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Abstract

Remittances are an important source of development finance, particularly in recent years due also to increased migration flows at global level. The recent COVID-19 pandemic resulted in a sudden drop of remittances and an alarming aspect of the pandemic is that it particularly affected female migrants. Despite the importance of gender for remittance sending and usage, research about international migration and remittances insufficiently takes into account its role. Against this background, the aim of this paper is to partially fill this gap in the relevant literature by trying to address the following important questions: (1) In what ways is gender important in understanding the sending and the usage of remittances?; and (2) what is the relationship between gender, COVID-19 and pandemic-induced remittance reductions? In doing so, we provide an overview of the (limited) literature on the vast influence of the COVID-19 pandemic on female migrants and we also assess whether gender has had an influence on the extent to which remittance inflows decreased as a consequence of the COVID-19 pandemic by conducting a preliminary empirical analysis based on some recent data (albeit limited) on the above nexus. Surprisingly, we found a negative correlation between COVID-19-induced changes in remittances and female emigration rates. This contrasts with insights about the higher vulnerability of female migrants for the pandemic. However, this finding seems to be in line with the stand of the literature which seems to suggest that female migrants remit more during periods of crisis than male ones, and that they tend to remit a larger percentage of their income than male migrants. This paper contributes to the relevant literature in multiple ways. First, our detailed discussion of the influence of gender on remittances and the impact of COVID-19 on female migrants has revealed other important aspects in the overall relationship that can stimulate further research on these topics and also raise important policy questions for policymakers. Second, our preliminary findings of a possible negative correlation between COVID-19-induced changes in remittances and female emigration rates is very relevant. In view of the insights we gained from the discussion of the relevant literature, these findings raise important concerns about female migrants' well-being during the pandemic and call for further empirical research in this crucial area once more reliable data become available.

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1. Introduction

In the past decades migration flows intensified a lot. Between 1965 and 2000 the international migrant stock more than doubled (Lean Lim et al., 2003). Remittance flows, which are strongly associated with migration, increased with it, with a lot of low- and middle-income countries being more dependent on them (Adams & Page, 2005; Ratha et al., 2020). Consequently, a lot of households rely on remittances for their survival (Sørensen, 2005). However, the COVID-19 pandemic resulted in a sudden drop of remittances (Ratha et al., 2021). An alarming aspect of the pandemic is that it particularly affected female migrants, which means that the amount of remittances sent by them is especially threatened (Azam et al., 2020; UN Women, 2020). This is problematic as both the sending and the usage of remittances are far from gender neutral (Sørensen, 2005). At the same time, female sending and usage of remittances is believed to have a more positive effect on poverty levels and human development indicators (Fleury, 2016; Guzmán et al., 2008; Orozco et al., 2006). Therefore, the potentially larger drop in remittances coming from female migrants can have major implications.

Despite the importance of gender for remittance sending and usage, research about international migration and remittances insufficiently takes into account its role (Hennebry et al., 2017; International Organization for Migration (IOM), n.d.). The aim of this paper is to partially fill this gap in the relevant literature. In doing so, we will try to address the following important questions: (1) In what ways is gender important in understanding the sending and the usage of remittances?; and (2) what is the relationship between gender, COVID-19 and pandemic-induced remittance reductions? We provide an overview of the (limited) literature on the vast influence of the COVID-19 pandemic on female migrants. In addition, we assess whether gender has had an influence on the extent to which remittance inflows decreased as a consequence of the COVID-19 pandemic by conducting a preliminary empirical analysis.

The remainder of the paper is structured as follows: In section 2 we provide an overview of the (limited) literature available on the relationship between gender and remittances and in section 3 we discuss trends in female migration and we show how the COVID-19 pandemic has had an influence on remittance sending from female migrants. Section 4 reports the key finding emanating from the empirical analysis along with a discussion of data sources used

and our methodology. Section 5 concludes the paper and provides some tentative policy recommendations in this important research and policy area.

2. Gender as an influencing factor in remittances

The term ‘gender’ refers to what it socially and culturally means to be male or female. Gender influences people’s visions of what males and females should behave like, and what is expected from them. Consequentially, it leads to stereotypes, norms and rules and thus influences people’s actual behavior (Davids and van Driel, 2015; Fleury, 2016). It has been argued that gender should be considered when analyzing remittances, as it influences both the amount of remittances sent and remittance usage (IOM, n.d.; Sørensen, 2005).

2.1. Gender differences in remitting behavior

There is still a lot of uncertainty about the difference in total remittances sent by male and female migrants (Azam et al., 2020). However, more consensus emerges about women’s tendency to remit a larger share of their income than men (Azam et al., 2020; Foley and Piper, 2020; IOM, n.d.; Robert, 2015; Tittensor and Mansouri, 2017). This is striking as female migrants, on average, earn less than male migrants (Engle, 2004; Fleury, 2016). Lower earnings of migrant women can be explained by two factors. First, female migrants are more often unemployed than their male counterparts and females without a migration background. This is because female migrants, having both the migrant and female identity, face a ‘double disadvantage’ in the labor market and this negatively affects their employment rates. In addition, working female migrants are more often employed in low-skilled, low-paid and precarious occupations than men (Azam et al., 2020; Donato et al., 2014; Foley and Piper, 2020; Hennebry et al., 2017; Hennebry et al., 2016; ILO, 2018; IOM, n.d.; Lean Lim et al., 2003; OECD, 2020; Rubin et al., 2008; Tayah, 2016).

The tendency of female migrants to remit a larger percentage of their income than male ones has multiple plausible causes. First, female migrants have stronger family bonds and they have more altruistic motives to send remittances than male migrants (Chimhowu et al., 2005; Fleury, 2016; Le Goff and Salomone, 2016; Orozco et al., 2006). Second, gender norms may also have an influence. These norms can lead to higher expectations and pressures to remit for female migrants. In addition, inheritance may play a role here. The (in)ability to ‘earn’ an

inheritance, which is linked with gender in some societies, can increase (or decrease) female and male migrants' remittance sending (Fleury, 2016; IOM, n.d.; Orozco et al., 2006). The finding that female migrants remit a large share of their income, despite the fact that they earn less than male migrants, can be seen as a positive outcome, since female migrants' households still receive a significant amount of remittances. However, it has been argued that this also raises concerns about female migrants' well-being and mental health, as they significantly lower their own expenditures in order to remit (Foley and Piper, 2020; Pérez Orozco et al., 2010; Robert, 2015).

Although female migrants remit a large share of their income despite their lower earnings, their labor market circumstances do influence their ability to remit, and thus their remitting behavior (IOM, n.d.; Robert, 2015). The amounts that female migrants send per transaction are overall smaller than those sent by their male counterparts (Fleury, 2016; Engle, 2004; Hennebry et al., 2017; IOM, n.d). Furthermore, female migrants send more often remittances home than male migrants and they keep sending them for a longer time period (Fleury, 2016; Engle, 2004; Hennebry et al., 2017; IOM, n.d). The finding that female migrants send more frequently smaller amounts of money also means that they lose more money on transfer fees than male migrants (Fleury, 2016; IOM, n.d).

A third important difference between male and female migrants is that female migrants less often use formal remittance sending methods (Azam et al., 2020; Hennebry et al., 2017). Female migrants' lower access to banks' financial services and technological money transfer services is partly responsible for this difference. Lower educational levels of female migrants and banks' reluctance to open bank accounts for female migrants are important in this respect (Azam et al., 2020; Engle, 2004; IOM, n.d.; Ramírez et al. 2005). Another difference between male and female migrants is that female migrants remit more during periods of crisis than men (Fleury, 2016; Hennebry et al., 2017; Orozco et al., 2006).

In addition, the recipients of male and female migrants' remittances are different. The recipients of male migrants' remittances are usually their wives. However, female migrants who have children living in the home country often send remittances to females that took over the childcare after their migration. The partner is often not the one receiving the remittances, as men rarely take over the care of the children after their wife migrates. Female migrants want to evade that the money is spent on things that do not benefit their household

and therefore send the money to the caretakers of their children (IOM, n.d.; Lopez-Ekra et al., 2011; Pérez Orozco et al., 2010; van Naerssen, 2015). Female migrants thus do not only send remittances to members of their nuclear family, they more often remit to their extended family than male migrants (IOM, n.d.; Orozco et al., 2006; Robert, 2015).

Finally, female migrants more often instruct the recipients of remittances on how to use the money than male migrants (Fleury, 2016). Female migrants often want their remittances to be used for education and healthcare. Male migrants on the other hand, more often want the recipients to invest the money in real estate or productive activities (sometimes on their behalf). This last finding can be explained by the fact that male migrants more often intend to return home than female migrants. Therefore, they might prefer the money to be used in ways that will also benefit them upon return (Chimhowu et al., 2005; Engle, 2004; Guzmán et al., 2008). The differing preferences of male and female remitters are relevant as they (to a varying extent) also have an influence on the spending of their remittances (Pérez Orozco et al., 2010; Rahman and Fee, 2009). Orozco et al. (2006) have argued that the difference between male and female migrants' preferences about remittance spending results in female remittances having a more positive influence on poverty alleviation than men's.

2.2. Gender differences in remittance usage

Although women are often the recipients of remittances (Chimhowu et al., 2005; Engle, 2004; Fleury, 2016; IOM, n.d.; van Naerssen, 2015), they do not always control the usage of this money. Pérez Orozco et al. (2010) have found that women are both the major recipients and the chief administrators of remittances. However, other authors (like IOM, n.d.; Lopez-Ekra et al., 2011) have argued that women's control over the usage of the money varies between regions. In addition, joint decision making between males and females about the usage of the remittances is also possible (IOM, n.d.; World Bank, 2021d).

Women's control over the usage of remittances depends on multiple factors. Decision-making power over remittances is higher for women who receive remittances in their name (Lopez-Ekra et al., 2011). However, Ramírez et al. (2005) have argued that the household allocation of resources and bargaining strength also influence who decides on the usage of the money received. We can also link this to the importance of individual characteristics. For instance, educational level and age are relevant, with decision-making power over remittances being

higher for older and more educated women. For women who receive remittances from their migrant husband, the duration of the marriage also influences their decision-making power. Third, household characteristics can influence females' ability to control remittances. Household structure (i.e. who the woman and her children live with - her own parents, the parents of the husband or alone), is also relevant. In addition, the households' socioeconomic status is influential (IOM, n.d.; Lopez-Ekra et al., 2011; Sørensen, 2005). Finally, gender norms can also influence female decision-making power over remittances. In more patriarchal societies, for example, females have less control over the usage of remittances (Fleury, 2016; Robert, 2015; Sørensen, 2005).

When women are in control of the spending of remittances, they are believed to spend the money on different items than male recipients. Men more often use the money for their personal needs, while women usually spend it on things that have value for the entire household. More specifically, female recipients are believed to use the money mostly for purchasing food and paying for education and healthcare. Males also use remittances for these purposes, although in smaller proportions. Instead, they more often invest the remittances, use them to buy assets or spend them on leisure (Chimhowu et al., 2005; Fleury, 2016; IOM, n.d.; Pérez Orozco et al, 2010; Tittensor and Mansouri, 2017; van Naerssen, 2015). Consequently, when women decide on the usage of remittances, this is more positive for children's educational level and health than when men decide (Fleury, 2016; Guzmán et al., 2008). Therefore, intuitively, one could argue that female spending of remittances can have a more positive influence on human development outcomes, while male spending of remittances could be more valuable to economic development.

2.3. Further insights

The previous sub-section provided overall insights on the relationship between gender and remittances. However, it is important to stress that the influence of gender on remittance sending and usage can vary a lot from region to region and from country to country. Various authors (Dodson et al., 2008; King et al., 2013; Engle, 2004) have argued that findings can differ a lot between countries and regions. Therefore, Dodson et al. (2008) have argued that it is important to conduct gender-sensitive research in different contexts.

In addition, it must be noted that there are also sceptics regarding the view that female migrants are better remitters. For example, Davids and van Driel (2015) and King et al. (2013) argue that the above insights are common views in the literature, but that the amount of empirical evidence is fairly limited. In a similar vein, Pérez Orozco et al. (2010) emphasize that dogmas about gender-differentiated behavior are prevalent in gender-sensitive research. Therefore, they warn that studies sometimes affirm these dogmas whilst not correctly testing them. And since the relevant literature is rather limited it is thus necessary to be cautious about the above insights (Sørensen, 2005). In addition, concerns also arose about the consequences of dogmas about women being better remitters. Kunz (2015), for example, argues that this image can normalize gendered behavior, forcing women to apply to certain expectations and intensifying gender inequality.

3. Trends in female migration and the impact of COVID-19

3.1. Trends in female migration and its influence on remittance sending

Over the past six decades, women have been migrating more or less in the same amount as men (Lean Lim et al., 2003; Migration Data Portal, 2021a). **Table 1** shows the United Nations Department of Economic and Social Affairs' (UN-DESA) (2020b) most recent calculations of the international migrant stock and the number and percentage of female international migrants.

Table 1: Female participation in migration, 1990-2020

Female migrants in the total international migrant stock, 1990-2020			
Year	Total migrant stock	Female migrant stock	Percentages
1990	152.986.157,00	75.422.690,00	49,3
1995	161.289.976,00	79.708.475,00	49,4
2000	173.230.585,00	85.510.752,00	49,4
2005	191.446.828,00	93.783.747,00	49,0
2010	220.983.187,00	107.042.306,00	48,4
2015	247.958.644,00	119.720.586,00	48,3
2020	280.598.105,00	134.942.261,00	48,1

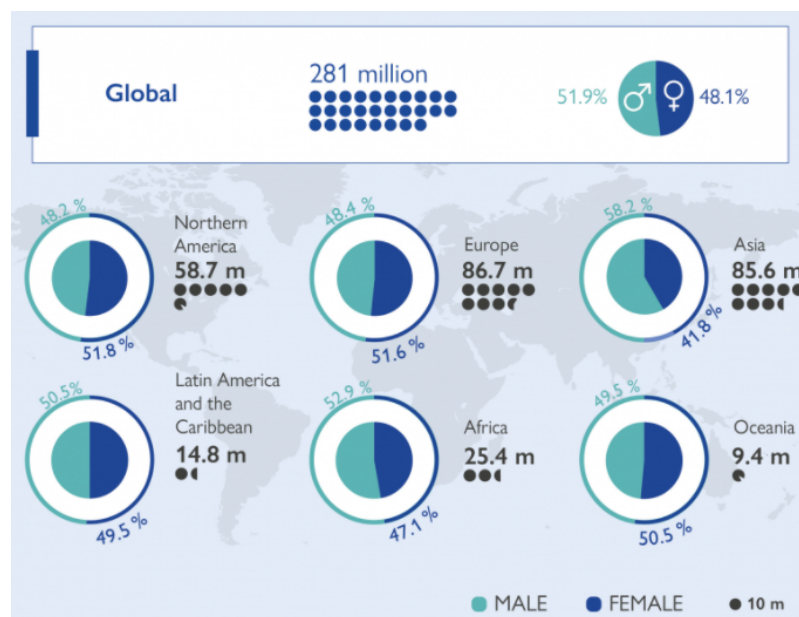
Source: Authors, based on United Nations Department of Economic and Social Affairs (UN-DESA), 2020b

The table illustrates that both the total migrant stock and the female migrant stock have increased significantly over the past three decades. However, female participation in international migration has decreased a bit over the years. In 2020, approximately 48% of international migrants were female (UN-DESA, 2020b).

Nevertheless, there are regional differences in the proportion of female international migrants. Le Goff (2016) argues that particularly developed countries (and particularly Europe) host a lot of female migrants. In contrast, female migrant stocks are lowest in Asian and African countries (Le Goff, 2016). His statements are confirmed by the Migration Data Portal (2021a), which provides an excellent overview for the year 2020. This is shown in **Figure 1**. The figure shows that a lot of international immigrants in Europe, Northern America and Oceania are female (Migration Data Portal, 2021a). In addition, there are sizeable differences

within regions. For example, in the South-Asia region, the average percentage of females among the international immigrant stock over the period 1990-2020 in Bhutan was approximately 18%, while this was 68% in Nepal (own calculation based on data from UN-DESA (2020a)).

Figure 1: Regional differences in the number of male and female migrants for the year 2020



Source: Migration Data Portal, 2021a

Although female migration has not increased in recent years, female migrants’ migration motives have changed considerably. Unlike in the past, when females most often migrated for family reunification, more and more women are migrating independently in recent years. More specifically, females are more often migrating for economic reasons, to study or as refugees. Still, more women are migrating for family reunification, but an evolution definitely occurred where women’s independent migration increased. This could have implications for remittance trends, as female migrants can become financial supporters of home-staying family. Consequently, this could be one of the reasons why international remittance flows have significantly increased in recent years (Bauloz et al., 2019; Ghosh, 2009; Le Goff, 2016; Sørensen, 2005).

3.2. COVID-19 as a great burden to migrant women

Ratha et al. (2021) showed that the COVID-19 pandemic had a negative influence on global remittance flows. They found that remittance flows towards LMICs decreased with 1.6% in 2020 and that there were large regional differences (Ratha et al., 2021). As was already mentioned, overall little is known however about the total amounts of remittances sent by male and female migrants (Azam et al., 2020). Therefore the exact extent with which female remittance sending has decreased as a consequence of the pandemic is still uncertain. However, there are important reasons to think that female migrant's remittances could be vastly affected by the pandemic.

A first pathway in which remittances from migrant women could be negatively affected by the pandemic is through its influence on remittance sending methods. Informal methods to send remittances became inoperative because of the pandemic. As migrant women are less able to use formal methods, this can prevent them from sending remittances (Azam et al., 2020; UN Women, 2020).

Second, the pandemic unevenly affected female migrants. The specific occupations female migrants often take on, play a large role here. To begin with, the group of female migrants is one of the most exposed groups to COVID-19 as they are overrepresented in the health, social care and domestic sector. Insufficient protection against infection, a lack of hygienic facilities and close contact with sick people increases the risks of female migrants to get infected in the workplace (Foley and Piper, 2020; Gottardo and Cyment, 2020; UN Women, 2020; International Organization for Migration (IOM), 2021). Furthermore, female migrants often lack information on how to protect themselves against infection. Their living and working circumstances also do not allow them to take distance from others (ILO & UN Women, 2020). In addition, overrepresentation in essential sectors like healthcare and cleaning services, places a greater pressure on female migrants. This is because they often need to work longer whilst at the same time they face more responsibilities at home due to closures of nurseries and schools. As a result, female migrants bear a double burden (Foley and Piper, 2020; Migration Data Portal, 2021b; UN Women, 2020).

Third, the risk of experiencing (sexual) violence is higher for female migrants. Again, females working in the health, domestic and social care sectors face a higher risk of becoming the

victim of violence in the workplace. Overall, domestic violence against females increased during the pandemic, but female migrants as a group are especially vulnerable to this. This is because they often lack information about the support they can appeal to and because they lack language skills (Foley and Piper, 2020; ILO & UN Women, 2020; UN Women, 2020). Abusers also take advantage of undocumented female migrants' migration status to prevent them from seeking help (IOM, 2021). In addition, the number of organizations that can help migrant women in person decreased because of mandatory closures. This is an additional barrier, as migrant women have less access to technologies to report the violence online (ILO & UN Women, 2020).

Another problem female migrants are experiencing is a higher risk of dismissal. A first important factor here is that a lot of migrant women are working in sectors that are most severely hit by the pandemic (ILO and UN Women, 2020). In addition, a higher risk of dismissal is especially true for women working in the domestic sector, where fear of infection caused employers to lay off their domestic workers. Female migrants working in the informal economy also face larger risks of losing their job as they lack protection by labor laws and labor agreements. This means employers can easily dismiss them. Female migrants working in the sex sector also lost their job and thus their means of earning an income. The high dismissals are problematic as the chances of finding a new job are low. The fact that the sectors where a lot of vacancies opened, were also sectors where specific knowledge and experience are needed, enlarged this problem. Dismissals are not only problematic for the incomes of migrant women, they can also result in additional problems, like losing one's work permit or becoming homeless (Foley and Piper, 2020; UN Women, 2020; Gottardo and Cyment, 2020).

Finally, and as already mentioned, female migrants often lack access to social security and healthcare. Especially for undocumented migrant women and those working in the informal economy, this poses a serious problem. This is problematic for migrant women's health during this pandemic. Both the fact that women migrants lack access to healthcare when they have symptoms and the decreased access of female migrants to reproductive healthcare are important in this respect (Foley and Piper, 2020; Gottardo and Cyment, 2020; IOM, 2021).

The many problems migrant women are facing expose them to a higher risk of poverty and food deprivation (Gottardo and Cyment, 2020). Some women, as a last resort, take on

occupations where the risk of violence, exploitation and infection is high (IOM, 2021). In addition, lots of them were forced to return home (Gottardo and Cyment, 2020). Intuitively, one could argue that these problems can have significant effects on remittance flows from this particular group.

4. Empirical analysis

4.1. Data and methodology

In our empirical analysis we seek to contribute to the rather inadequate literature on the relationship between COVID-19-induced remittance reductions and gender. In particular we want to examine whether countries with a higher rate of female emigrants have experienced more/less reductions in remittances after the start of the pandemic. We perform a correlation analysis for this end, for which we use three datasets.

Firstly, we use new data on the international migrant stock from the United Nations Department of Economic and Social Affairs (2020b). This dataset contains estimates on the international migrant stock by country of destination and country of origin and also consists of data on the age and gender of international migrants. Data is available for 232 countries or areas during the period 1990-2020 (for every five years¹). Most of the data from this dataset was gathered from population censuses. In addition, information from population registers and nationally representative surveys was used. In this dataset, a country's number of international migrants is counted based on people's place of birth or (when this information is not available²) their country of citizenship. The data was adjusted in order to properly count for refugee populations in countries where the data insufficiently captures this group. In addition, the United Nations took into account the impact of the COVID-19 pandemic on the international migrant stock in 2020. As international travel was highly affected by the pandemic, the 2020 estimates were made under the assumption³ that the number of international migrants remained unchanged between the first of March and the first of July of 2020 (UN-DESA, 2020c). For our empirical analysis we focused on the United Nations' estimates of the percentages of female emigrants migrating from specific countries of origin. We directly used this data in our empirical analysis.

¹ The data refers to the situation on the 1st of July of each of the reference years (1990, 1995, 2000, 2005, 2010, 2015, 2020) (UN-DESA, 2020c)

² However, in most countries, data on the foreign-born population was available (UN-DESA (2020c).

³ However, intuitively one can argue that this assumption might be incorrect. Therefore we recognize that this dataset might insufficiently reflect reality. The United Nations themselves argue that very little empirical data is currently available on the influence of COVID-19 on the international migrant stock and that their future data will be updated to new information (UN-DESA, 2020c).

In addition, we use the World Bank's (2021c) Annual Remittance Data. This dataset consists of information on both remittance inflows and outflows of 214 countries or areas around the world. Data is available for the period 1980-2020. Estimates are based on balance of payment data obtained from the International Monetary Fund (IMF), the World Bank's country desks, central banks and countries' statistical institutions (World Bank, 2021c). For our empirical analysis we only used the data concerning migrant remittance inflows in 2019 and 2020. This data was available for 185 countries. We used this data to construct a variable we named 'Rem_%_change', which showed the percentage changes in countries' total remittance inflows from 2019 to 2020.

A third dataset we use for this paper is the World Bank's (2021a) COVID-19 Household Monitoring Dashboard. *High Frequency Phone Surveys* about the impact of the COVID-19 pandemic on people's socioeconomic situation were performed to construct this dataset. Data was collected through multiple waves in around 70 developing countries. A questionnaire template was provided by the World Bank, but countries could change the questionnaire so that it would fit with the country context⁴. Information about approximately 15 socio-economic topics was gathered (for example people's labor, education, safety nets and food security) (World Bank, 2021a; World Bank, 2021b; World Bank, n.d.-a). For our empirical analysis we use the World Bank's data on 'the percentage of remittance-receiving households that saw their remittances decrease since the start of the pandemic'⁵ (World Bank, 2021a). We only look at short-term remittance reductions as a consequence of the pandemic, as the used data was gathered between April and August 2020⁶. An important remark to make here is that the data for this variable is quite limited. At the time the empirical analysis was performed, only 28 countries had gathered this data. In addition, the samples taken in countries were quite small (see **Appendix 1** – the average size of the sample is 366

⁴ As a consequence, countries' questionnaires differed from each other. The World Bank however harmonized the data obtained from the countries (World Bank, n.d.-a).

⁵ Data was also available on remittance decreases 'in the past 12 months' (before the interview) and 'since the last interview'. We chose to use the data on remittance decreases 'since the start of the pandemic' for multiple reasons. First, most data was available for this variable. In addition, the shock that resulted from the pandemic is not captured sufficiently by the data from 'the past 12 months'. The number of data collections (and timing) for the variable on remittance decreases 'since the last interview' differed a lot among countries, which made the variable not appropriate to conduct between-country-comparisons.

⁶ Only three countries' data was collected in April. One country collected its data in August. Most of the data was thus collected between May and July.

households). Another disadvantage of this variable is the differing timing of data collection between countries.

An overview of the three variables employed in our analysis is provided in **Table 2**.

Table 2: Overview of variables used in empirical analysis

Variable name	Dataset	Description
Femaleemigrants	The United Nations Department of Economic and Social Affairs (2020b)	Percentage of female emigrants of a country, compared to the total international emigrant stock of that country.
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.

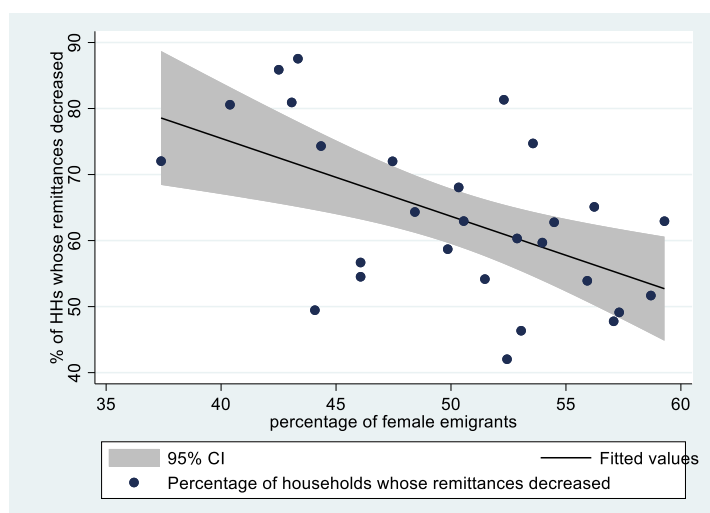
Source: World Bank, 2021a; World Bank, 2021c; UN-DESA, 2020b

4.2. Results

We first report scatterplots of changes in remittance flows and female emigration.

Figure 2 shows the scatterplot of female migration rates and remittance reductions, using the remittance data from the COVID-19 Household Monitoring Dashboard (World Bank, 2021a). The figure shows that, as the percentage of female emigrants is higher, the percentage of households that experienced decreasing remittances is lower, and vice versa. It, thus, shows a negative correlation between COVID-19-induced remittance reductions and female emigration.

Figure 2: Scatterplot of remittance reductions and female migration using data from household surveys



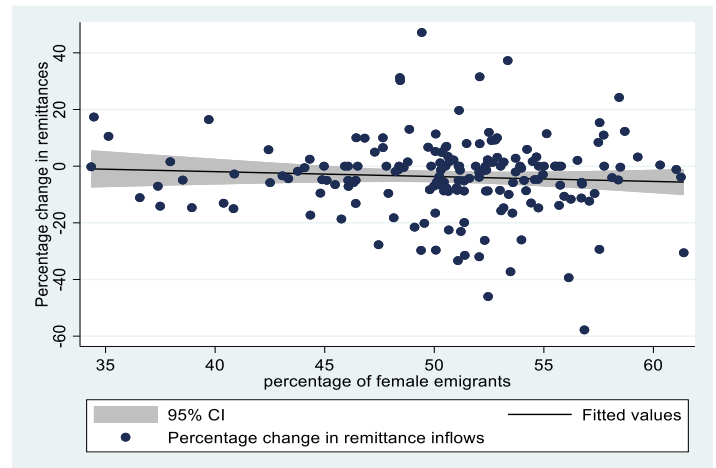
Source: Authors, based on data from the World Bank (2021a) and UN-DESA (2020b)

However, the number of observations for Figure 2 is quite small as the COVID-19 Dashboard only contained remittance reduction data for 28 countries.

Figure 3 shows the scatterplot of remittance reductions and female emigration, using the World Bank's annual remittance data (World Bank, 2021c). Here, the trend line is a little descending but almost horizontal. Thus, there appears to be (at best) a very small negative correlation between remittance reductions after COVID-19 and female emigration.

In addition, we look at the Pearson's correlation coefficients. As this measure is sensitive to outliers in the data (Neels, 2017), we first check for outliers and exclude these observations from the analysis. When using the survey results about remittance reductions, we find a Pearson's correlation coefficient of -0.5477. This indicates that a strong negative linear correlation between remittance reductions and female emigration exists (Neels, 2017). However, when using the World Bank's estimates on remittance reductions, we find a Pearson's correlation coefficient of -0.066, suggesting a very weak negative linear correlation (Neels, 2017). Although both datasets show a negative correlation between female emigration and remittance reductions during the pandemic, the strength of the relationship differs. This difference in results could be explained by two factors. First, and as already mentioned, the COVID-19 Household Monitoring Dashboard contains only a small number of data points. Therefore, the found correlation coefficient could inadequately reflect reality. A second plausible explanation could be given by looking at the interpretation of variables *Rem_%_change* and *Inco_redremitt*. The variable *Rem_%_change* shows us percentage changes in remittance inflows and thus reflects the intensity of remittance reductions. However, the variable *Inco_redremitt* tells us something about the amount of households that declared their remittances decreased. The variable does not show, however, the intensity of remittance reductions. This difference in interpretation of the two variables could explain why we find different results.

Figure 3: Scatterplot of remittance reductions and female migration using the World Bank's estimates



Source: Authors, based on data from the World Bank (2021c) and UN-DESA (2020b)

It is necessary, however, to make some remarks about these correlation coefficients. First, interpreting the correlation coefficient of -0.066 should be done with caution, as the Shapiro Wilk and Shapiro Francia test for normality both show that the data is not normally distributed. The correlation coefficient of -0.5477 also has to be interpreted prudently, as there are only 28 observations in this dataset. For these reasons, the above correlations should be interpreted with some degree of caution since they do not provide strong evidence for the existence of a negative correlation between COVID-19-induced changes in remittances and female emigration rates.

Finding a negative correlation between remittance reductions during the pandemic and female emigration is a quite interesting finding, though. The discussion of the literature review provides some insights on how the pandemic unevenly affects migrant women (Foley and Piper, 2020; Gottardo and Cyment, 2020; UN Women, 2020; IOM, 2021) and how it mainly threatens female migrant's remittances (Azam et al., 2020; UN Women, 2020). However, the emerging negative correlation between remittance reductions and female emigration does not align with these insights from the above literature. Having said that, the above finding corresponds with Fleury (2016), Hennebry et al. (2017) and Orozco et al. (2006), who argue that female migrants remit more during periods of crisis than men. It is also possible that female migrants' tendency to remit a larger percentage of their income (Azam et al., 2020; Foley and Piper, 2020; IOM, n.d.; Robert, 2015; Tittensor and Mansouri, 2017) played a role in this finding. These kinds of explanations are problematic, however, as they would suggest that female migrants' own well-being may be at stake as a consequence of their persisting tendency to send remittances home during the pandemic. This is a general concern that was already raised by various authors before the COVID-19 outbreak (see Foley and Piper, 2020; Pérez Orozco et al., 2010; Robert, 2015).

5. Conclusion

This paper's aim was twofold. First, we tried to clarify why gender is an important factor to take into account when trying to understand the sending and usage of remittances. Second, we assessed the relationship between gender, COVID-19 and the pandemic-induced remittance reductions. A literature review and a preliminary empirical analysis (based on a rather limited data) was performed for this purpose.

Our detailed discussion of the relevant literature seems to suggest that remitting behavior of male and female migrants differs from each other. Female migrants are believed to remit a larger share of their income whilst at the same time sending smaller amounts more frequently than men. In addition, they remit more during periods of crisis. They also send remittances for a more prolonged amount of time, more often use informal methods to remit and the recipients of their remittances are usually other females. Furthermore, their preferences about the spending of their remittances more often result in poverty alleviation. Second, we found that the usage of remittances is also influenced by gender. Regarding the usage of remittances, the literature review showed that female control over remittances depends on multiple factors. Age, household structure, socioeconomic status, educational level, duration of marriage and gender norms determine whether or not females actually get control over remittances. However, when women decide on the usage of the money, the remittances are more often spend on food, education and healthcare, and thus, affecting human development outcomes.

Our literature review also suggests that the pandemic had a larger effect on remittance sending methods that are more commonly used by female migrants. In addition, their occupations and status expose them to a higher risk to be severely affected by the pandemic than male migrants. More precisely, the various problems female migrants are facing during the pandemic puts them at a higher risk of poverty and food deprivation, which forces some of them to take on occupations with a high risk of violence, exploitation and infection. Therefore, female migrant remittances may be more vulnerable to the pandemic as compared to those from male migrants. In our preliminary empirical analysis based on correlation statistics we tried to see whether countries with a higher rate of female emigrants have experienced more or less reductions in remittances after the start of the pandemic.

Surprisingly, we found a negative correlation between COVID-19-induced changes in remittances and female emigration rates. This contrasts with the above insights about the higher vulnerability of female migrants for the pandemic. However, this finding seems to be in line with the stand of the literature which seems to suggest that female migrants remit more during periods of crisis than men, and that they tend to remit a larger percentage of their income than male migrants.

This paper contributes to the relevant literature in multiple ways. First, our detailed discussion of the influence of gender on remittances and the impact of COVID-19 on female migrants has revealed other important aspects in the overall relationship that can stimulate further research on these topics and also raise important policy questions for policymakers. Second, our finding of a possible negative correlation between COVID-19-induced changes in remittances and female emigration rates is very relevant. In view of the insights we gained from the discussion of the relevant literature, this finding raises important concerns about female migrants' well-being during the pandemic.

Having said this, this study has some important limitations. An important limitation of this research lies within our data sources. Our data on female emigration rates from the UN-DESA (2020b) for instance has certain limitations. First, international migrants in this dataset are equated with the foreign-born population of a country or, when this information was not available⁷, citizens with foreign citizenship. However, using citizenship as a basis to count migrants can lead to inaccurate results⁸. A second disadvantage of this dataset is that some countries do not provide information (or accurate information) on the country of origin of their migrant stock (UN-DESA, 2020c). Therefore, the United Nations Department of Economic and Social Affairs (2020c) recognize that “estimates of the origin of international migrants by sex are likely to underestimate the size of transnational populations, especially for smaller countries or areas of origin” (p.7). The data from the COVID-19 Household Monitoring Dashboard also has some disadvantages as mobile phone surveys were used to acquire this data. These kinds of surveys, however, are characterized by a high non-response bias, the

⁷ This information was however available in most countries.

⁸ People who were born in a different country but who acquired naturalization are, for instance, not counted as migrants. In addition, in some countries *jus sanguinis* is used as a basis for citizenship, which means that some people who were born in the country and who have never lived abroad could erroneously be counted as migrants (UN-DESA, 2020c).

acquisition of superficial information, a high attrition rate and selection bias (World Bank, n.d.-a; World Bank, n.d.-b). In addition, and as was already mentioned, the available data in this dataset was quite limited and the timing of data collection differed between countries. These shortcomings could also influence the results. A further limitation is related to the Annual Remittance Data (World Bank, 2021c) we used, since their estimates on remittance flows have some important shortcomings. For example, the incomes of short-term migrant workers are automatically counted in these estimates, whether or not they remit. In addition, residency status is used as a basis for the calculation and not all countries report reliable data on their remittance inflows. Finally, the estimates insufficiently include remittances sent by informal methods (International Monetary Fund, 2009; Migration Data Portal, 2021c; Ratha et al., 2017).

Nevertheless, some useful (albeit tentative) recommendations can emerge from the discussion. The most important recommendation emerging from our discussion is that we need more research on the gender-remittances nexus, an area that has not received the attention it deserves in the relevant literature. This complex relationship becomes even more important in the context of the COVID-19 pandemic. However, and as mentioned repeatedly in the paper, there is still insufficient data regarding the influence of gender on remittances. In addition, data sources that allow researchers to assess the role of gender in the COVID-19-induced remittance reductions are also scarce. Second, we would like to argue that data registration systems should be adjusted in such a way that the gender of the remittance sender is also documented. This modification would be a very valuable one because this would resolve a very important shortcoming in the current data available, therefore enabling more research to be conducted (at the country level too) on this important research and policy area. Another recommendation emanating from our discussion is associated with the finding that the female migrants labor market circumstances have important effects on their ability to remit. In this context, it is important for host countries to make an effort to increase employment rates of female migrants in the formal economy as well as improve the quality of the occupations they take on (e.g. by addressing the problem of non-recognition of diplomas and the problem of discrimination among others). This way, female migrants' access to formal employment can be enhanced, which in turn can increase their ability to remit. Our paper seems also to suggest that during the pandemic, these problems female migrants are generally

facing, were further reinforced. This made them more vulnerable to the effects of the pandemic, by increasing in particular their vulnerability to poverty and food deprivation. And this calls for the urgent need for more protective measures to be taken in order to secure female migrants' wellbeing during and after the pandemic.

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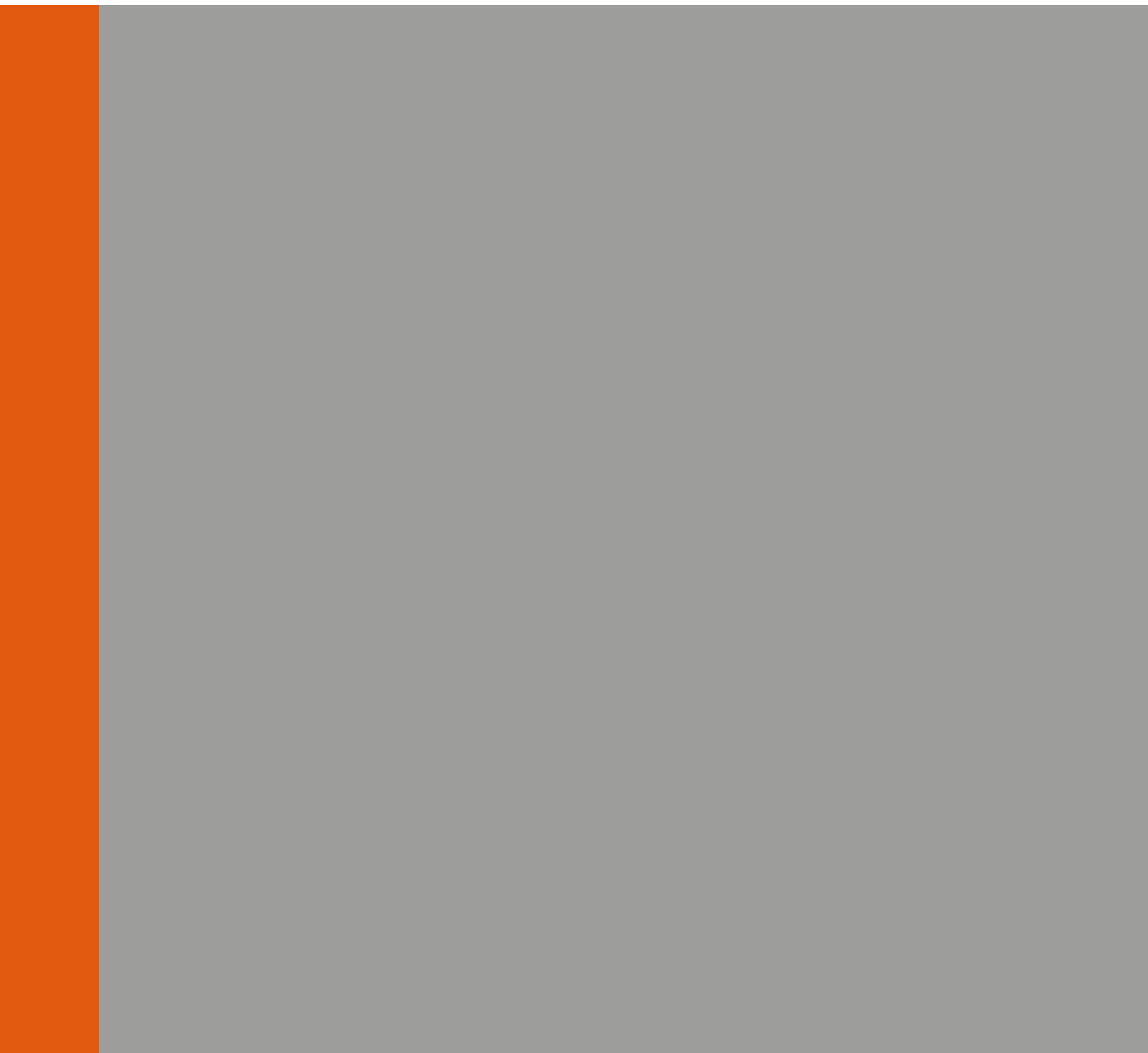
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Appendix 1

Table 3: COVID-19 Household Monitoring Dashboard - number of households from which data about remittance reductions was gathered (compared to the total sample of the survey in the country)

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

Source: World Bank, 2021a



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