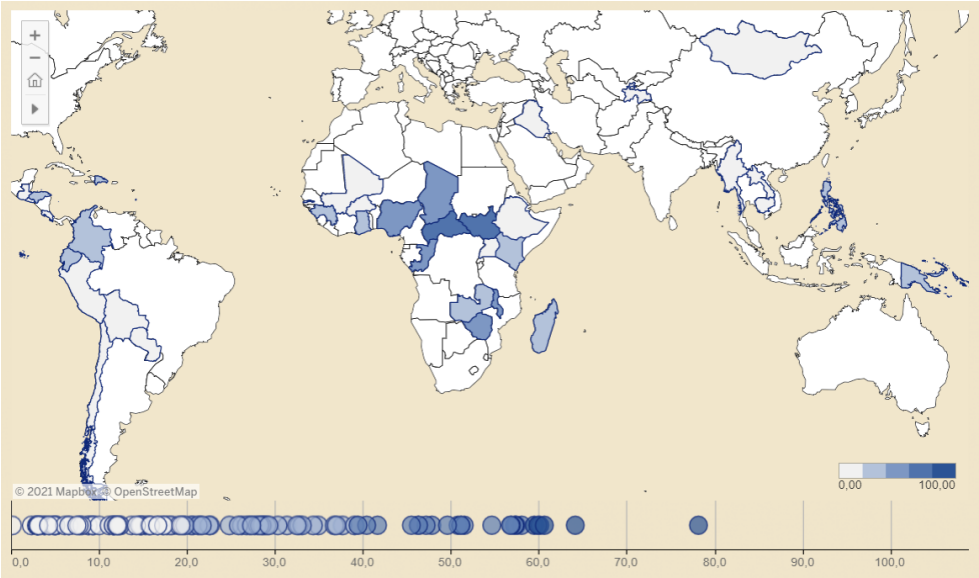
5.2.1. Remittance reductions and food security

Figure 5 illustrates the World Bank's (2021a) data from the variable 'FS_hungry'. The figure shows that there were quite a lot of countries in which a considerable percentage of households experienced hunger. Sub-Saharan Africa, in particular, contained a lot of households who experienced hunger due to lack of resources. Figure 6 illustrates the World Bank's (2021a) findings from another measure of food insecurity

during the pandemic, variable 'FS_day'. It is evident from the figure that some countries (like South Sudan) contained considerable percentages of households that suffered from this severe form of food insecurity. However, there is a lot of variation between countries.

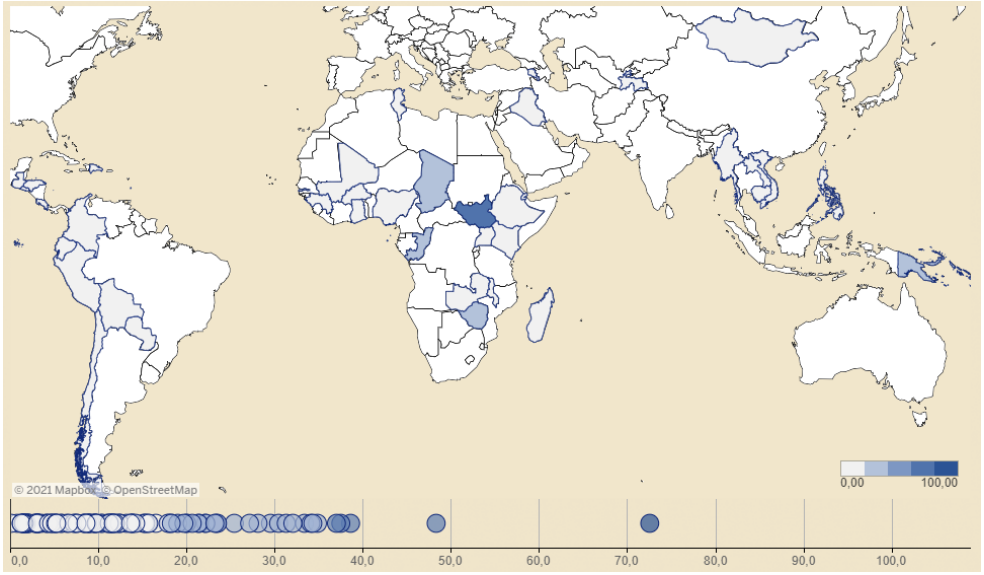
Since the literature review showed that remittances can influence food security, in what follows we use data from the COVID-19 Household Monitoring Dashboard to assess whether there is a correlation between remittance reductions and food insecurity. We use the variables 'FS_hungry' and 'FS_day' for this purpose (World Bank, 2021b).

Figure 5: World map: percentage of households that experienced hunger because of financial issues



Source: World Bank (2021a)

Figure 6: World map: percentage of households that did not eat for a day because of financial issues



Source: World Bank (2021a)

Figure 7: Scatterplot of remittance reductions and hunger – Total

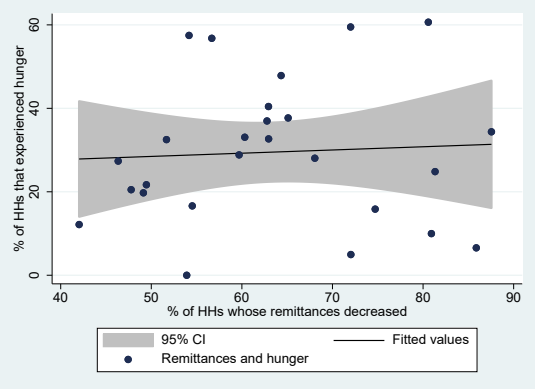


Figure 8: Scatterplot of remittance reductions and hunger – Limited

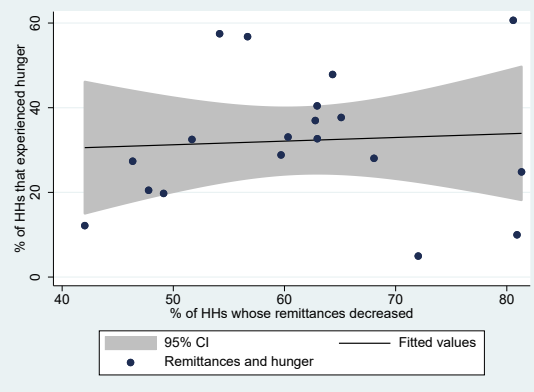


Figure 9: Scatterplot of remittance reductions and food insecurity – Total

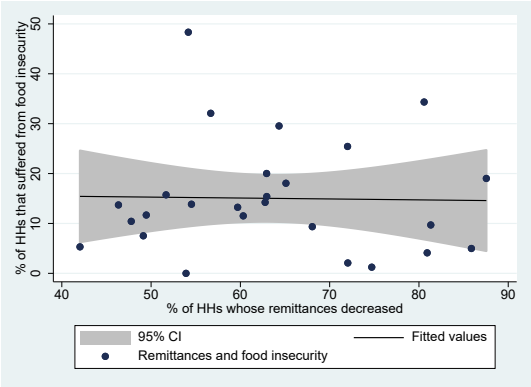
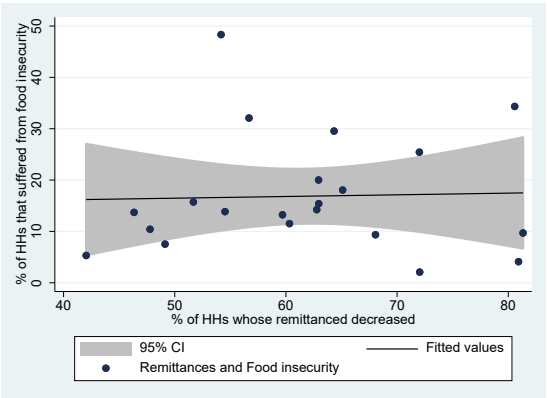


Figure 10: Scatterplot of remittance reductions and food insecurity – Limited



Source: Authors, based on data from the World Bank (2021b)

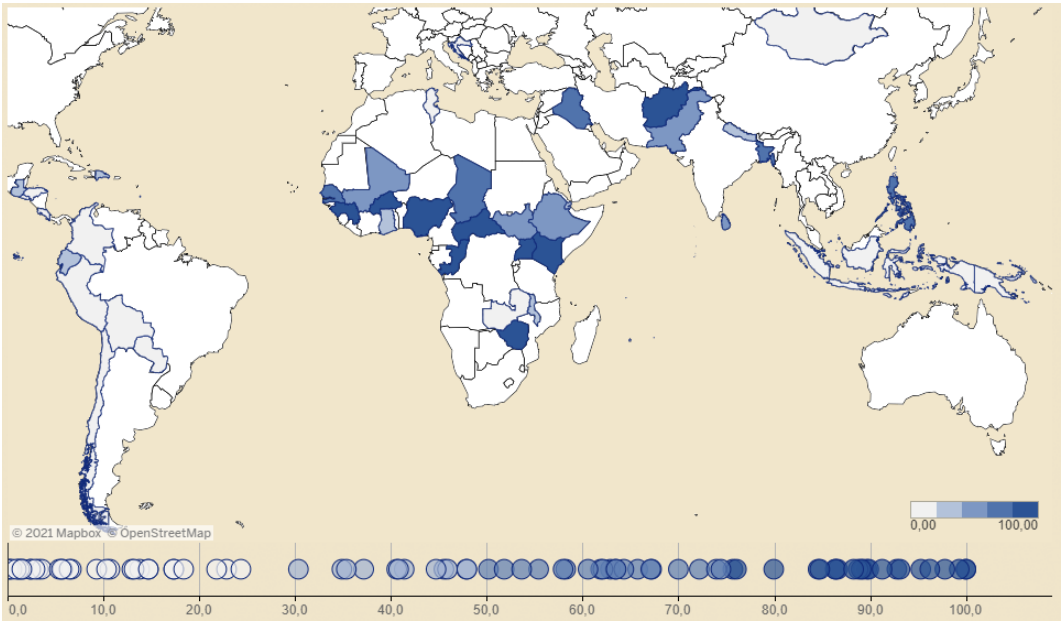
First, we look at the correlation between COVID-19-induced remittance reductions and 'FS_hungry'. Figure 7 shows the scatterplot of these two variables if we include all countries that collected data on them (see 26 countries) in the sample. The scatterplot shows a small positive correlation. However, in some countries, the data collection on food security occurred some (one to eight) months later than the one on remittances. Since the COVID-19 situation could have changed during this period, the context in which the data collection took place could be different for both variables. In view of this, Figure 8 also shows a scatterplot of 'FS_hungry' and 'Inco_redremitt' but it only contains data points from the 19 countries for which data collection happened at the same point in time. The trend line does not appear to change significantly, as compared to Figure 7.

In addition, we look at the correlation between COVID-19-induced remittance reductions and 'FS_day'. Figure 9 shows the scatterplot of the variables 'FS_day' and 'Inco_redremitt' if we include all 26 countries for which this data was available in the sample. The figure shows that there is no correlation between the two variables. When we only include data points from the 21 countries for which data collection happened at the same point in time in Figure 10, we find a very weak positive correlation between the two variables.

5.2.2. Remittance reductions and healthcare

Figure 11 presents the World Bank's (2021a) data for the variable 'Heal_reason1'. Again, there seems to be a lot of variation among countries. However, it is striking to see how many households (particularly in the SSA region) could not get the healthcare they needed during the pandemic because of financial issues.

Figure 11: World map: percentage of households that were unable to receive medical care because of financial issues



Source: World Bank (2021a)

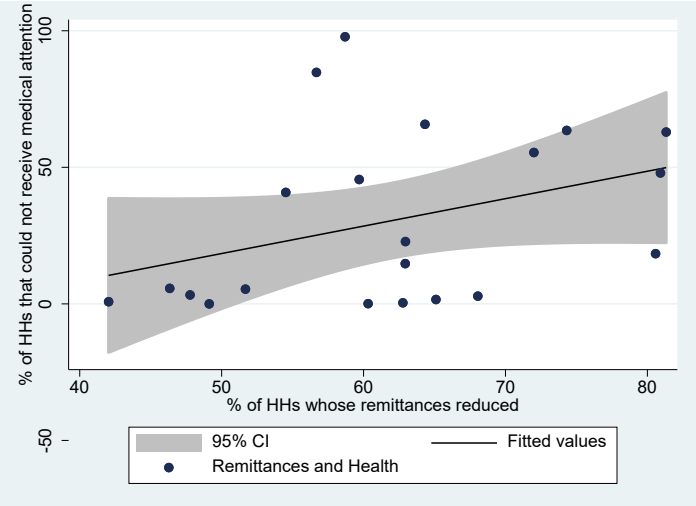
Figure 12 shows the scatterplot of the variable 'Heal_reason1' and 'Inco_redremitt' for the 23 countries for which this data is available. The scatterplot shows a positive correlation between the two variables. Thus, countries in which a lot of households experienced remittance reductions also comprised a lot of households that could not receive medical attention because of financial issues (and vice versa).

Figure 12: Scatterplot of remittance reductions and health - Total

Source: Authors, based on data from the World Bank (2021b)

For the variable 'Heal_reason1', only two countries collected their data on medical care and remittances at a different time. In view of this, we again include a figure excluding these two countries. Figure 13 shows that the trendline changes very little, and a positive correlation between the two variables is found.

Figure 13: Scatterplot of remittance reductions and health - Limited

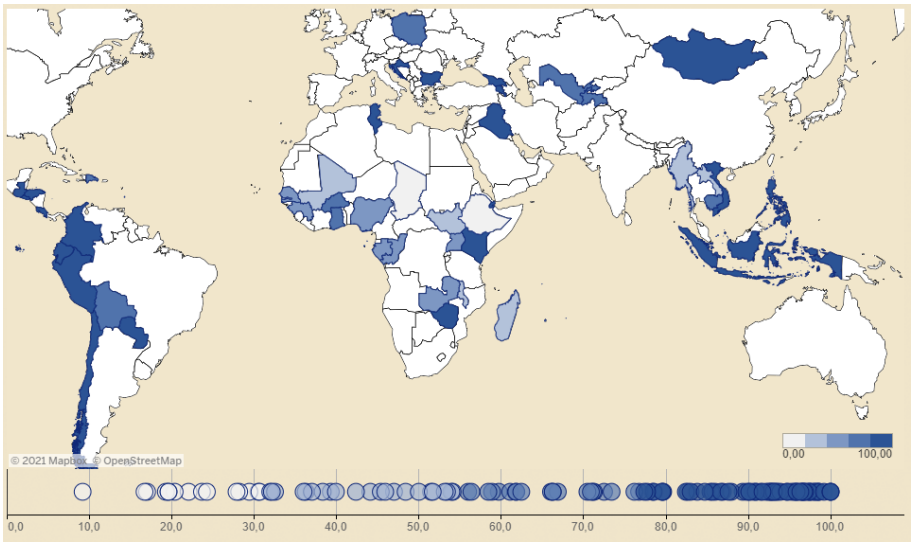


Source: Authors, based on data from the World Bank (2021b)

5.2.3. Remittance reductions and education

The data from the World Bank (2021b) also allows us to assess the correlation between COVID-19-induced drops in remittances and deterioration of educational participation. Aside from the variable 'Inco_redremitt', we use the variable 'Educ_any'. Figure 14 shows a world map illustrating the World Bank's (2021a) data for this variable. It is clear that in some countries, children's participation in learning activities remained quite high. However, in some countries, educational activity became very low. Again, this issue seems to be especially prevalent in Sub-Saharan African countries.

Figure 14: World map: percentages of households (with school-age children) with children participating in educational activities despite school closures

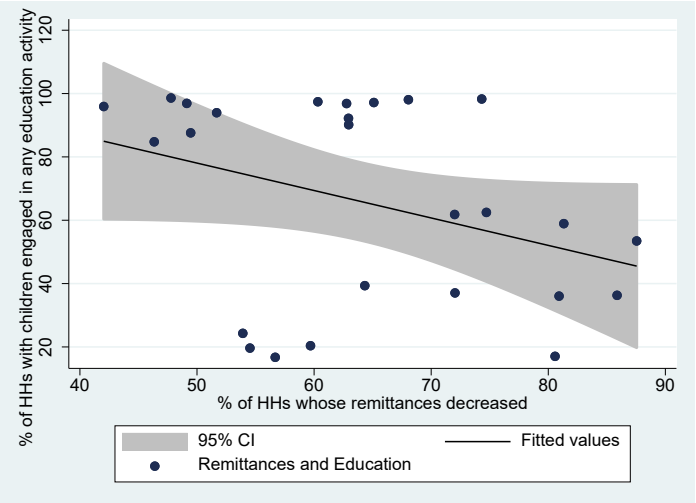


Source: World Bank (2021a)

Figure 15 shows the scatterplot of the variable 'Educ_any' and 'Inco_redremitt' for the 26 countries for which data on both variables was available. The scatterplot shows a negative correlation between the variables. Thus, countries where the number of households that experienced drops in remittances was higher had fewer households in which children engaged in learning activities since the closure of the schools (and vice versa)

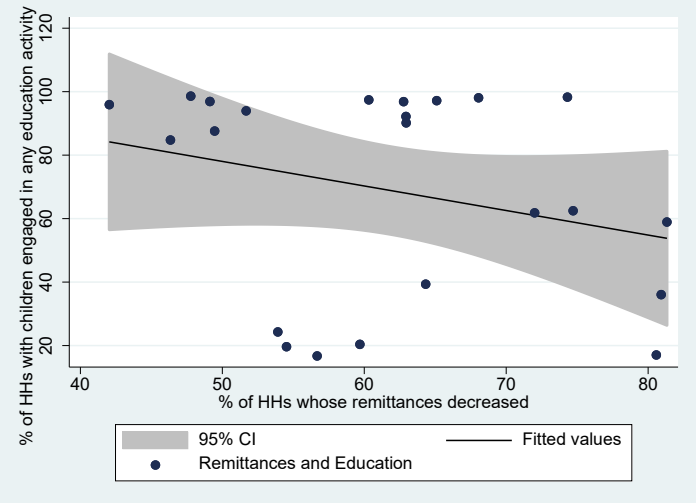
Once again, we include a figure that excludes countries in which the timing of the data collection on education differed from the one of remittances (see Figure 16). We still find a negative correlation between COVID-19-induced changes in remittances and educational activity

Figure 15: Scatterplot of remittance reductions and education - Total



Source: Authors, based on data from the World Bank (2021b)

Figure 16: Scatterplot of remittance reductions and education - Limited



Source: Authors, based on data from the World Bank (2021b)

6. Conclusion

The aim of this paper was to provide some useful insights about the impact of COVID-19 on remittances and the subsequent potential effects on development outcomes. To address this we conducted a detailed literature review and undertook also an empirical analysis by using the rather limited data available at the time of writing.

Our detailed discussion of the literature review seems to suggest that annual remittance data pointed to a 1.6% decrease in remittance flows towards LMICs. However, there were large regional differences. The empirical part of this paper extended these insights from the literature. We found that both the annual remittance data and the survey data from the World Bank provided evidence that remittance inflows in a substantial number of countries decreased in 2020. The annual remittance data showed that 57% of the 185 countries for which data existed at the time of writing experienced a drop in remittance inflows. In addition, in 23 out of 28 countries in which surveys about remittances were conducted, over 50 percent of remittance-receiving households experienced declines in remittances. However, the annual remittance data and the survey data sometimes showed contradictory results. Thus, the exact influence of COVID-19 on remittances to specific countries remains indefinite.

The second research question that we tried to address is what potential influence the COVID-19-induced drop in remittances may have on development outcomes. The discussion of the literature showed that the influence of remittances on economic development is indefinite, but that remittances lower poverty in recipient countries. In addition, remittances have the potential to positively influence human development. However, there is evidence which seems to suggest that, in particular circumstances, remittances can increase inequality in countries of origin. These insights from the literature hint that the COVID-19-induced drops in remittances could have a negative effect on poverty levels and human development. We tried to gain more insights on this last presumption by looking at survey data from the World Bank. However, the data only allows us to look at correlations between COVID-19-induced drops in remittances and human development indicators (not poverty). Our empirical analysis suggests a non-existent or, at best, weak positive relationship between these remittance drops and food insecurity. In addition, we found a moderate positive correlation between these remittance reductions and households' inability to pay for medical care. A moderate negative correlation was also found to exist between COVID-19-induced changes in remittances and educational activity.

This paper contributes to the relevant literature as it tries to fill part of the current gap in the literature on the influence of COVID-19 on remittances and development. The tentative insights emanating

from this study also reveal some important potential problems that can occur because of COVID-19-induced remittance reductions. Needless to say, this study has some important limitations. First, in this paper we applied a global focus, so the insights emerging from this work should not be blindly applied at the country level. As our literature review clearly suggests the contextual framework is very important. The centrality of the local context also means that the influence of COVID-19 on remittances, and subsequently on development outcomes, can differ a lot from region to region. A second limitation of this paper lies within the availability of data at the time of writing. First, survey data was only available for a scant number of countries (19 to 28). This did allow us to conduct an in-depth empirical analysis and try to identify any possible causal relationships for the variables of interest. Having said that, our correlation analysis can yield some useful insights. Data limitations also forced us to focus on the short-term influence of COVID-19 on remittances and development outcomes. Second, the specific samples taken in the surveyed countries were very limited in some cases. This small number of observations did not allow us to add further gravitas in the results reported in this paper. Third, the nature of the available data has certain limitations. As already mentioned, the timing of data collection on the used variables differed among countries in the sample. We tried to address this problem by performing multiple correlation analysis on a more limited group of countries. Having said that, the variance in timing of data collection on remittances may still influence the results. In view of the above data limitations the reported findings are only tentative and they should be interpreted with some degree of caution. Hopefully, as better and more data become available in the near future, researchers will be able to address these important research questions in more detail so we can delve deeper into the overall impact of the pandemic on remittances at the global, regional and country level.

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Appendix

Number of households from which data was gathered about drops in remittances, compared to the total sample of the COVID-19 Household Monitoring Dashboard Survey.

Country	Subset sample	Total sample	Subset sample as a percentage of total sample
Cambodia	87	700	12%
Indonesia	621	4338	14%
Lao PDR	202	2500	8%
Myanmar	182	1500	12%
Philippines	1814	9448	19%
Solomon Islands	531	2665	20%
Tajikistan	390	1141	34%
Bolivia	122	1075	11%
Chile	102	1000	10%
Colombia	165	1000	17%
Costa Rica	82	801	10%
Dominican Republic	308	807	38%
Ecuador	230	1227	19%
El Salvador	270	804	34%
Guatemala	135	806	17%
Honduras	268	807	33%
Paraguay	139	715	19%
Peru	160	1000	16%
Burkina Faso	493	1968	25%
Central African Republic (Bangui/Bimbo)	45	600	8%
Chad	166	1748	9%
Ethiopia	433	3249	13%
Guinea	1967	1968	100%
Malawi	387	1729	22%
Mali	213	1766	12%
Nigeria	467	1950	24%
Uganda	34	2226	2%
Zimbabwe	234	1747	13%

Source: ***Authors, based on data from the World Bank, 2021b***

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