

**THE IMPACT OF COVID-19 ON INTERNATIONAL
MIGRATION AND REMITTANCES IN DEVELOPING COUNTRIES**

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DECLARATION

I, Awa Zihindula, declare that this research report is my own, unaided work. It is being submitted for the degree of Master of Arts in the field of e-Science at the Witwatersrand University. It has not been submitted for any degree or examination at any other university.

Signature

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Abstract

International migration from developing countries and remittances to those same countries have risen steadily over time due to various factors. Remittance is a source of income for most developing countries. Both sending and receiving countries benefit from migration. However, shocks such as natural crises, pandemics and epidemics (COVID-19 and Ebola) have devastated the economy worldwide, with a high unemployment rate and lower income. This research report aimed to study the impact of COVID-19 pandemic on migration and remittances in developing countries to establish the relationship between inflow remittances and migration outflow controlling for other factors (such as unemployment rate, internet access, economic growth and GDP growth). World Bank data and UNDESA data were used in the study. However, the developing countries were dichotomized as African and non_African countries for an in-depth analysis. The study employed multiple regression model to identify the associations between variables.

Results of the study found that in African countries before and during COVID-19, there was no significant relationship between migration outflow and inflow of remittances. Furthermore, the control variables did not have an effect on the dependent variable. For non-African countries, the result shows that COVID-19 did significantly affect the relationship between inflow remittances and migration outflow; when migration outflow increases, there is a decrease in remittances inflow.

Keywords: COVID-19, migrants, Remittances, Developing countries.

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CHAPTER I

1.1.Introduction and Background

International migration from developing countries and remittances to those same countries have risen steadily over time due to various factors. The number of international migrants, including economic and humanitarian migrants, has tripled since 1960, reaching 232 million in 2013, with around one-quarter migrating over the last two decades, despite a downturn in the aftermath of the global financial crisis (Dickinson, 2016). Moreover, growth in the number of international migrants has been robust over the last two decades, reaching 281 million people living outside their country of origin in 2020 (Department of Economic and Social Affairs, 2021). According to the United Nations' global estimates, there were around 281 million international migrants in the world in 2020, accounting for 3.6 per cent of the worldwide population (McAuliffe and Triandafyllidou, 2021). Globally, 14.5 million of the 1 billion international migrants are African, of whom 10 million reside in Sub-Saharan Africa (Ncube, Bahta, and Jordaan, 2019). Given the levels or increase in migration outflows from developing countries, remittance inflows are expected to be equally on the rise.

Migration and remittances are two terms that have become common in most developing countries, whether under-developing, low-developing or middle-developing countries (De Haas, 2005; Mahmud, Sabur, and Tamanna, 2009). Remittances are the financial support migrants send to their families and friends back home to assist them with different needs. International migration and remittances are crucial factors for the economic development of developing countries. Studies based on 74 developing countries found that international migration and remittances have a strong statistical impact on the reduction of poverty, whereby the increase in remittances does decrease the GDP per capita in the share of people living in poverty; additionally, there is a positive impact of remittances on economic growth (Siddique et al., 2016; Adams, and Page, 2005; Pradhan, Upadhyay, and Upadhyaya, 2008). International migration and remittances reduced poverty in developing countries, with a 10% increased in international migrants leading to a 2.1% decrease in poverty (Adams and Page, 2005). Moreover, the contribution of foreign remittances to the total income of South Asia is 4.2%, which shows a significant proportion of GDP, and it has a significant impact on poverty alleviation (Mitra, Bang, and Abbas, 2021; Siddique, Shehzadi, Manzoor, and Majeed, 2016).

Additionally, the two contribute to increasing GDP per capita. Remittances improve the amount of physical and human capital - qualities that contribute to long-run growth - when used to finance small companies, education, or health (Nazneen, Francois, Andrew, and Nti-Addae, 2021).

However, the motivation behind the investigation of migration and remittances is that they both play a vital role in the economies of developing countries (Dé and Jackson-Becerra, 2021; Khanna, 2020). The sending countries can export their workforce, which finds employment in the destination country and sends back foreign exchange, which alleviates the balance finances crisis and helps support governments to finance the much-needed development projects besides generating brain gain, a phenomenon which causes more migration and remittances which in turn enhance investment and consumption in the society (Muhammad, 2021; Swing, 2018). It is also beneficial for the destination countries as these countries require the necessary labour, which their people could not provide besides enlarging the tax net and contributing to the destination country's society in the form of innovation, skills transmission, entrepreneurial initiatives and cultural diversity (Muhammad, 2021).

Migrants send money to their countries of origin as remittances, helping the people they left behind. Remittances impact developing regions, reaching millions of households, affecting 10% of the global population (Mahmud, Sabur, and Tamanna, 2009). The main force behind this phenomenon is an estimated 150 million global migrants who remitted more than US\$300 billion to their families in underdeveloped nations in 2006, generally US\$100, US\$200, or US\$300 at a time, via more than 1.5 billion different bank transactions (IFAD, 2007). Scholars have recognised that international migration profoundly impacts development in the receiving countries through remittances. Despite the conventional economic rationale of higher income, Brown (2006) argues that migrants migrate overseas and remit money for various reasons, many of which have major political ramifications.

Research reveals that migrants and their families have benefited economically through migration, particularly from less developed to more developed nations due to the higher wages available in such countries (Gollopeni, 2020; Siar, 2013; Borjab, 2003). Upon arrival to the destination countries, migrants become supporters of their home families through receiving remittances.

Migration has enabled migrants and their families to improve their income due to higher-paying jobs in the destination country (Gollopini, 2020; Siar, 2013; Borjab, 2003). Upon arrival, they become supporters of their home families through remittances. Scientific evidence shows that remittances are a source of income for most developing countries (Murakami, Yamada, and Sioson, 2021). Scholars in their research found that remittances are a source of income for families and have been proven to be a more sustainable source of foreign currency in developing countries and facilitate financial flow to developing countries (Lubambu, 2014; Pradhan et al., 2008; Gammeltoft 2002). This trend of migration and remittances is a source of income for many developing countries.

Moreover, remittances have a positive impact on economic growth. For some developing countries, it forms almost 40-50% of their GDP (Banga and Sahu, 2010; Pradhan, Upadhyay, and Upadhyaya, 2008). Sending countries benefit from migration, bringing in remittances, a key component of Gross Domestic Product (GDP), while receiving countries benefit from human capital and brain gain.

The benefits or positives of migration and remittances can be severely affected or impacted in the face of a pandemic or epidemic. Developing countries face a triple disease burden, including NCDs, pandemics, and globalisation-related problems (Frenk and Gomez-Dantes, 2011). For example, countries in West and Central Africa were hit by Ebola, malaria, and polio. Unlike the stated epidemics, COVID-19 was a pandemic that moved countries worldwide. The existence of these burdens pushed people to leave their countries to look for better places. With the big COVID-19 pandemic, quarantine and travel restrictions were implemented to keep individuals from being infected.

Yet, changes in finance, labour flow, and migration have occurred due to the COVID-19 pandemic, which has had a far-reaching influence on people's mobility and earnings. These problems have exacerbated economic insecurity and rising unemployment rates.

The Coronavirus pandemic has devastated the economy worldwide, with a high unemployment rate and lower income. Countries like Brazil, China, India, Iran, and Italy were among the first to be affected due to their geographic emplacement and population size (Mishra, Haleem, and Javaid, 2020). The pandemic has damaged economic growth and caused other crises.

The observation was that about 77% of countries worldwide closed workplaces around June 2020 (Takenaka, Gaspar, Villafuerte, and Narayanan, 2020). In Asia, losing jobs in the region

was likely to reduce wage income, with the projected decline estimates of \$359 billion to \$550 billion (Takenaka, Gaspar, Villafuerte, and Narayanan, 2020). Nevertheless, given the precarious nature surrounding most low-to-unskilled migrant jobs such as cleaners, general hands, and construction workers however, these and other categories of the jobs (such as hospitality, retail services, farming, manufacturing food services) suffered the most job loss, they would suffer more or the most when a pandemic of the Covid-19 magnitude hit (Orupabo, and Nadim, 2020; Che, Du, and Chan, 2020). This situation did affect not only developing countries but also affected developed countries (Zhang, Chen, Lyulyov, and Pimonenko, 2022; Sharifi and Khavarian-Garmsir, 2020; Tadesse and Muluye, 2020; Chen and Chand, 2020).

In general, migrants tend to send more money home to their families who face issues associated with the financial crisis and natural disasters (Takenaka et al., 2020; Sirkeci, Cohen, and Ratha, 2012). Unlike common disasters and shocks with a localised effect, the COVID-19 catastrophe simultaneously hurts migrants' destinations and native countries. In comparison to developed or emerging states, in developing states, remittances constitute a significant source of economic growth in developing countries. (Jijin, Alok Kumar Mishra, and Nithin, 2021). These reasons make developing countries a compelling case to be studied in this regard.

This research report argues that there is a relationship between migration and remittances; thus, migration influences remittances in such a way that when migration increases, remittances increase and vice versa. Moreover, COVID-19 disrupted several activities, leading to people being quarantined to prevent the spread of the virus. In the meantime, technology was helping to conduct other activities from home. Financial institutions, the most used channel to remit, were closed, but people with internet access still used their phones. In other words, technology has impacted remittances.

This study will examine the impact¹ of the COVID-19 pandemic on migration and remittances in developing countries. The results will help identify whether the effect was positive or negative and the increase or decrease of remittances during the pandemic.

¹ Impact of COVID-19 on migration and remittances refer to the influence the pandemic might have had to the flow of remittances and the movement of people which is migration.

1.2.Problem statement

Although migration drives remittances, COVID-19 has interfered with the process (Takenaka, 2020; Ratha et al., 2020). Banks and other institutions were closed in most countries, and due to low productivity, other companies were forced to retrench their staff or shut down. COVID-19 have impacted migration, given the travelling restrictions and borders of different countries being closed; as a result, remittances were affected.

With the presence of the pandemic, developing countries experienced a shifting period in remittances. Most developing countries depend primarily on remittances as a source of wealth for families and contributes financially to the household's need (Kpodar, Quayyum, Gammadigbe, and Mlachila, 2021; Combes, and Ebeke. 2011; Barajas, Chami, Fullenkamp, Gapen, and Montiel. 2009) Additionally, given that most developing countries can be considered both countries of emigration and immigration, especially India makes rich case studies when it comes to the effect these have on migration and remittances. Moreover, economic issues are of significant concern for most developing countries, such as low incomes, high unemployment, and economic and social inequality; these are one of the factors that drive people from their countries to search for a better life elsewhere. It is vital to explore the impact of COVID-19 on migration and remittances in developing countries. Additionally, it is crucial to determine the movement of remittances and migration flow before and during the pandemic. The study will have to determine if there have been any changes concerning remittances and migration during COVID-19.

Against this backdrop, this research report investigates whether COVID-19 affected trends in migration (outflows) and remittances (inflows) in the developing world. The objective is to examine remittances and migration flow before and during the COVID-19 pandemic to establish if there has been an impact on these variables due to the pandemic's outbreak. The study employed a multiple regression model to determine the relationship between the variables and identify the pandemic's effect on migration and remittances to achieve the objectives. This study report utilized the pluralistic conceptual framework, remittance theories, and migration system theories to guide its thinking.

1.3. Research objectives

The principal objective is to examine the remittances and migration flow before and during the COVID-19 era and to determine the effect of COVID-19 on migration and remittances in developing nations.

The objectives are:

- To examine the remittances and migration flow before and during the COVID-19 era
- To examine the impact of COVID-19 on remittances flow and migration in developing countries
- To determine the obstacles hindering migrants from remitting in developing countries
- To determine the relationship between the variables and then to identify the effect of the pandemic on migration and remittances

The research questions are:

- How did COVID-19 impact remittances flow and migration in developing countries?
- What impact did COVID-19 have on the flow of remittances in developing countries?
- What are the different challenges that COVID-19 presented migrants from remitting funds in developing countries alongside COVID-19?

1.4. Significance of the study

As a starting point for this research, the relevance to the real world serves as an inspiration. However, it remains motivational because there is little academic literature on COVID-19's impact on migrants and remittances in developing countries, particularly when using terms such as "outward migration." Remittances are essential, especially for developing countries, as they play a vital economic role in individuals' lives (Meyer and Shera, 2017). These are the savings migrants, and their families use in their home countries to purchase food, clothes, and other necessities. Most developing nations rely on remittances from their citizens working abroad to meet their basic needs.

What distinguishes remittances from other financial transfers, such as foreign aid, is that they sidestep the obstacles frequently encountered by governmental organisations. Remittances, in particular, have a household-to-household aspect that avoids government agencies (Meyer and Shera, 2017; De Haas, 2013). As a result, after accounting for transaction expenses, money contributed from outside is received directly by households, who are frequently the genuine beneficiaries. As a result, it is not unexpected that numerous economists claim that remittances have a positive impact. Indeed, remittances are utilised for many impoverished families in developing nations to meet basic requirements such as food, hygiene, clothes, and cooking energy. These economic activities directly impact poverty reduction in low-income households living below or near the poverty line (Siddique, Selvanathan, and Selvanathan, 2012; Choong and Kumar, 2009).

Beyond the immediate benefits of remittances on poverty reduction, they can improve the amount of physical and human capital - qualities that contribute to long-run growth - when used to finance small companies, education, or health (Nazneen, Francois, Andrew, and Nti-Addae, 2021). Remittance-driven change can produce more jobs in recipient nations, provided it is inclusive. As a result, remittances have the potential to assist in erasing poverty at the micro-level while simultaneously functioning as a driver of macro-growth.

It was assumed that during the outbreak of COVID-19, most migrant-remittance activities were put on hold in quarantine due to the hard lockdown (Gamage, 2021). According to some sources (Lambert et al., 2020; Mukumbang, Ambe, and Adebisi, 2020; Sengupta and Jha, 2020), migrants had stopped sending money home because of the pandemic. Mainstream sources of sending money home (Western Union, MoneyGram, Mukuru and Banks) were closed due to the lockdown (Benni, 2021; Gravesteijn and Katakam, 2020). People then become dependent on technology and the use of apps. This has been used as an alternative to sending money home (Machasio, 2020). Moreover, many migrants' families in developing countries depend primarily on remittances whose movement or flow might have been interrupted by COVID-19. Hence, studying the impacts of COVID-19 on international migration and remittances in developing countries is crucial.

Nonetheless, plenty of literature is available on the relationship between migration, remittances and COVID-19 separately. Still, there is significantly less written on COVID-19 and its impact on migration and remittances in developing countries in general. This study will augment the

existing body of knowledge by contributing to the lack of literature on COVID-19's impact on migration and remittances in developing countries.

1.5. Outline of the thesis

The outline is as follows: Chapter 1 begins by providing background information based on the case studies and their previous migration trends and remittances to put the research into context. Chapter 2 will present the literature review on the impact of the pandemic on migration and remittances, the flow of remittances, COVID-19, Effects of COVID-19 on migration and remittances flows. It discusses the theoretical framework of migration theory. Chapter 3 outlines the study methodology and data analysis procedure. Subsequently, Chapter 4, the presentation of the findings and results discussion comes next. Chapter 5, the study presents the concluding discussions and, finally, Chapter 6 provides overall conclusion and recommendations for future work.

1.6. Chapter Summary

This introductory part gives a detailed process of how the study will be conducted. The study aims to investigate the impact of COVID-19 on migration and remittances flow in developing countries. The argument is there is a relationship between migration and remittances; thus, migration influences remittances in such a way that when migration increases, remittances increase and vice versa, and access to the internet or technology impacts remittances inflow. The finding of this study will contribute to the existing lack of literature on the effects of COVID-19 on migration and remittances in developing countries for future studies.

CHAPTER II: LITERATURE REVIEW

2.1. Introduction

Cross-border and international migration have risen in the developing world (Hanson, 2010; Adams and Page, 2005). There are approximately 158 million estimated legal international migrants worldwide. Nearly 40 percent live in developing countries (Di Giovanni, Levchenko, and Ortega, 2015; Balbo and Marconi, 2005). A common belief is that migration flows almost exclusively from south to north, but these figures probably underestimate this assumption.

It is important to note that migration, as used across literature, refers to the movement of people across/outside national jurisdiction/borders. Hence, 'international migration' and 'migration' will be used interchangeably—internal migration results from a nation's social, economic, and geographic conditions. However, international migration is governed by international and national laws (Lucas, 2015; Zagheni, Garimella, Weber, and State, 2014).

According to research on migration (Hackl, 2018; Nissanke and Thorbecke, 2006), people migrate to and from developing nations since capital, goods, and skilled professionals are essential components of open economies, including those with middle and low incomes. The growth of economic and social inequality is fueling migration as a tool to improve the living conditions of migrants and their families and communities. However, migration produces both brain drain and brain gain.

Remittances from migrants are another avenue through which brain drain may positively impact source nations. This finding argued remittances from migrants have an impact on household decisions on labour supply, investment, education, migration, occupational choice, and fertility. Literature on remittances showed that Migrants' remittances are motivated by altruism and exchange, with altruism directed towards immediate family and discussion focused on taking care of assets or relatives (Rapoport and Docquier, 2006).

The study focuses on covid-19 and its impact; however, it is crucial to explore existing works on how shocks (mainly external ones) affected trends in migration and remittances.

2.2. Pandemics/epidemics vs migration and remittances

According to the World Health Organisation (WHO), an epidemic disease involves one person “affecting many persons at the same time and spreading from person to person in a locality where the disease is not permanently prevalent.” WHO further specifies epidemics as occurring at the level of a region or community (Chakraborty and Chakraborty, 2020).

For instance, an epidemic such as Ebola is “a rapid spread or increase in the occurrence of something,” usually with a negative or humorous connotation. For example, an epidemic of gentrification was affecting low-income communities, or the hipster look gave way to an epidemic of 1990s fashion.

Compared to an epidemic, a pandemic is an epidemic that has spread over a large area; that is, it is “prevalent throughout an entire country, continent, or the whole world.”

The World Health Organization, more specifically, defines a pandemic as “a worldwide spread of a new disease (World Health Organization, 2020).” In March 2020, the WHO officially declared the COVID-19 outbreak a pandemic due to the global spread and severity. While a pandemic can be used for a disease that has spread across an entire country or other large landmass, the word is generally reserved for diseases that have spread across continents or the entire world. For instance, after documenting cases in all continents except Antarctica, scientists declared the disease a pandemic.

The pandemic and epidemic have caused various effects on people's movement and remittances, nationally or globally. During these periods, most governments used quarantine as a relevant method to discontinue the spread of the health crisis.

The coronavirus pandemic induced economic crises and is expected to be more profound when viewed through a migration lens. Lockdown regulations (travel bans, social distancing, and vaccination obligations) brought worldwide economic activities close to cessation (Ratha, 2020). Moreover, receiving countries faced additional challenges in other sectors dependent on migrant workers' availability, such as health and agriculture.

The related restrictions of COVID-19 impacted the movement of migrants and the humanitarian organisations' role. A day before WHO declared COVID-19 a pandemic, between March 10, 2020, and February 28, 2022, there were 122,823 morbidity restrictions implemented globally (IOM, 2021a). Migration inflow to OECD countries was projected to

fall by at least 30% in 2020, which was low for migration to OECD nations since 2003 (OECD, 2021).

In 2014, the Ebola epidemic largely affected West Africa. As a precautionary measure, quarantines were implemented in affected areas, and borders between affected countries were closed (Campbell, 2017). Mobility and economic activities across borders were severely disrupted due to these measures. In response to the outbreak, remittances were crucial in supporting households and small businesses (World Bank, 2014; Sy and Copley, 2014; World Bank, 2014). During the Ebola epidemic, remittances remained steady. Migrant workers and their families used remittances from West African diaspora communities during quarantine to stock up on food and supplies.

Furthermore, digital payment systems were more widely used in West Africa following the crisis, especially in the affected countries. Therefore, West African countries had to set up digitalization policies and regulations for the financial sector, including controls on payment platforms, connectivity with financial institutions, and currencies used for payments (Bangura, 2016). Families of migrants were paid through e-wallets and received remittance transfers (Bangura, 2016). Economic activities were kick-started in the region by remittances following the crisis (BBC News, 2017). For example, remittances were used to finance small businesses, pay school fees and hospital bills. Collective (pooled) remittances were used for larger infrastructure projects to assist communities decimated by the crisis and ensure economic recovery.

Due to Ebola spreading from Liberia to Nigeria in August 2014, airlines cancelled flights to Guinea, Liberia, and Sierra Leone. Several countries closed their borders to forbid travellers from these countries (Anderson, 2014). This shortage slowed the delivery of humanitarian aid, causing medical supplies, personal protective equipment, and food shortages (Cohen, 2016). During the same pandemic period, there was a shift in migration. People were prohibited from travelling, and the borders of countries like Liberia, Sierra Leone, Nigeria, and the Democratic Republic of Congo were closed. For example, in 2014, the United States recorded 2 cases of Ebola and prohibited citizens from the affected countries from travelling back for fear of affecting more people on their return (Chevalier et al., 2014; McCarty et al., 2014; Basler et al., 2015).

However, the literature alluded to external shocks that impact migration and remittances, such as financial recession, conflict, and natural shocks.

Financial crisis, migration and remittances

Throughout the 2008 financial crisis, remittances to impoverished countries were substantial, counter-cyclical, and largely steady. According to the International Labour Organization, an estimated 22 million people lost their jobs during the 2008-2009 global financial crisis. 2020 (Khanna). Although the vast majority of migrant workers lost their jobs in 2008 and 2009 (Taran, 2009), global remittances fell by just 6%. But this was small compared to other forms of foreign financings, such as FDI, private debt, and portfolio equity flows, which plummeted by 40% and 80%, respectively (WB 2010a). Remittances to Sub-Saharan Africa fell by 4% in particular (WB 2010b).

According to Cal and Dell'Erba (2009), the global financial crisis is likely to reduce remittances to developing countries through a reduction in migration from developing to developed countries due to reduced opportunities in these countries, a negative income shock suffered by migrants, as many will lose their jobs or earn less; and a reduction in the amount of money remitted per migrant due to lower incomes.

The bulk of African migrants, according to Barajas et al. (2010), remain in Africa. The result is that they are less likely to suffer harm than in countries where most migrants live, such as the United States or Europe. They conclude that "the global reduction in remittances is expected to have a relatively little impact on African countries' GDP growth" (Ibid, p.10). According to Ratha et al. (2008), remittances are more resilient than a portfolio, FDI, or foreign assistance flows, and migrants usually keep their remittances even when their host countries' economic position deteriorates.

Notwithstanding the turmoil, migrants may continue to send money home in various ways. First, unemployed migrants placed their money at risk for remittances until they could locate alternate sources of income (Orozco, 2009). Second, after losing jobs in industries like construction and manufacturing, migrants began working part-time or full-time in retail commerce and agriculture (Sirkeci, Ratha and Cohen 2012). This enabled them to continue as a source of income and transfer money to family members in less developed nations. Third, in

the aftermath of the 2008 financial crisis, many migrants decreased their spending to meet their remittance responsibilities (Sirkeci, Ratha and Cohen 2012).

In Gulf countries such as the United Arab Emirates, for example, many migrant labourers have shared residences to send money home. The capacity of migrants to maintain remittance flows to their home countries contributed to minimizing the impact of the financial crisis on African countries, acting as a shock absorber (Singh, 2010). Households earned revenue via these remittances, which aided their recovery from the economic crisis. In this example, if severe economic shocks lowered income in their home countries, migrants would remit more to shield their families from the impacts.

Natural shocks and remittances

On January 12, 2012, Haiti was struck by an earthquake that killed over 200,000 people. Can remittances play a role in assisting Haitians in their recovery? That may, according to Ratha (2010), be given that over a million Haitians are migrants. He calculated that a 20% increase in average remittances per migrant would contribute an additional US \$1 billion for economic rehabilitation over the next three years. The concern is whether remittances are responsive enough. Mohapatra et al. (2009) list Bangladesh (1998), China (1999), El Salvador (1986), Guyana (2004), Honduras (1998), India (1992), and Jamaica as examples of countries where remittance flows increased after a natural disaster (1989;2004).

These instances featured natural disasters such as earthquakes, storms, floods, and landslides. They point out that in slower-onset crises, such as drought, we may not witness a significant increase in remittances since remittances are included in these nations' inter-temporal consumption decisions (Mohapatra et al., 2012:4). When analyzing remittance patterns in the face of natural disasters for SSA, where droughts are the most common natural disaster. Migration is frequently used as a deliberate livelihood strategy to mitigate the impact of drought and the possibility that SSA will not experience an increase in remittances in the case of drought.

Lastly, natural calamities in a sending nation might affect remittances. This might occur when a natural disaster destroys or ruins banks and other infrastructure required to transfer remittances (David, 2011).

Conflict, remittances and migration

Armed conflicts, like the impact of a natural disaster, might negatively influence a household's well-being by destroying or diminishing its revenue sources and assets (Naudé and Bezuidenhout, 2012). Remittances to conflict-affected nations may grow in such instances. In the event of a lengthy battle, a country's Diaspora would represent a more significant proportion of its population. Following the onset of violence, remittances in such nations may show an increasing trend as the number of refugees increases. However, this may take some time to show up in national accounts. In reality, several nations with high remittance-to-GDP ratios are countries at war or have conflicts (examples of these cases are Syria, the Democratic Republic of Congo, and Haiti).

Yet, while the foregoing demonstrates a rising trend in remittances in reaction to conflict or post-conflict reconstruction, remitting cash to households in conflict nations may be challenging. Banks are frequently harmed or restricted, and migrants/refugees often lack faith in these institutions. Governments in crisis zones may be hostile to their Diasporas, and remittances may be interpreted as weakening or fueling violence. Furthermore, "remittances themselves become a highly sought resource appealing to criminals and even warring parties" (Young, 2006:28). As a result, in times of war, officially measured remittances may shrink or show no substantial rise, although more informally sent monies may increase.

2.3. COVID-19, health and socio-economic impact

A unique respiratory disease was discovered in late December 2019 in Wuhan, a city in China's Hubei Province, and is currently being referred to as coronavirus disease-2019 by the WHO (WHO 2020; Gautam and Hens 2020). Novel coronaviruses (i.e., huge numbers of single-stranded ribonucleic acid viruses of the subfamily Orthocoronavirinae, family Coronaviridae order Nidovirales), which are currently divided into alpha, beta, delta, and gamma coronaviruses, are related with human health difficulties (Peters et al. 2020). COVID-19 is one of the most alluring tasks and the greatest tragedies of the twentieth century following World War II (Gautam 2020a). Many outbreaks of viral pandemic illnesses have been observed throughout human history (Gautam and others). On the other side, the whole global population is today confronted with significant issues (social, environmental, health, and economic) as a result of the impact of COVID-19 (Gautam 2020b).

COVID-19 has caused a global health catastrophe in which many people are dying, spreading human misery, and people's lives are turned upside down (Nicola et al., 2020). It is a health

crisis and a social and economic problem, both of which are critical to long-term growth (Pirouz et al., 2020). By March 11, 2020, when WHO proclaimed a worldwide pandemic, 118,000 recorded cases from 114 nations had been documented, with over 4,000 fatalities. The first recorded case took 67 days to reach 100,000 cases, 11 days for the second 100,000, and only four days for the third (United Nations Development Programme, 2020). This has overburdened even the wealthiest nations' health-care systems, forcing doctors to make difficult decisions about who survives and who dies. The COVID-19 pandemic has thrown the globe into disarray, with no apparent escape strategy without a vaccine. This epidemic has afflicted people from all walks of life (Mofijur et al., 2021). Yet, it is especially harmful to vulnerable socio-economic groups such as low-income people, older people, individuals with disabilities, youths, indigenous people, and ethnic minorities.

Preventive initiatives to save lives are having a detrimental influence on the economy all across the world. The lockdown is the most extensively used protection device, which has forced people to work from home whenever possible (Sohrabi et al., 2020). Workplace closures have disrupted supply networks and decreased productivity. Many countries have tightened borders in an attempt to contain the spread. Travel restrictions and banning sporting events and other mass gatherings are among the additional precautions (Sohrabi et al., 2020; Horton, 2021).

Additionally, restrictions such as discouraging public transportation and public venues such as restaurants, shopping malls, and public attractions exist worldwide. Measures such as prohibiting public transit and public spaces such as restaurants, shopping malls, and public attractions exist worldwide. The situation is particularly dire in the hospitality and global travel businesses, which include airlines, cruise lines, casinos, and hotels, where economic activity has dropped by 90%. (Fernandes, 2020). Companies that rely on social interactions, such as entertainment and tourism, suffer severely, with millions of jobs lost. Consumers are spending less as a result of layoffs, decreased personal income, and uncertainty, resulting in additional firm closures and job losses (Ghosh, 2020).

2.4. Impact of COVID-19 on remittances flow and migration

Bisong, Ahairwe and Njoroge (2021) and Ratha (2021) argue that the COVID-19 pandemic has affected migration and remittance flows, which can negatively impact the socio-economic status of migrants, sending and destination countries. The COVID-19 pandemic has negatively affected migration flows globally due to extensive travel bans, fear of the virus, and weak job

prospects (Ratha, 2021). Khachidze (2021) conducted a qualitative study on the impact of COVID-19 on migration and remittances globally. The study indicated that migrants brought workforce, knowledge, and innovation ideas from their countries. Moreover, the conclusion shows the outcome of COVID-19 has hit the migrant community the hardest.

A survey study conducted in South Africa found that migrants were mainly affected by COVID-19 as opposed to non-migrants (Statistic South Africa, 2020). Migrants' livelihoods were disrupted, and income-generating activities were curtailed during the pandemic, making their lives difficult. It also harmed the families and communities who depend on migrants' support through remittances. The survey study found that most migrants came from Europe (22,6%), Zimbabwe(22,6%), Democratic Republic of Congo (10,4%), Namibia and Lesotho(6,1%) respectively, South and North America(4,3%) respectively, the Rest of Africa(3,5%), Congo Republic (2,6%), Tanzania and Asia (1,7%) respectively, Botswana, Kenya, Zambia, Oceania (0,9%) respectively (Statistic South Africa, 2020). With this statistic, it is clear that South Africa is home to migrants worldwide. Additionally, the survey by statistic South Africa is more accurate than individual studies as it touches all corners/provinces of South Africa, and the results are not biased. Moreover, South Africa host most migrant from Southern African Development Communities countries (SADC). Following lockdown measures, most migrants who worked in the informal sector lost their jobs and returned home (Cohen and Vecchiatto, 2020).

Similarly, migrants lost their employment, according to the World Bank (2019). This, in turn, had a negative impact on the earnings of people, families, and society in areas where remittances were critical for daily existence. In the African context, the pandemic resulted in decreased FDI flows, increased capital flight, tightening of local financial markets, and a slowdown in investment (Velde, 2020).

During the COVID-19 epidemic, for example, falling remittance transfers contributed to a slowdown of economic development and growth in Sub-Saharan Africa. Reduced remittance flows substantially negatively influence the development growth and welfare of remittance-dependent countries, potentially sending many people back into poverty (Ataguba, 2020; Damak and Bahtia, 2020).

Mushomi et al. (2022) conducted a study on the impact of COVID-19 on migrants in southern African countries. The focus was on South Africa as many southern countries (SADC) came

to find refuge in South Africa. The study found that the pandemic negatively impacted people on the move as during the crisis, they did not have access to vaccines, unlike the citizens. This was a literature-based study that only included qualitative methods. Minister Zweli Mkhize initially reserved vaccines for South Africans only at the beginning of COVID-19 vaccine rollouts (Burger et al., 2021; Coulter et al., 2021). This measure limited the opportunities for migrants to work as in most workplaces producing the vaccination card was a significant requirement before starting the job.

A study in Lebanon based on the case study method investigated the association between migration, remittances and economic development. The intention was to use out-migrant initially, but they used net migration given the lack of that (Waked, 2022). The study's findings reveal that for a long time, out-migration has resulted in Lebanon's reliance on remittances, which act as a safety net for Lebanese households during times of crisis. On the other hand, remittance inflows fell by 15.1%, from \$7.21 billion in 2019 to \$6.29 billion at the end of 2020. Prior to that, though, remittance inflows climbed by 6.31 percent between 2018 and 2019. The cause for this is most likely the global slowdown in commercial activity following the commencement of the COVID-19 pandemic since total global remittance flows fell between 2019 and 2020. As the country depends mainly on remittances, the decrease in remittances during the COVID-19 crisis resulted in a GDP decrease.

An interesting study on remittances and COVID-19, a case study of Mexico and El Salvador, found that remittances to El Salvador witnessed a record 40 per cent sudden drop. In contrast, Mexico recorded an unexpected 35 per cent increase. This is an interesting case because both countries account for approximately 30 per cent of all immigrants currently residing in the United States. For one country, the inflow of remittances dropped, while for the other, the inflow of remittances increased (Mandelman and Vilan, 2020). The second quarter of 2020 saw a severe 32 per cent (annualised) decline in GDP due to the general economic shutdown. In addition, many sectors hardest hit by the shutdown frequently use a higher proportion of migrant workers from Mexico and El Salvador. In other words, the shutdown of enterprises or industries impacted the country's economy and the migrants'.

Numerous studies report a considerable decrease in remittances as a result of COVID-19 in Africa (Bisong et al., 2020), the Philippines (Ang and Opiniano, 2020; Murakami et al., 2020), and Bangladesh (Das, 2020). The COVID-19 epidemic, which has plagued numerous nations

since January 2020, has caused worldwide economic contractions on a significant scale (International Monetary Fund, 2020). The bigger the pandemic's impact on economic development and job prospects in affluent countries, the greater the impact on low-income countries. In South Africa, all industries recorded employment losses in the second quarter of 2020 compared to the first quarter 2020. The commerce industry lost 192 000 jobs, followed by the business services industry, which lost 147 000 jobs, and community services, which lost 103 000 jobs.

While a case of inflow of remittances to Samoa has a contradictory result, Chen, Chand, and Singh (2020) found that the pandemic positively affected the long-term inflow of remittances to Samoa. On the other hand, a study by Murakami et al. (2020) found strong evidence of a negative impact on remittances. Chen et al.'s (2020) findings added to the scarce literature (Ang and Opiniano, 2020; Bisong et al., 2020; Das, 2020; Murakami et al., 2020) on the effect of COVID-19 on remittances.

Researchers such as Skrivankova and McGregor, 2007 indicated that migrant usually works under exploitation and are denied proper remunerations. The COVID-19 pandemic has negatively impacted many economies, and many migrant workers abroad lost their jobs without any compensation to cushion the blow. However, the global COVID-19 pandemic has caused severe socio-economic, financial, and health crises in a region or globally, affecting migrant workers' quality of life and remittance flows to recipient countries (Chowdhury and Chakraborty, 2021). Additionally, during COVID-19 early 2020, when people were in quarantine, migrants were forced to take money from their savings and send it home to struggling families for upkeep during the crisis. Quayyum and Kpodar (2020) argue that the trend would not last long if the pandemic caused a recession in the host countries and the migrants used their savings to support their families back home. Additionally, the government of most Europeans and American countries paid a reasonable amount to people in the countries, including migrants during the COVID-19 period, and this helped migrants to keep sending money home (Greig, Deadman, and Noel, 2021; Chetty, Friedman, and Stepner, 2020).

In the second quarter of 2020, there was a noticeable negative impact on employment, particularly for migrant workers with dwindling working hours, in the USA, the UK, as well as in Europe and Central Asia (Chowdhury and Chakraborty, 2021; World Bank, 2020a) which had an impact on countries like Bangladesh, India, Mexico and so forth. Before the epidemic,

Bangladesh had roughly 10 million migrant workers in other countries who used to provide a significant amount of foreign exchange money to the country. According to an earlier World Bank (2020a) prediction, overall remittances to Bangladesh were estimated to fall to US\$14 billion in 2020, a 20% decrease from the previous year. According to statistics disclosed for remittances received by Bangladesh, year-on-year remittances declined by 20% in March, April, and May, matching the World Bank's estimate (Bangladesh Bank, 2020). This decline in revenue put a significant strain on the household income of many migrant households, as this money helped significantly to eliminate poverty in the country's rural areas. Poverty declined quicker in migrant-sending districts, and it has been discovered that for every 0.1% increase in the number of migrants from that district, the poverty rate lowers by 1.7% (UNDP, 2020).

The COVID-19 crisis impacted native and foreign-born workers, although the latter suffered the most. In Q2 2020, employment (a fraction of the working-age population) declined by 3.3 percentage points for foreign-born people and 2.3 percentage points for locals on average across the 28 nations studied (Basso et al., 2020). There was, however, substantial heterogeneity among countries. Foreign-born employment declined by more than 11 percentage points in Canada and the United States. At the same time, decreases (for both migrants and locals) were often smaller in European nations that depended significantly on employment retention measures.

Notwithstanding this, migrants experienced considerable job losses in certain European nations. In Spain, for example, where migrants are disproportionately overrepresented in temporary occupations, employment plummeted by more than eight percentage points, compared to a reduction of just over three percentage points for native-born workers. In France and Switzerland, two countries with among the highest rates of usage of job retention programs in the OECD (Basso et al., 2020; OECD, 2021), the initial drop in employment was lower for foreign-born workers than for native-born workers. In contrast, despite extensive use of job retention programs (and a layoff prohibition), foreign-born employment fell four percentage points in Italy, compared to one percentage point for locals. The early impact of the crisis was less for migrants than for native-born people in only 9 of the 28 nations studied. Migrant employment increased somewhat in three countries (the Netherlands, Latvia, and the United Kingdom) in the second quarter of 2020 compared to the previous year. The increase in

employment rate in the United Kingdom, in particular, was mainly owing to the selective exits of non-employed migrants during the epidemic (OECD, 2021).

However, the impact of international migration on remittances during COVID-19 has changed the complexity of economic growth, mainly based on the 'Stay at home' COVID-19 health protocol measures adopted by many countries in 2020. International borders were closed, thus restricting migration. Additionally, most employers shut down their businesses or had limited operations, thus reducing the financial flows to workers hence reducing income (WHO, 2020).

2.5. The impact of remittances on economic development/growth in developing countries

Recent literature has focused on international migration and remittance drivers, especially on potential higher income and self-interest motives. Chowdhury and Chakraborty (2021) argue that despite the selfless reason of sending remittances back home by migrants being primarily financial, the self-interest perspective is based on the need by migrants to invest for their retirement. The other reasons for migration and remittances are to pay debts back home, as migrants, mainly from developing countries, usually borrow money to fund their migration. Certain studies indicate that remittances reduce poverty and enhance economic growth in receiving countries (Adams and Cuecuecha, 2013; Mughal, 2013). Other studies showed that remittances have a potential for brain-draining (Beine, Docquier and Rapoport, 2012; Gibson and McKenzie, 2012).

Many scholars (Cazachevici, Havranek, and Horvath, 2020; Meyer and Shera, 2017; Ratha, 2013; Javid, Arif and Qayyum, 2012; Pradhan, Upadhyay, and Upadhyaya, 2008) widely regard migration and remittances as chief drivers of economic growth and development, human capital development, financial emancipation, academic success, and poverty reduction in the country of origin (Chowdhury, 2011). However, the effects of different epidemiological (COVID-19 in 2019), geopolitical (Wars such as the Ukraine/Russian war in 2022), socio-economic, and financial shocks (Global financial crisis in 2008) had an impact on migration and remittances. According to the Groupe Special Mobile Association (2021), during the peak of the COVID-19-induced lockdowns in 2020, mobile remittances increased by 65%.

Although the variables determining economic growth are still being debated, institutions, trade openness, and remittances have been recognized as the primary determinants of economic growth. Remittances affected economic growth in three ways in the countries of destination:

first, by directly investing in capital accumulation; second, through labour inputs via labour force contributions; and third, by influencing total factor productivity growth (Barajas et al. 2009; Rahman, 2014:141). There are three hypotheses on the influence of remittances on economic growth: The optimistic developmental school is the first hypothesis, the pessimistic developmental school is the second, and the remittances development pluralists' theory is the third (Jushi et al. 2021). The first theory is optimistic about the impact of remittances on economic growth, claiming that remittances are one of the most important factors in reducing poverty among migrant households in their home country and that remittances are also used to finance imports and external imbalances at the macroeconomic level. According to the pessimistic viewpoint, international migration increases the recipient country's reliance on remittance inflows. Also, it harms economic growth because only a few households get remittances, resulting in inequities among the population.

The third hypothesis emphasizes that there is no clear positive or negative view on the influence of remittances on economic growth. While economists have yet to agree on the impact of remittances on economic growth, this debate can be resolved experimentally. Sadly, the empirical research on the influence of remittances on the recipient country's economic growth is equally equivocal (World Bank, 2019). Some publications gave empirical evidence that remittances had a beneficial effect on economic growth, while others provided evidence that remittances have had a detrimental impact on economic growth. Numerous empirical investigations have revealed little evidence of a link between remittances and economic progress. Bangake et al. (2019) presented empirical evidence showing remittances positively and significantly influence economic growth in underdeveloped nations, but aid and foreign direct investment had no impact. According to Matuzeviciute and Butkus (2016), remittances have a favourable influence on long-term economic growth. Yet, the influence varies depending on the country's economic growth level and remittances. Mim and Ali (2012) discovered that remittances had a beneficial influence on consumption, investment, and economic growth, whereas Cooray (2012) found that remittances promote economic growth through education and finance sector development.

According to Rao and Hassan (2011), a rise in private transfers, directly and indirectly, influences economic activity. Nsiah and Fayissa (2013) predicted that a 10% increase in remittances would result in a 0.4% rise in GDP per capita growth rate in a panel of 64 countries in Africa, Asia, and Latin America-Caribbean from 1987 to 2007. Giuliano and Ruiz-Arranz

(2009) proved the presence of a positive association between remittances and economic development, but only for nations with weak banking systems. Kumar (2013) examined the short and long-term impacts of remittances, assistance, and financial deepening on growth in Guyana from 1982 to 2010. He discovered that remittances had a positive and substantial influence in the short and long run.

Recently, Batu (2017) examined 81 countries from 1970 to 2012 and showed that transient inflows of workers' remittances positively boost GDP per capita; however, permanent increases in remittances do not. According to Lartey (2017), a 1% rise in remittances enhances per capita growth by roughly 0.79 percent under a fixed exchange rate regime, whereas a 1% increase in the exchange rate flexibility index increases this benefit by about 0.13 percent. According to Simionescu and Dumitrescu (2017), remittances from migrants are positively associated with economic growth and private consumer spending. According to Olayungbo and Quadri (2019), both remittances and financial development aid favourably impact economic growth in both the short and long run.

Nonetheless, empirical studies have examined the influence of remittances on the economic growth of Central and Eastern European (CEE) nations. Goschin (2014) examined 10 CEE nations from 1995 to 2011 to investigate the impact of remittances as a significant money source on the receiving countries' economic growth. Her analysis found that remittances had a positive and substantial effect on both absolute and relative GDP growth. Meyer and Shera (2017) discovered a significant positive association between remittances and economic development using panel data for six countries (Albania, Bulgaria, Macedonia, Moldova, Romania, and Bosnia and Herzegovina) from 1999 to 2013. According to Raggl (2017), remittances are a significant source of income for households in 10 CEE nations (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Albania, Bosnia and Herzegovina, Macedonia, and Serbia).

On the other hand, Chami, Fullenkamp, and Jahjah (2005) and Karagöz (2009) discovered a negative and substantial link between remittances and economic growth. According to Amuedo-Dorantes (2014), remittances may boost the consumption of non-tradable items, raise prices, strengthen the real exchange rate, and reduce exports, harming the receiving country's competitiveness in global markets. Jongwanich (2007), on the other hand, offered empirical evidence that remittances marginalize growth. Similarly, Barajas et al. (2009) discovered that

remittances had little effect on long-term economic growth, while Clemens and McKenzie (2018) concluded that detecting the influence of remittances on economic growth is extremely challenging. According to Chirila & Chirila (2017) and Cismaş et al. (2020), remittances do not support economic growth in Romania.

2.6. Remittances Channels to developing countries

The channel for sending remittances is frequently characterized as official or informal, each with its hurdles. The first method is to transmit money legally via bank-to-bank transfers between a bank in the sending nation and a bank in the receiving country. The second option is to use a registered money transfer operator (MTO). In general, MTOs have a broad network of local branches that migrants utilize to send and receive money. Money Gram and Western Union are the most often used. Credit unions have recently begun to provide remittance services. Additionally, tourists can withdraw money from ATMs in other countries using traveller's cheques, credit cards, and debit cards. Web-based money-sending is still in its infancy as a third official payment channel (Martina et al., 2019).

Popular web-based transfer services support peer-to-peer money transfers. This means that one gadget can accept funds from another. Rapid peer-to-peer transactions are linked to established banking institutions. PayPal is the most widely used web-based international money transfer tool (PayPal, 2016). From 2018, monies can be transferred from M-Pesa wallets to PayPal and vice versa if the wallet and account have the same name (PayPal, 2019).

Moreover, TransferWise and WorldRemit are the market leaders in the online remittance area. Martina et al. (2019) suggest alternative remittance channels include mobile cash and Bitcoin-based transfer services. According to the authors, a mobile cash system is any payment system that allows users to transfer money from one mobile device to another. Conversely, Bitcoin is scientifically and popularly referred to as a cryptocurrency or virtual currency. The digitalisation of remittances can increase access to and usage of accounts, reduce costs, and improve AML/CFT risk mitigation. Cash-based remittances remain the most prevalent payment instrument due to a lack of access to transaction accounts, a lack of knowledge of digital products, and a lack of innovation (Allen et al., 2020). An enabling ecosystem for digital payments is needed, and exchange controls can push consumers to use unregulated services.

Due to low financial inclusion rates, access to digital channels for remittances is limited, resulting in a substantial proportion of remittances being handled in cash. Regulatory regimes favour bank-led initiatives, restricting e-money services' ability to advance formalisation. Most remittances were made in cash (Ardic et al., 2022). Migrants with lesser incomes and those who had relocated without legal authorization also had restricted access to digital remittance channels for funding and disbursing remittances, such as transaction accounts, online remittance platforms, and mobile wallets.

SSA, for example, is the most costly area for sending remittances, with costs ranging from 9.4 to 22% of the transfer value. This is because there is a greater demand for more accessible access locations for cashing in or cashing out remittances and the requirement for official paperwork, such as national identity documents (IDs) or proof of address (Bester et al., 2008). Due to the providers' demand for residency/immigration status, many clients in South Africa are barred from sending them officially, even if they have a form of ID (Barry, Esser and Tuyeni, 2018). These obstacles for consumers and RSPs both impede flow scale and raise the cost of doing business.

Despite significant progress in several corridors, obstacles persist. These might range from hardship owing to uneven or inadequate execution of regulatory and legal requirements to impediments to competition, payment system infrastructures, transparency and consumer protection difficulties, and other market structure challenges (Ardic et al., 2022). The cost of remittances remains greater than international objectives, particularly in specific regions. These impediments can hinder the flow of remittances through transparent, regulated channels. Nevertheless, challenges on the demand side, such as migrants' lack of identification, recipients' lack of IDs, and a lack of digital and financial abilities, continue to be impediments (Barry, Esser and Tuyeni, 2018; Rocher, and Pelletier, 2008).

.Discussion of the gap in the literature

One of the papers reviewed used a survey methodology, and the rest used qualitative methods. Moreover, the papers were mainly focused on remittances in general and migration. Only one article was close to this study, but it did not have a stipulated case study or, better say, the study area needed to be identified. There is a gap in the literature about out-migrants/migration outflow; the focus has always been on migrants in general, at least with remittances; some studies involve remittances-inflow. Outward-migrant or out-migrants is one of the significant

variables that I will use in this study, as out-migrants are the ones who send remittances back to the countries where they originated from. However, there is a unique study (*Out-migration and Remittances*) that had out-migrant as one of the variables. Unfortunately, the study needed data to represent that variable and used net migration instead.

2.7. Theoretical framework

The pluralistic developmental theory, which neoclassical economists embrace, was developed in the late 1980s and 1990s, and it brought out a new argument regarding migration, remittances, and development. It places migration in a positive and negative perspective. It argues that migration increases the flow of remittances and experience, skills, and knowledge that migrants acquire abroad, which will either enhance or derail development in both the sending and destination countries (Taylor, 1999). The theory further links the motives and impact of migration, highlighting that migration can positively and negatively impact development and economic growth (de Haas, 2007). Therefore, there is a need to understand the relationship between migration, remittances, and economic growth. The effects of migration and remittances are context-dependent (de Haas, 2007). No theory explicitly explores the relationship between migration and remittances on one side and developmental and economic growth on the other side. Migration brings out balanced growth because it best allocates production factors, such as labour and income, which benefit both the sending and the destination countries (de Haas, 2007). For instance, migrants would invest in their home countries, thus stimulating development (Adenutsi, 2010; de Haas, 2007). On the other hand, migration can be detrimental to growth, as propounded by the pluralistic developmental theory.

2.7.1. Developmental pluralistic conceptual framework

The framework works on the notion that the economies of remittance-recipient countries (also migrant-sending countries) are stratified into macro, meso and micro levels (Larsson and Angman, 2014). The macro-level highlights how and where remittances, brain drain, or brain gain issues are spent. The macro-level highlights that remittances are spent on domestic and foreign goods, depending on the recipient country's economy (de Haas, 2007). For instance, during Zimbabwe's economic meltdown in the 2000s, remittances could be used to buy goods in neighbouring South Africa because they were unavailable. Therefore, the impact on the macro level is determined by whether remittances are spent on domestic or foreign products. On the same level, brain drain is widely associated with negative impacts on migrant-sending

countries. There would be a lower labour supply in many industries as people migrate. Thirdly, the framework argues that challenges are associated with macro-level remittances in-flows. They are associated with an increased risk of corruption in the recipient country, thus affecting economic and developmental growth (Abdih et al., 2012; Berdiev, Kim and Chang, 2013).

The pluralistic framework further proposed that meso and micro levels of migration and remittances highlight positive developmental and economic growth (Larsson and Angman, 2014). For instance, when remittances are received in more stable economies and are used to purchase locally produced products, it increases the demand-supply chains, thereby creating jobs (de Haas, 2007). Remittances alleviate poverty, as outlined by the optimistic developmental theory, which is also widely embraced by the pluralistic developmental framework. However, remittances also negatively impact the meso, incredibly impoverished communities unable to send their people abroad. Figure 1 highlights the developmental pluralistic conceptual framework.

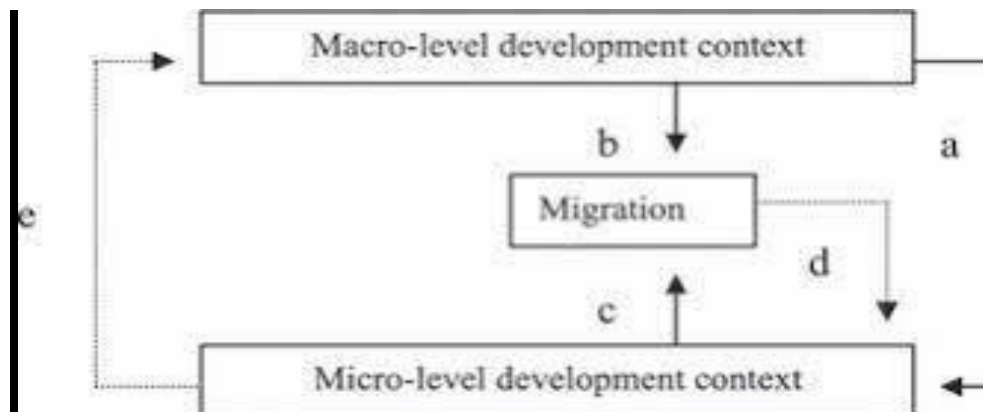


Figure 1: Developmental pluralistic conceptual framework. Source: (Larsson and Angman, 2014).

2.7.2. Theory of remittance

This theory investigates the micro- and macro-level elements that impact the choice to remit. Considering the micro-foundation of macroeconomic models and migrants' reasons to remit, theoretical micro-models assess the extent to which compassion trumps self-interest as the primary motivator for sending remittances. Pure altruism indicates migrants' concern for people left behind in their home country, regardless of their own economic situation. In contrast, self-interest reflects migrants' concern for investing in their home nation for future

advantages. The landmark study by Lucas and Stark (1985), the first to establish a theoretical framework in this field, reveals that altruism alone cannot explain migrants' desire to send remittances. In inter-temporal agreements, for example, remittances are believed to benefit the migrant and their family mutually, taking risk diversification methods and self-interest into account. SeyedSoroosh (2017), Osili (2007), and Adams (2011) discovered that altruism is the primary motive for sending remittances. However, other writers found the link between altruism and remittances challenging to establish (Antoniades et al., 2017; Mahapatro, 2017; Cox et al., 1998).

The authors discover that altruism is intangible and interacts with a variety of different elements. In this light, Antoniades et al. (2017) and Mohapatra et al. (2012) contend that altruism may be quantified indirectly using microeconomic or macroeconomic data or approximated experimentally. Recent experimental economics research reveals that altruism is not static and fluctuates greatly depending on the circumstance. In the instance of the COVID-19 crisis, Luo et al. (2021) argue that the pandemic created a considerable disturbance in social cognition and behaviour and that when the severity of the pandemic increased, participants in an experiment made more decisions that benefitted others more than themselves. These findings are consistent with pre-pandemic studies, demonstrating that an individual's level of altruism is dynamic and context-dependent, increasing in the face of crises and natural disasters (Luo et al., 2021). Investing in assets, paying for relocation fees, saving for retirement, or acquiring administrative services are examples of microeconomic motivations to remit that are tied to self-interest. Motives of self-interest may also be related to the migrant's desire to return home (Rapoport and Docquier, 2006). Another self-interested rationale for remitting is protection against unforeseen shocks that cause income volatility (Docquier and Salomone, 2012; Adams, 2011; Yang and Choi, 2007; Lucas and Stark, 1985).

As previously stated, the causes of altruism and self-interest motives for remittances have been studied using either microeconomic or macroeconomic data (Rapoport and Docquier, 2006). Microeconomic studies employ data from household surveys, censuses, or migrant surveys to estimate, for example, the household earnings elasticity of remittances (Simpson and Sparber, 2020) while adjusting for individual household factors. In this approach, research often contains data on the migrant-sending or receiving household, but seldom both. On the one hand, writers focused on migrants often examine the impact of their skill mix, duration since departure, age, and particular socioeconomic features of remittance-receiving households

(Docquier and Salomone, 2012; Adams, 2009). Authors concentrating on the origins of migrants, on the other hand, discover that nations with high poverty rates and low levels of human capital have an even more significant proportion of persons planning to move and send remittances. Some agree that when compassion outweighs self-interest, remittances increase when the emigrant's income is higher, and adversities in the emigrant's home country diminish the income of family members. In contrast, remittances are positively associated with family income at home when self-interest dominates (Adams, 2009).

Furthermore, macroeconomic studies use cross-sectional or panel data at the national level and incorporate aggregate factors to explain remittances (Adams, 2009). Some of these factors include the expense of sending money abroad, the stock of migrants, the political or economic risk in the receiving country, the level of poverty there, and the difference in gross domestic product (GDP) between the two countries (Freund and Spatafora, 2008). The home country's GDP and unemployment rates may affect the migrant's take-home pay. Therefore, it stands to reason that a rise in GDP and a fall in unemployment, both correlated with the prevalence of altruism, will lead to increased remittances (Lin, 2011; Chami et al., 2005).

2.7.3 Migration System Theory

The primary premise of this theory is that migration affects the receiving and exporting countries' economic, social, cultural, and institutional conditions. De Haas (2010a) states that Network Theory is strongly related to Migration System Theory. Moreover, the System approach emphasizes the macro and micro links of locations associated with the migration process (Fawcett & Arnold, 1987; Kritz, Lim, and Zlotnik, 1992). Kinship and friendship systems are examples of micro-level elements, whereas macro-level influences include economics, domination, political systems, national immigration policies, and cultural and social systems. The Migration System Theory, in contrast to previous theories, emphasizes the reciprocal relationship between migration and development (De Haas, 2010a).

As a result, this theory helps construct a theoretical framework that addresses migration from a more significant development standpoint. Migration promotes not just economic but also social growth. For example, remittances (a significant component of this study) sent back to family members may affect the social and economic background of labour-sending countries (Wickramasinghe and Wimalaratana, 2016). As a result, it may be claimed that migration can impact the socio-economic growth of the nation of origin and stimulate continued movement

at both the macro and local levels. This idea is strongly related to this study since it is based on diverse focuses.

In the literature, these (remittances theory, migration theory and the pluralistic framework) theories have been used to understand the impact of external shocks on migration and remittances. The pluralistic framework argues that migration and remittances' meso and micro levels highlight positive developmental and economic growth during external shocks and determine how the remittances should be used to cover the gap. Further, migration system theory suggests that migration changes the receiving and sending country's economic, social, cultural and institutional conditions. The above theories are significant, but none have detailed benefits for migrants. However, remittances theory argues that the decision to remit due to external shocks depends on personal will. In this case, remittances and migration system theories are used to understand the impact of the external shocks in destination and origin countries. Migration system theory is essential that the migrants would not be stranded while already knowing someone in the destination country, and they support their families' economic and social development. As for the remittances theory, it's also crucial that people decide to send money home to their direct families to support them throughout the shocks.

2.7.4. Chapter Summary

The chapter began with a critical engagement with existing literature on external shocks (pandemics/epidemics) and their effect on migration and remittances. It is seen that scholars wrote about the pandemic, and the findings show that, yes, the pandemic, epidemic and other external shocks affected migration and remittances. In contrast, other the World Bank indicated that there had not been a significant decrease in remittances. However, this was a general perspective. Thus, this study is specific to the case study, where it shall find an equilibrium between what was said or found in the literature and the study results.

Moreover, the framework selection is based on the fact that it includes remittances and migration. The study looks at migration, remittances and the impact COVID-19 had on them. In the literature, scholars have indicated that migration and remittances are related to economic development, health and socio-economic status. As there is a lack of literature on the “Impact of COVID-19 on Migration and remittances in developing countries”, it is not easy to compare what framework other scholars used. However, there have been studies on the impact of COVID-19 on Migration impact of COVID-19 on remittances respectively.

CHAPTER III: METHODOLOGY

3.1. Introduction

This chapter describes the research approach to be adopted in this study on the impact of COVID-19 on international migration and remittances in developing countries. This study adopts a quantitative methodology in assessing the impact of Covid-19 on migration and remittances in developing countries. It adopted a statistical approach to the research problem using quantitative analytic techniques. While there are studies, mainly subnational studies, that have examined various impacts of COVID-19 on migration and remittances, respectively relying on purely qualitative approaches drawing on existing literature and documents, the goal of this study is to make broader inferential statements and generalizations based on patterns emanating from statistical analysis of migration and remittances in developing countries.

3.2. Research design

This study adopted an explanatory research design. Explanatory research is a study approach that investigates why something happens when minimal information is available (Kothari, 2004). It can help to grasp a subject better, determine how or why a certain phenomenon occurs, and forecast future events (Paré, 2004). Explanatory research may be defined as a "cause and effect" paradigm in which patterns and trends in current data that have not been explored before are investigated. As a result, it is frequently seen as a sort of causal study. This research report's main variables are remittance inflow (the dependent variable) and migration outflow (the dependent variable). These two variables are related in a way that migrants are to send remittances; in other words, there must be migrants outside the country of origin to send remittances. This explains 'when' something happens and why. Migrants move from their countries of origin due to various reasons and external shocks, which in turn have an impact on remittances.

The design is relevant for the study as the aim is to investigate the impact of COVID-19 on migration and remittances in developing countries. Additionally, the study defines a relationship between migration outflow and remittances and a way to determine their causal relationship.

This study is based on the quantitative research tradition - a mode of inquiry “that evaluates mathematical representations of the world. Data from surveys, questionnaires, and medical or physiological data are frequently examined in quantitative units “(Yoshikawa et al. 2008; Yoshikawa et al. 2013). Quantitative research emphasizes measuring phenomena and tries specific predictions and generalized conclusions based on recognized patterns and interactions between variables and statistics. In this sense, it highlights a high level of objectivity in data analysis compared to qualitative techniques that rely on context and human experiences to learn more about a phenomenon (McCusker and Gunaydin, 2015).

This method helped determine the interaction between the dependent and independent variables, the changes over time, and the impact COVID-19 has on them. The goal is to determine the changes due to the COVID-19 pandemic and analyze the remittances inflow to different developing countries before the pandemic compared to the flow during the pandemic. Data were analysed using statistical software called R programming. Through the use of R, not only was an empirical association established, but this association was visualized through the use of graphics.

This study focuses on determining the impact of the COVID-19 pandemic on remittances and migration in developing countries. More specifically, it examines the association between the inflow of remittances and migration patterns in developing countries during Covid-19 – did Covid-19 affect the two?

3.3. Data collection

This study uses cross-national data drawn from the World Bank data and the United Nations Department of Economic and Social Affairs (UNDESA), whose data is free and accessible online. The dataset covers over 90 developing countries for all the variables. United nations classify countries as underdeveloped, developing and developed countries based on different factors such as standard of living, human development index and industrialisation. In this study, developing countries were selected as the best fit for the study. A developing country according to the UN has relatively low standard of living, undeveloped industrial base and moderate to low human development index (Babatola and Arum, 2017).

The Demographic Division of the Department of Economic and Social Affairs offers the international community timely and accessible population statistics and analyses of population

trends and development outcomes for all nations and regions (United Nations, Department of Economic and Social Affairs, Population Division, 2020). Data on migration flows are more challenging to get than stock statistics. Migration data measure the number of persons who move from their habitual country of residence during a specific time other than a comparison with their birth or citizenship country. For that reason, UNDESA considers five (5) years as a significant time to determine the migration status of a person. Thus, the data on migration is collected within five (5) year intervals. To that aim, the Division conducts regular studies of population size, characteristics, and the three components of population change (fertility, mortality and migration).

The main variables for this study are the COVID-19 pandemic, remittances – dependent variable, and migration outflow- independent variable. The time frame studied is 2005 and 2020; this investigated the potential changes in remittance inflow and migration flows over the proposed period within developing countries. It is important to note that as most migration data are collected after five years, the migrant stock values also have five-year intervals, unlike remittances that are surveyed yearly. For uniformity, remittances and other variables were also converted/transformed and were captured within five years intervals. This decision facilitated the analysis and helped to avoid biased and irrelevant outcomes.

The sources of the dataset are reliable and were preferred because they are more comprehensive and contain details regarding migration, remittances and other population data.

3.3. Concepts and measures

Dependent variable: Inflow Remittances

The inflow remittance variable is measured in remittances inflow only (Remittances received in the country of origin) because remittances outflow from most developing countries were unavailable². Given the considerable appearance of missing data, it makes sense to generate this variable based on the given data to avoid biased results. Initially, the study was supposed to use total remittances as the dependent variable, but inflow remittances were only considered due to the missing outflow remittances.

² Data (outflow remittances) was accessible but a considerable number of countries had missing data, thus the author with the permission of her supervisor decided to measure remittances by the inflow remittances since almost 95% of countries had available data on remittance inflow.

Predictor variable: Migration outflow

Migration outflow is the number of people found outside their countries of origin after a considerable time (Kim and Cohen, 2010). This variable is essential for the study as it plays an important role in the existence of remittances. Migration and remittances affect each other; hence migration cannot be substituted for the remittances inflow. In most developing countries, people rely on the out-migrants income for survival. The variable is measured in percentage of the population.

Countries have attempted to conduct censuses that include migration modules at least once every five to ten years, resulting in the availability of migration data for study across time. However, census data on migration has limits. Due to the nature of censuses as a data gathering tool, only "the latest move" is documented, leaving out past migratory moves that people would have gone through before the current/last migration. As a result, the census on migration data understates people's mobility (UN DESA, 2022; Statistic South Africa, 2015). The primary advantage of utilizing census data in migration study is the nationwide coverage, which allows good representation. Migration stock (including outflow and inflow) data from the UN DESA was collected using a census of 5 years of intervals. This study measures migration in terms of "migrant outflow". The variable "migration outflow" is the source of remittances; thus, it influences the existence of the "inflow_remittances"; people have to move to be able to send remittances. There is a probability that a particular relationship exists between the two variables- the dependent and independent variables.

Unemployment rate: Most countries in the developing world face many issues, including a high unemployment rate. This is among many reasons that push people to leave their countries for better opportunities elsewhere. When the economic growth of the country (Measured in the form of Gross domestic product) is low or negative, employment is affected in return. For example, countries like DRC, South Africa (29.2%) with -6.4% economic growth, Lesotho (-22.9%) with -8.4% economic growth, Botswana (24.9%) with 8.7 economic growth, Grenada (-22.9%) with -13.8 GDP growth and have high unemployment rate (World Bank, 2020). During the COVID-19 period, the unemployment rate was one of the ruling topics in either sending or receiving countries, given the rules and regulations of the pandemic. Among the regulations was quarantine, a total lockdown whereby jobs were stopped apart from the essential workers (mostly medical practitioners). In the early first months of the pandemic (March/April 2020), people were still stunned by the pandemic's sudden appearance. In the late

months of 2020, people started trying to find ways to adjust to the situation. Among those ways, working from home was introduced, and people had to rely mostly on the internet/technology to do any work. Financial institutions were also closed in 2020, so it became difficult for people to do their money transactions and remit; thus, individuals started using phones and computers to do mobile money transfers. Additionally, sending migrants decreases labour supply, while receiving remittances reduces the labour supply.

The control variables are GDP growth, unemployment, access to the Internet and migration inflow, and there is an assumption that these variables influence remittances. The control values are expected to add values to the dependent variable or to affect the remittance inflow. For example, in the literature, studies showed that economic growth has a positive impact on remittances; the use of technology has facilitated the flow of remittances during shocks, and the use of that technic is increasing since the beginning of the shocks. Nothing much has been said about migration inflow influencing remittances inflow. Thus it is predicted to affect remittances.

The variables are renamed in R programming, separated with a dot or hyphen interchangeably to avoid confusion. This notation is observed throughout the paper.

3.4. Sampling

Probability sampling is the type of sampling in which the study participants are selected randomly. All participants have equal chances of being chosen (Peersman, 2016:47). In this study, countries from all the different continents have the probability of being involved in the study. For the study, stratified probability sampling was used to identify the sample. The countries were classified into two categories: developed and developing countries. However, developing countries (classified as low-, medium- and high-income countries) were further classified into African and Non-African countries³.

Developing countries were selected for this study as people are likely to move from these regions to other countries, searching for greener pastures. The placement of countries into

³ Countries were classified as African and non-African because it is assumed that most of Africans countries are developing (where some of the countries are low, middle and upper-income countries) and depend on remittances. Yet there are developing countries such as Mexico, Yemen, Afghanistan etc, which dependent on remittances but there are not African countries. This assumptions was carried out as it was necessary to verify if truly only African countries live on remittances and the patterns of remittances flow in African and non-African countries.

African and non_African countries enables the study to have in-depth details rather than generalizing the results to developing countries.

3.5. Data analysis plan

Multiple regression analysis investigated the impact of COVID-19 on remittances and migration in developing countries controlling for economic growth, unemployment rate, migration inflow, and internet access. However, multiple regression grants the ability to define the association between variables and how the other factors affect the dependent variable. In other words, with this process, it will be possible to establish the relationship between remittances inflow and migration outflow and how different variables, the control variables, affect the dependent variable. The goodness of fit was employed in the study to check if the diagnostics plot generated by the regression models were accurate.

Regression analysis describes the relationship between one variable and one other variable in a specific body of data (Stolzenberg, 2004). This study uses Multiple regression analysis to identify the relationship between remittances inflow and migration outflow and control variables GDP growth, unemployment rate, migration inflow and internet access. The control variables predict the model if their values are significant. The expectation is that when adding these variables, a change in remittances should be visible. In that way, their impact will be accounted for.

In order to determine if incoming remittances have an effect on outgoing migration, regression models were developed. In statistical terms, a correlation between the two variables exists if and only if the model's p-value is less than the 0.05 significance level. Once this is in place, the unemployment rate may be incorporated into the model to see if it affects the dependent variable. All remaining variables were subsequently added until their effects on the dependent variable were quantified. A diagnostics plot should reveal outliers to confirm that these models do not adequately fit the data.

3.6 Descriptive statistics

Basic statistics such as summary statistics and correlation matrix are used to determine the nature of data and the correlation of the variables. Before engaging in any regression analysis,

this process is important to have a feel of the dataset. It tells what the sample conveys. Below are the descriptive statistics of the variables to be used in the study.

Additionally, Descriptive statistics were carried out to describe the variables through scatter and density plots. The object of the scatterplot was to identify the distribution of the countries based on the dependent and independent. Summary statistics are presented in Table (1) below:

Table 1: Descriptive Statistics

	vars	n	mean	sd	median	trimmed	mad	min	max	range	skew	kurtosis
inflow_remittances	1	468.00	5.77	7.25	2.60	4.33	3.61	0.00	35.81	35.81	1.70	2.54
migration_inflow	2	487.00	5.00	8.26	2.15	3.05	2.39	0.06	66.39	66.33	3.36	13.38
migration_outflow	3	480.00	48.78	5.78	49.96	49.14	5.08	32.43	63.59	31.15	-0.56	0.30
unemploy_rate	4	474.00	8.47	6.72	6.58	7.48	5.17	0.33	37.25	36.92	1.35	1.62
internet_a	5	439.00	24.66	23.38	17.10	21.50	20.68	0.07	95.23	95.16	0.96	-0.09
gdp_growth	6	479.00	0.70	6.51	1.89	1.19	3.87	-34.68	42.79	77.47	-0.70	8.00

The summary statistics revealed that developing countries received on average remittances of 5.77 % while the maximum was about 35.81 %. Skewness for the dependent variable is 1.70, greater than 0; this means that the variable is positively skewed, while the kurtosis is 2.54, less than 3 but roughly close to 3. The kurtosis indicates that the distribution does follow a normal curve. The standard deviation value (7.25) suggests that the observations are not far from the average values.

For the independent variable "migration outflow", on average, about 48.87 percent of the population moved outside of their home countries to look for greener pastures. And a maximum of 63.59 % of the population migrate to other places. The skewness in -0.56 means that in this distribution, more values are concentrated on the right side (tail) of the distribution graph. However, the kurtosis of 0.3 less than 3 indicates that the data is normally distributed.

The variable "migration_inflow" had, on average, 4.84 % of the population that represented migrants coming from developing countries, and the maximum number was 66.39%. The skewness value of 3.66 (>0) shows that the data is positively skewed; the series has higher values. Furthermore, the kurtosis value of 13.38 (> 3) indicates that the data is symmetric and it has outliers.

Developing countries in this dataset have, on average, a GDP of 0.83. This shows how well the economy is in these countries. For this variable, the minimum value is -34.68 of GDP; this includes countries with negative GDP, such as Ukraine, Tonga, Samoa, Soudan, Haiti, Yemen, Venezuela, and the Republic of Congo, while the maximum value is 42.79. A negative GDP means a decline in the real economy, increasing unemployment and reduction in productivity.

The consequences are the ones that push people to look for employment outside where the countries have better economies than the home economy; thus, migration and remittances are affected. The skewness value (-0.70) indicates that the data is negatively skewed, meaning there are lower values. The kurtosis is still positive but not a significant value; however, the distribution is still not normal.

The unemployment rate, on average, stands at 8.10 for 90 developing countries. The minimum value is 0.33 for a country with the lowest unemployment rate, while the maximum is 37.25 for a country with a high unemployment rate. Countries with an unemployment rate of 37 should be among the poorest countries, and the economy in such countries might not be stable.

Use of technology or Access to the Internet, on average, 24.66 of the population have access to the Internet to use technology. Some countries have the people accessing the internet at 0.07%, while the maximum percent of accessing the internet in other countries is 95.23 %. According to the descriptive summary, there is high inequality in accessing the internet among developing countries.

Correlation matrix

This output shows the association between variables; if the variables are highly correlated, then the variable should be taken out.

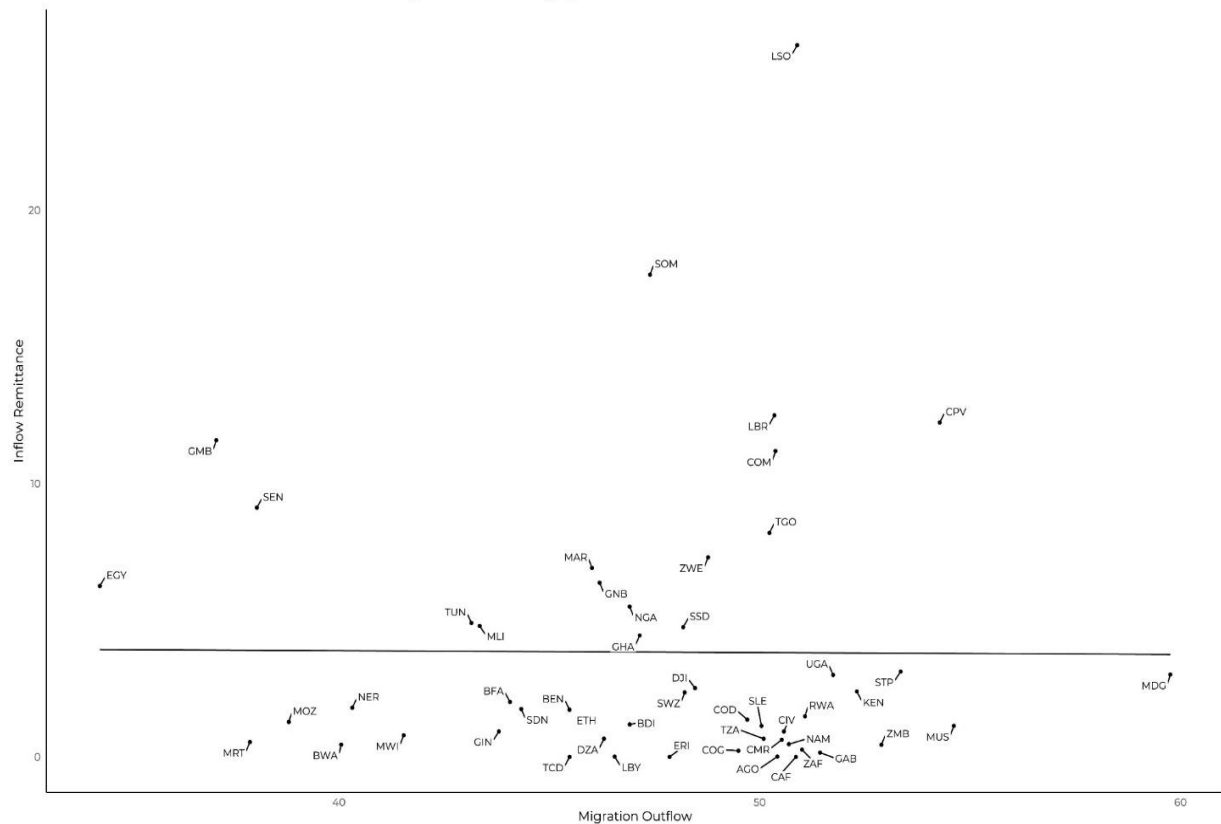
	Inflow.Remittances	Migration.Inflow	Migration.Outflow	Unemploy.Rate	InternetA	GDP.growtht
Inflow.Remittances	1.00	-0.03	-0.10	0.07	-0.01	0.01
Migration.Inflow	-0.03	1.00	0.01	0.27	0.27	-0.04
Migration.Outflow	-0.10	0.01	1.00	-0.03	0.23	0.01
Unemploy.Rate	0.07	0.27	-0.03	1.00	0.19	-0.05
InternetA	-0.01	0.27	0.23	0.19	1.00	-0.16
GDP.growtht	0.01	-0.04	0.01	-0.05	-0.16	1.00

The correlation matrix displays a correlation between variables whereby some are positively or negatively correlated, while others have a weak correlation. The output shows a negative, weak correlation ($r = -0.10$) between the dependent variable remittances inflow and the independent –migration outflow variable. The dependent variable was correlated with all other variables, with the highest being 0.07.

The correlation between the dependent variable is positive. All the variables are generally correlated, with the highest correlation coefficient of 16, 19, 23 and 27. These correlation coefficients of the two variables are weak ($r = 0.01$), while others are barely strong since their values are less than 0.75; however, there is no perfect correlation either.

Since there is a correlation among variables, it is safe to carry out a scatter plot to investigate the relation of the dependent and independent variables, not controlling for other variables.

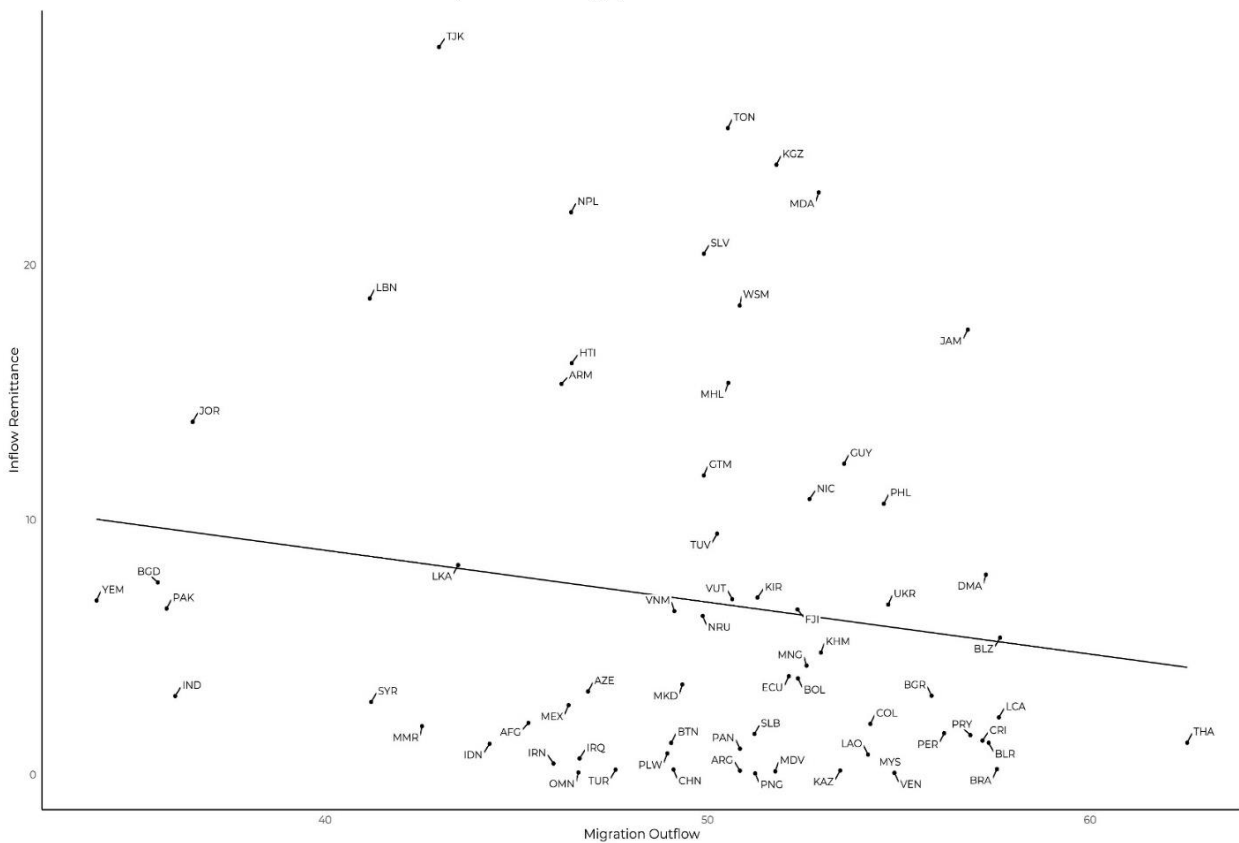
Scatter Plot IV & DV - African Countries (5-Year Average)



Source: Author (2023)

In this scatterplot, the regression line is horizontal, which means there is no relationship between the dependent variable (inflow remittances) and the independent variable (migration outflow). However, it is clear that some countries are below the line and others above the line, then some are at further extreme; others are below the regression line. A country like Lesotho (LSO) is far from remittances inflow and migration outflow. That observation gives more reasons to do further analysis to understand why it is an extreme point.

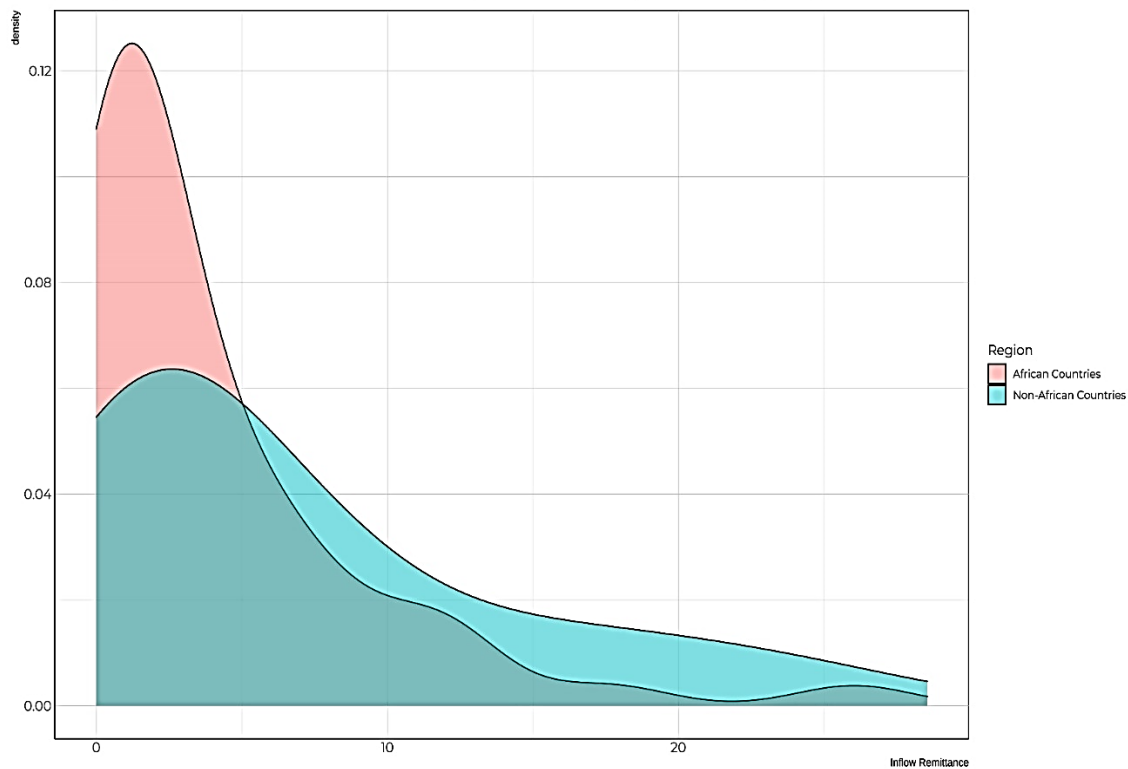
Scatter Plot IV & DV: Non-African Countries (5-Year Average)



Source: Author's construct (2023)

For the Non-African countries, a scatterplot was generated, and some observations were made. From the graph, some countries are above the fitting line while others are below the line. However, given this location, some countries, such as TJK, TON, KOZ and JOR, tend to be far from the line. From the observation, TJK happens to be so far from the regression line. In other words, one could say that TJK has more migration outflow values than other countries. The regression line displays a negative relationship between inflow remittances and migration outflow in non-African countries.

Remittance Inflow: African and Non - African Countries (5-Year Average)

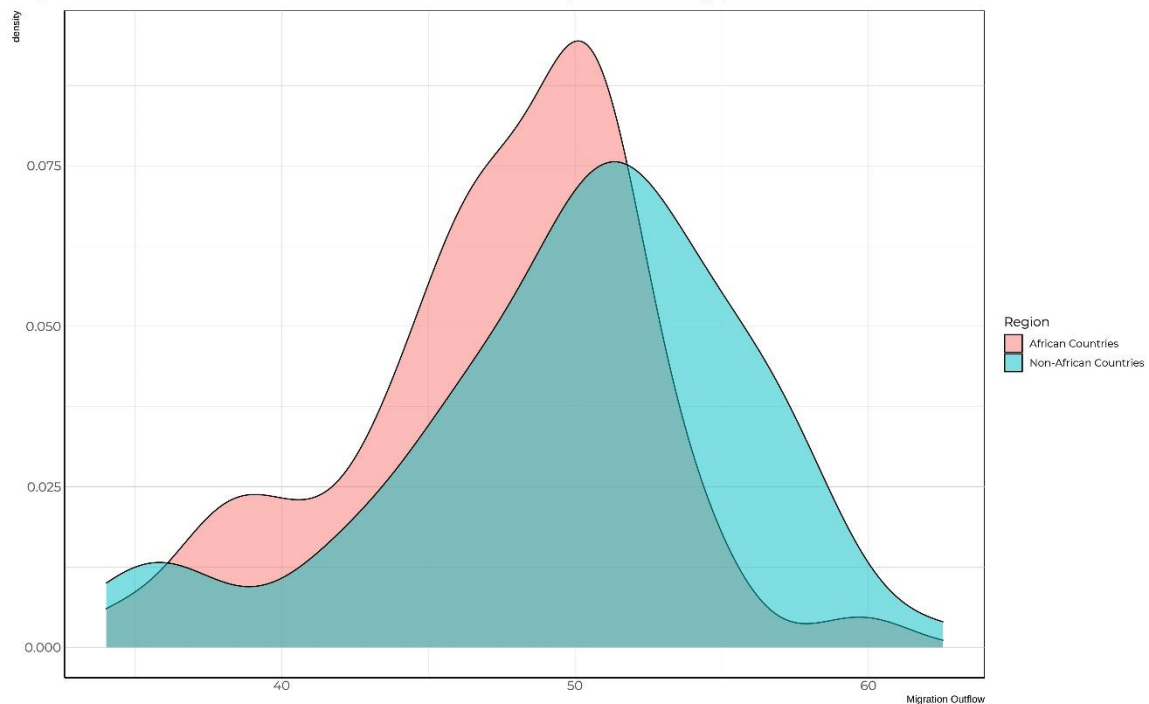


Source: Author's construct (2023)

The distribution of remittances inflow for African and non-African countries tends to be positively skewed, i.e., more values of remittances are located at the left. This condition occurs because probabilities taper off more slowly for higher values. Consequently, extreme values are far from the peak on the high end more frequently than on the low. In other words, there are more values of remittances inflow to African countries but with slow growth compared to non-African countries.

However, the distribution for African countries is at a peak, while the distribution for non-African countries seems flat.

Migration Outflow: African and Non - African Countries (5-Year Average)



The distribution of migration outflow is fairly normal for African and non-African countries. However, the distribution of non-African countries for remittances inflow and migration outflow tend to be flat for non-African countries. African countries tend to have a high number of people migrating outside their countries of origin.

3.7. Trends of international migration and remittances

Scholars Kalantaryan and McMahon (2020:6) highlight that remittances are an integral element "for economic growth and poverty alleviation by ensuring a flow of financial resources from migrants and Diasporas to households and communities in other countries".

As Figure 2 shows, remittances had rapidly increased, especially in developing countries, before COVID-19. Remittances attained an annual real growth rate of approximately 13 per cent between 1991 and 2008, more than the actual yearly growth rate of Foreign Direct Investment (FDI), at 11 per cent and Official Development Assistance (ODA) at approximately 6 per cent (Yang, 2011). Between 2005 and 2012, remittances roughly doubled, according to the World Bank (Larsson and Ångman, 2014). Remittance inflows to SSA were estimated to reach US46 billion Dollars in 2019 (Bisong, Ahairwe and Njoroge, 2020).

With the advent of the COVID-19 pandemic affecting most migrant host economies, especially in Europe, remittances in-flows were expected to decline by approximately 23 per cent in 2020 (Bisong, Ahairwe, and Njoroge, 2020; Quinn, 2020). For example, remittances to low- and middle-income nations only fell by roughly 2 per cent in 2020, from 548 billion in 2019 to 540 billion dollars (World Bank, 2020.). Instead, remittances increased by 6.5 per cent in Latin America and the Caribbean in 2020 (World Bank, 2020).

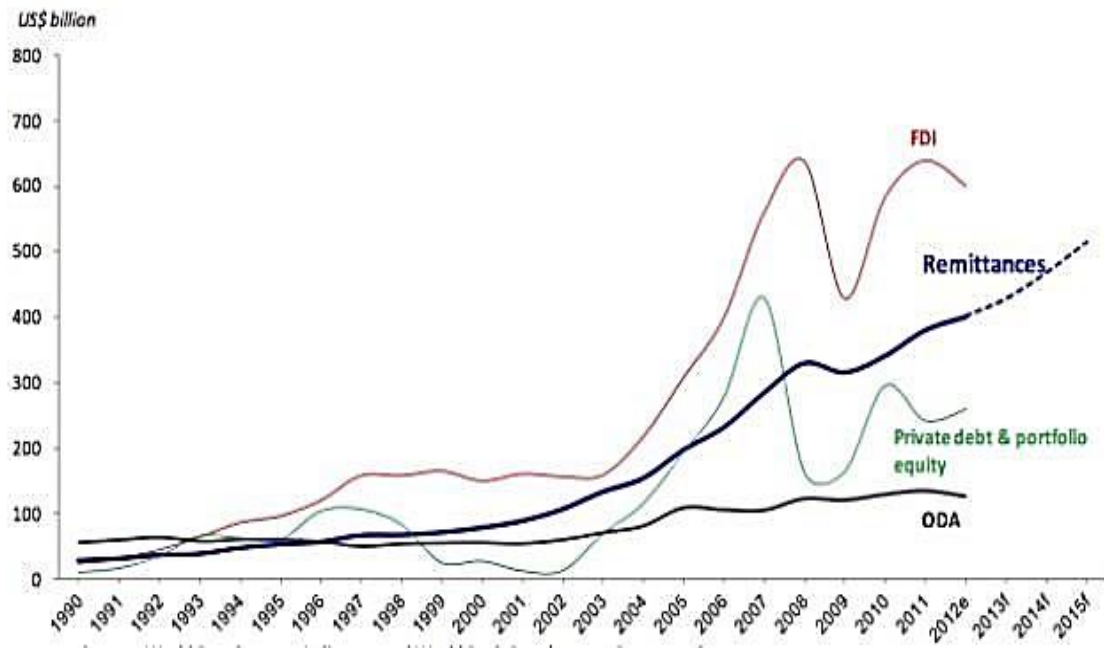


Figure 2: The rapid growth of remittances over two decades (1990-2015)

3.8. Ethical Considerations

The study used secondary data, which are freely accessible from World Bank, and UN DESA. Ethics clearance/waiver number: WINTR2022/07/35 was granted by the School of social sciences ethics committee to proceed with the study.

Limitations

Many factors are considered limitations to this study, such as the availability of data and access to the internet due to load shedding, which contributes to the delay in the finishing time. Remittance data was not available for both inflow and outflow remittances. However, the decision was made to use the inflow remittances to measure the remittances as there were missing data on outflow remittances. This might cause errors due to the unavailability of data and the use of approximation. On the other side, stock migration was only available until the year 2020 as the survey is done after every five years; thus, all the over variables were collected

within five (5) years intervals to allow uniformity, but this process caused a loss of data based on the years that were not included in the study. Thus, the focus is based only on 2020 as the COVID-19 year.

3.9. Chapter summary

This research explores the impact of COVID-19 on remittances and international migration in developing countries through the data collected from UNDESA and the World Bank. It focuses on analysing migration and remittances before and during COVID-19, specifically focusing on African and non_African developing countries. Through a quantitative research design, this study aimed to provide statistically generalizable conclusions regarding the outcome of COVID-19 on migration outflow and how that later affected remittances. The importance of this statistical analysis-focused approach centres on the support it lends towards drawing inferences and making generalizations based on the results from the study into a larger population. Though imperfect, this proves insightful into the probability of sending remittances to developing countries, considering these factors in the changing socio-economic status of the population left in sending countries.

Research design, data collection, data analysis plan and methodology were discussed in this chapter. Basic descriptive statistics such as summary statistics, correlation matrix, scatter plot, and density plot were performed to describe the data.

The correlation matrix display the association between variables; it showed that all the variables were correlated, although the correlation was not perfect.

Limitations on the lack of data and way forward were discussed in the last part. The following chapter presents the results of the analysis.

CHAPTER IV: RESULTS

4.1. Introduction

This chapter presents the output of the study from the R studio. It covers the part of the regression analysis, diagnostics test and trends of migration and remittances information. The regression analysis aims to establish a relationship between variables and the impact of the other variables on the dependent variable. In the following sections, the presented result is about establishing the relationship between the variables and identifying the effect of the control variables on the dependent variables.

4.2. Remittances inflow and migration outflow trends

It is essential to check the trend of the two main variables, mainly `inflow_remittances` and `migration_outflow`, before and during the pandemic. This objective was achieved by plotting the variables against the time as seen in Figure 3 below; they include both African and non-African countries in general.

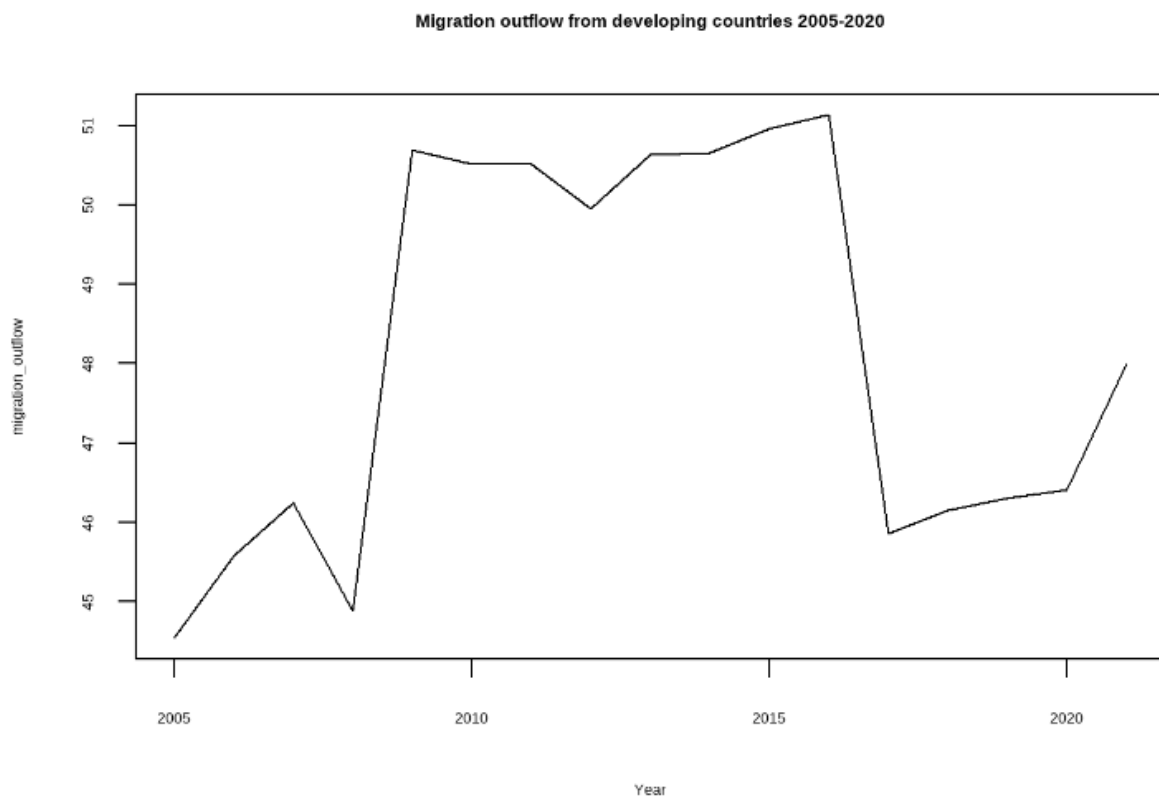


Figure 3: Migration outflow (2005-2020). Source: Author's construct (2023)

The output of the migration data shows high and low growth. There was an increase in the number of people moving from their home countries in 2005 and 2007 and a decrease from 2007 to 2009. There's an observation of a massive increase in migration outflow from 2009 to roughly 2016. Additionally, there was a considerable decrease from 2016 to 2020. However, there is an increase from the year 2020, although it is insignificant.

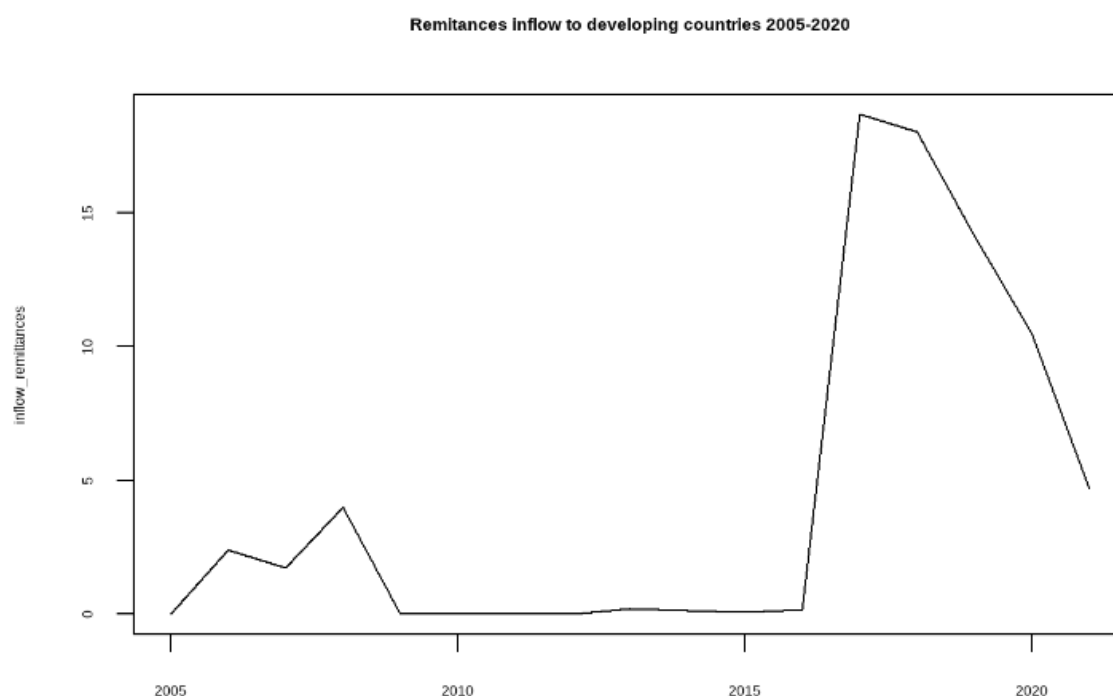


Figure 4: Remittances inflow (2005-2020). Source: Author's construct (2023)

The graph shows the movement of remittances from the year 2005 to 2020. The pre-COVID-19 period is from 2005 to 2019 (early), while the COVID-19 period is from late 2019 to 2020. In the pre-COVID-19 period, decreased and increased changes are observed. However, from 2009 to 2016, there seems to have been constant growth. From 2016 to 2018, a significant increase and decrease was observed from late 2019 to 2020. The focus is on 2020, which is the COVID-19 period; the graph indicates a decrease in the flow of remittances during that specific year but does not seem to be a drastic change. The most affected countries are not identified, but generally, there is a decrease in remittance inflow. The migration outflow graph shows an increase in the number of migrants going out by 2020, while the remittances flow decreased by 2020. Moreover, the association between remittances and migration outflow could be identified using regression analysis.

4.3. Regression analysis

To explore the possible associations, considering the focus on the factors (migration outflow, unemployment rate, GDP growth, and internet access and migration inflow) that affect remittances flow, the first approach utilised entailed the response variable on the predictor variables to ascertain independent and possible effects of these factors individually and collectively on the flow of remittances. Different models were run using multiple regression to determine the different associations of the dependent, independent and control variables, firstly based on a general overview and then on other regions – African and non_African developing countries, respectively.

4.3.1. Regression analysis of all countries in general

A multiple regression analysis was performed based on African and non-African countries. The first model contains the main variables, remittances inflow (dependent) and migration outflow (independent). The coefficient of migration outflow is -0.11101; for every one-unit increase in migration-outflow, remittances decrease by -0.01101. However, the p-value is 0.0520, greater than the 0.05 significance level. Therefore, the variable does not predict the dependent variable (remittance inflow). However, there is less variability (9.3%) of the data in the equation given the value of R-squared (0.00929). The f test is 3.789 while the p-value is 0.05201, which is higher than the 0.05 level of significance; thus, the model is not significant.

In the second model, unemployment rate was added, and it happens to be less significant with its higher p-value of 0.17824, which is higher than the 0.05 significance level. R squared value has increased from 0.00929 to 0.01373, and the general model is not significant based on the p-value (0.06126) of the F statistics (2.812). In other words, the unemployment rate is not a good predictor of the inflow of remittances.

In the third model, the 'internet_a' variable was added and showed no statistical significance with a p-value of 0.93112. However, the R-square value still increases to 0.01375, while the f test value is 1.873 and the p-value is 0.1336 (greater than 0.05 significance level). Moreover, its coefficient is 0.001321, which means for every one-unit increase in internet access, there is an increase of 0.001321 for the remittances inflow, which does not show a significant change.

In the fourth model, migration inflow was added; its coefficient (-0.049359) is also minim and cannot show much impact. However, the p-value is higher (0.2729), more significant than the 0.05 significance level. Thus the variable added is not a good predictor as well as the entire

model (p-value 0.1477). The multiple R square value still increases to 0.0167 from the third model (0.01375).

In the 5th model, the variable `gdp_growth` was added, and its coefficient appears to be -0.48798; thus, when the GDP-growth increase by one unit, remittance flow decreases by -0.48798. On the other hand, the p-value (0.25356) is higher than 0.05; therefore, the variable does not predict the remittance inflow well. The overall model is not statistically significant, with a p-value of 0.2151. Moreover, the multiple R-squared increased to 0.0261, which means the model explains 26% of the data.

In the general case, the models seem not to be significant with the higher p-value. We cannot conclude that all the countries involved in this study have the same impact of the control variables on the remittance inflow. Thus, there is a need to do separate regression in terms of African and Non-African countries before generalizing the output.

4.3.2. Non-African countries

The first model used the independent variable to predict the dependent variable remittance inflow. The migration outflow coefficient is negative, which means that this change impacts the remittances negatively. The p-value is 0.00333, less than 0.05, meaning migration outflow predicts remittance inflow positively and significantly. The overall model is significant with a 0.003327 p-value; the R-squared is 0.0385; this means that the model represents 38.5 % of the data. If migration outflow increases by one unit, then remittances decrease by -0.24179.

The second model added a variable unemployment rate to predict the dependent variable remittance inflow. The coefficient of the independent variable decreased to -0.23878 while the model is still significant. The coefficient of the control variable unemployment rate is positive 0.09713; thus, when the variable increased by one unit, remittance inflow increased by 0.09713. However, the p-value (0.31107) is greater than the level of significance (0.05); thus, the unemployment rate does not predict remittance inflow. However, the overall model is significant, with a small p-value (0.008117) and R squared of 0.04301. The R-squared values keep increasing as per the number of variables.

In the third model, variable access to the internet was added with a coefficient of -0.04589. This means for every one-unit increase in internet access ('internet_a'), remittances decrease by -0.04589. With a p-value (0.03607) less than 0.05 thus, the variable predicts the inflow of remittances. The value of R-squared stands at 0.06215, and the p-value of the F test is 0.00287.

In the fourth model, the control variable migration_inflow does not predict the dependent variable remittances inflow since the p-value (0.2147) is more than 0.05 level of significance. Migration_inflow has a coefficient value of -0.0685, meaning that for every increase of one unit, remittance inflow decrease by -0.06853. The multiple R-squared happened to be 0.06879, while the adjusted (0.05183) is not bad as well.

In the model, variable GDP growth was added and had a coefficient value of -1.99869. Thus, for every one unit in GDP growth, remittance inflow decrease by -1.88869. The p-value is smaller than 0.05 level of significance; therefore, the variable is good in predicting remittances inflow. In this model, the r-square value is 0.09445, while the adjusted in 0.06322. This implies that 94% of the data are represented in the model. However, the general f test is 3.025, and the p-value is 0.01256, which is less than the 0.05 significance level; thus, the model is statistically significant.

In summary, most variables predict the dependent variable properly, especially the ones with p-values less than 0.05 level of significance. This transformation was not observed in the general regression.

4.3.3. Regression for African countries

In this part, we have different models and their level of significant. For example, in the first model, when the dependent variable is regressed on the independent variable, it is shown that the coefficient of migration outflow is -0.04053. The coefficient value can be interpreted as, when one unit increases in the independent variable, the dependent variable decreases by -0.04053. The p-value (0.586) is greater than the 0.05 level of significance; thus, the variable does not predict the dependent variable. In this case, there is no evidence to conclude that there is a relationship between the inflow of remittances and migration outflow. However, R-squared (0.001624) is not that significant as it represents around 0.1% of the data's variability.

In the second model, the unemployment rate was added to model one. It appears that the p-value (0.0369) is less than 0.05 level of significance; thus, the model is statistically significant, and the variable 'unemploy-rate' predicts the dependent variable. In other words, the unemployment rate impacts the inflow of remittances in African countries. When unemployment increases by one unit, remittance inflow increases by 0.1088.

In the 3rd model, the variable 'internet-a' was added, and it appears that it does not influence the dependent variable much, given the high p-value. Even the p-value of the entire model is not significant. In the 4th model, the variable migration inflow was added, and it happens to be significant given the p-value (0.0114), which is less than 0.05 level of significance. In other words, the variable is a good predictor for the inflow of remittances and impacts the dependent variable. With the negative coefficient, an increase in migration inflow causes a decrease in remittances by -0.30084. Note that the R-squared increases as variables are added to the model; the same applies to the adjusted R-squared.

In the last model, the control variable `dgp_growth` was added and it seems to have a high p-value (0.73625) far greater than 0.05l.s. In other words, `dgp_growth` is not a good predictor. The multiple R-squared increased to 0.1123 while the adjusted stands at 0.07369; the model represents 11% of the data. That does not look like a perfect representation. Moreover, the f-statistics 2.909 and p-value (0.014644) less than 0.05 indicate that the model is statistically significant, although most values do not impact the dependent variable.

4.3.4. Relationship among variables for African and non_African countries

Prior to performing this part of the analysis, a scatterplot for African countries showed no strong relationship between inflow_remittances and migration_outflow; the regression line was horizontal, which showed no relationship, while the regression line for the non-African countries showed a negative relationship. This gave the need to further the analysis to establish the reason behind that outcome. A regression for African and non-African countries was performed by controlling other variables- unemployment rate, Internet access, GDP growth and migration inflow. The result shows the very thing as the migration outflow coefficient is insignificant. Moreover, the non_African countries still have a negative relationship as the coefficient of migration outflow is significantly negative. The summary below is based on all the years included in the dataset; in another way, it is a general overview of migration and remittances from the year 2005 to the year 2020, controlling for other variables. However, from the control variable from African countries, it appears that migration inflow has a negative impact on remittances inflow, while the unemployment rate shows a significant positive impact. Additionally, for the non-African countries, the control variables - access to the internet and GDP- significantly negatively impact the dependent variable.

Table 2: General Regression summary

	Regression Summary		
	All Countries	African Countries	Non-African Countries
Migration Inflow	-0.07 (0.06)	-0.38** (0.16)	-0.05 (0.07)
Unemployment Rate	0.11 (0.07)	0.21*** (0.07)	0.14 (0.13)
Internet A	0.005 (0.02)	0.01 (0.04)	-0.06* (0.03)
GDP Growth	-0.87 (1.02)	0.001 (1.04)	-4.44** (1.74)
Migration Outflow	-0.10 (0.07)	-0.08 (0.09)	-0.20* (0.11)
Constant	10.02*** (3.67)	6.69 (4.34)	19.41*** (5.55)
Observations	259	110	149
R ²	0.03	0.11	0.10
Adjusted R ²	0.01	0.07	0.07
Residual Std. Error	6.84 (df = 253)	5.08 (df = 104)	7.41 (df = 143)
F Statistic	1.36 (df = 5; 253)	2.62** (df = 5; 104)	3.09** (df = 5; 143)

Note:

*p<0.1; **p<0.05; ***p<0.01

Source: Author (2023)

From the table above, variables within African countries seem not statistically significant, while some variables in non-African countries are statistically significant. However, for the African countries, the coefficient of variation is 0.18 and non-African countries is 0.26; therefore, it can be deduced that there's 20% of variability among the variables while non-African. However, the interaction of the independent, control, and dependent variables is insignificant for the African countries. While for the non-African countries, there is a significant interaction between the dependent variable and two control variables (GDP growth and migration outflow).

This outcome gives an idea of the regression analysis for the African countries. However, when there is no symmetry within the variable, it is almost pointless to perform the regression analysis. The regression analysis assumptions are that there should be a relationship between dependent and independent variables, and all the variables should be normally distributed.

4.4. Migration and remittances during COVID-19 period

The study aims to identify migration flows during the COVID-19 period and before. In this part, the COVID-19 year is 2020 then decision about the non-COVID-19 year is made to be 2015. Starting with the COVID-19 year analysis, summary statistics is employed on the models to identify the relationship between the dependent and independent variables controlling for other variables.

Case 1: Regression summary for African countries

A step-by-step regression analysis was performed before getting the regression table with the summarized models. The first model contains the dependent variable inflow remittances and the independent variable, migration outflow with a p-value of 0.411 which is higher than the 0.05 significance level. This means their variable is not a good predictor for the dependent variable since the p-value is insignificant. In other words, there is no enough evidence to conclude that there is a relationship between the inflow of remittances and migration outflow in developing African countries. Moreover, the multiple R-squared is about 0.01743 while the p-value of the model is 0.4106, still not significant. However, the coefficient of the variable migration outflow is -0.1375, meaning that for every one-unit increase in migration outflow, remittances decrease by -0.1375, explaining that the variable does not have a strong effect on the dependent variables. R adjusted is negative, meaning the variable does not add any values to the dependent variables.

The second model contains the mains (dependent and independent) variables, and the first control variable, ‘unemploy_rate’, which stands for the unemployment rate, was added. Its p-value (0.426) is not significant since it is greater than the 0.05 level of significant. The variable's unemployment rate is not a good predictor for the dependent variable. According to its negative R square, the variable adds no value to the dependent variable.

In the third, fourth and fifth models, the control variables were added, and none of them have significant p-values are significant as they are above 0.05 level of significance. Additionally, their R-squared values are very low, meaning they have no effect on the dependent variable.

Below is the summary of the regression models.

Table 3: Regression summary for African countries during COVID-19

	<i>Dependent variable:</i>				
	inflow_remittances				
	(1)	(2)	(3)	(4)	(5)
migration_outflow	−0.137 (0.165)	−0.147 (0.166)	−0.126 (0.170)	−0.132 (0.172)	−0.218 (0.179)
unemploy_rate		0.093 (0.115)	0.029 (0.146)	0.072 (0.160)	0.013 (0.163)
internet_a			0.041 (0.057)	0.038 (0.058)	0.008 (0.060)
gdp_growth					−0.374 (0.254)
migration_inflow				−0.203 (0.299)	−0.113 (0.300)
Constant	10.831 (7.886)	10.379 (7.942)	8.455 (8.429)	9.035 (8.533)	12.947 (8.811)
Observations	41	41	41	41	41
R ²	0.017	0.034	0.047	0.059	0.114
Adjusted R ²	−0.008	−0.017	−0.030	−0.045	−0.013
Residual Std. Error	5.660 (df = 39)	5.686 (df = 38)	5.722 (df = 37)	5.764 (df = 36)	5.673 (df = 35)
F Statistic	0.692 (df = 1; 39)	0.667 (df = 2; 38)	0.611 (df = 3; 37)	0.568 (df = 4; 36)	0.901 (df = 5; 35)

Note:

*p<0.1; **p<0.05; ***p<0.01

Case 2: Relationship between variables for the non-African countries during the COVID-19 era

A regression analysis determined the relationship between variables for non-African countries.

The step-by-step regression model showed in the first model whereby dependent and independent variables interact, the p-value is 0.0375, which is less than 0.05 level of significance. Thus the variable is a good predictor for the dependent variable inflow

remittances. However, as the p-value is significant, there is evident to say that there is a relationship between migration outflow and the inflow of remittances. The multiple-adjusted R-square confirms this point; the variable adds value to the dependent variable.

In the second model, the control variable 'unemploy_rate' was added, and its p-value (0.7978) is higher than the level of significance (0.05). Thus, the control variable is not significant. However, the Multiple R and R-adjusted squared are positive, which is not enough evidence to conclude that the variable impacts the dependent variable 'inflow-remittances'.

In the third, fourth and fifth models, control variables 'internet_a' with 0.0735, 'migration_inflow' with 0.8828 p-values, and 'gdp_growth' with 0.7715 p-values, were added to the models progressively. However, it turns out that the variables are less significant based on their high p-values. Therefore, there is not enough evidence to say that these variables affect the dependent variable. Additionally, the overall model has an F statistic of 1.59 and a p-value of 0.1878 higher than 0.05 l.s; thus, the model is not significant.

The coefficient of internet access (-0.115) is significant based on the summary bellow:

Table 5: Regression summary for non-African countries during COVID-19

Dependent variable:					
	inflow_remittances				
	(1)	(2)	(3)	(4)	(5)
migration_outflow	-0.314** (0.146)	-0.316** (0.148)	-0.146 (0.171)	-0.152 (0.177)	-0.162 (0.182)
unemploy_rate		0.052 (0.202)	0.163 (0.205)	0.166 (0.209)	0.151 (0.218)
internet_a			-0.115* (0.063)	-0.110 (0.071)	-0.108 (0.072)
gdp_growth					-0.044 (0.149)
migration_inflow				-0.019 (0.127)	-0.022 (0.129)
Constant	21.256*** (7.350)	20.911*** (7.557)	18.699** (7.434)	18.760** (7.542)	19.027** (7.691)
Observations	42	42	42	42	42
R2	0.104	0.105	0.178	0.179	0.181
Adjusted R2	0.081	0.059	0.114	0.090	0.067
Residual Std. Error	6.500 (df = 40)	6.577 (df = 39)	6.384 (df = 38)	6.468 (df = 37)	6.549 (df = 36)
F Statistic	4.627** (df = 1; 40)	2.293 (df = 2; 39)	2.751* (df = 3; 38)	2.016 (df = 4; 37)	1.590 (df = 5; 36)
Note: *p<0.1; **p<0.05; ***p<0.01					

4.5. Pre-COVID-19 era

Case 1: Regression summary for African countries before COVID-19

A step-by-step multiple regression analysis was performed whereby after the model containing only two variables, the dependent and the independent, control variables were added one by one until the options were exhausted. However, the first model contains two variables; the outcome is regressed on the predictor only. In this model, the p-value (0.798) happens to be greater than the significance level (0.05); thus, there is not enough evidence of a relationship between the outcome and the predictor variable. In the same way, there is no evidence that migration outflow affects remittances.

Moreover, in the second model, the first control variable, 'unemploy_rate', was added, and its p-value (0.811) appears to be higher than the significance level. Thus the variable is not a good predictor and does not add value to the dependent variable. Although this variable's coefficient (-0.02325) is negative, there is no evidence to conclude that it affects the remittance inflow negatively since the p_value is higher than 0.5 l.s.

In the third, fourth, and fifth equations, the control variables were added respectively and progressively. The coefficient (-0.07654) of 'dgp_growth' is negative, migration_inflow (negative) while the coefficient for 'internet_a' is positive. However, since their p-values (0.601, 0.419, and 0.563) are greater than the 0.05 significance level, there is not enough evidence that these control variables have impacted the dependent variable. However, since the p-value (0.9317) of the overall model is also higher than 0.05, there is no evidence to prove that the model is indeed significant. Models summary:

Table 6: Models summary for African countries before COVID-19

	Dependent variable:				
	(1)	(2)	inflow_remittances (3)	(4)	(5)
migration_outflow	0.035 (0.136)	0.037 (0.138)	0.038 (0.139)	0.039 (0.140)	0.036 (0.141)
unemploy_rate		-0.023 (0.096)	-0.055 (0.112)	-0.022 (0.120)	-0.023 (0.121)
gdp_growth					-0.077 (0.145)
internet_a			0.031 (0.055)	0.030 (0.055)	0.033 (0.056)
migration_inflow				-0.170 (0.216)	-0.178 (0.218)
Constant	2.454 (6.592)	2.563 (6.675)	2.213 (6.755)	2.432 (6.789)	2.637 (6.857)
Observations	49	49	49	49	49
R2	0.001	0.003	0.009	0.023	0.029
Adjusted R2	-0.020	-0.041	-0.057	-0.066	-0.083
Residual Std. Error	4.876 (df = 47)	4.926 (df = 46)	4.963 (df = 45)	4.984 (df = 44)	5.026 (df = 43)
F Statistic	0.066 (df = 1; 47)	0.061 (df = 2; 46)	0.143 (df = 3; 45)	0.261 (df = 4; 44)	0.261 (df = 5; 43)
Note:					*p<0.1; **p<0.05; ***p<0.01

Case 2: Regression for non-African countries before COVID-19

Considering the step-by-step regression, the value of the intercept is 18.2995 if all predictors and control values are set to zero. There is a p-value of 0.023 which is less than 0.05, supporting this claim. In other words, it means that non-African countries would still receive remittances without the predictors and control variables. However, the first model has the dependent variable regressed on the predictor where the p-value (0.146) is greater than the 0.05; thus, there is not enough evidence to say that migration outflow impacts the inflow of remittances. With the negative coefficient, migration outflow is predicted to affect remittances negatively.

In the second model, the control variable 'unemploy_rate' was added, and it turns out that it has a high p-value (0.841) greater than the significance level. Thus, there is no evidence that this control variable affects the dependent variable, the inflow of remittances. With a coefficient of 0.03985, the model predicts inflow remittances to increase by 0.03985 for every additional unit of unemployment rate. Moreover, the Multiple R- and R-squared adjust are positive, and the variable could add some values to the dependent variable.

In the Third model, the control variable 'internet_a' was added, with a p-value of 0.2236 with a negative coefficient. In the fourth model, 'migration_inflow' was added, with a negative coefficient with a p-value of 0.6860. In the last model, 'gdp_growth' was added to the equation with a p-value of 0.4535 with a negative coefficient. All three (3) control variables have p-

values greater than the significance level; thus, there is not enough evidence to show that the variables affect the inflow of remittances. The summary of models are presented below:

Table 7: Models summary for non-African countries before COVID-19

	Dependent variable:				
	inflow_remittances				
	(1)	(2)	(3)	(4)	(5)
migration_outflow	-0.229 (0.155)	-0.227 (0.157)	-0.154 (0.167)	-0.177 (0.178)	-0.177 (0.182)
unemploy_rate		0.040 (0.198)	0.113 (0.206)	0.124 (0.209)	0.124 (0.219)
gdp_growth					-0.001 (0.213)
internet_a			-0.067 (0.055)	-0.052 (0.067)	-0.052 (0.068)
migration_inflow				-0.050 (0.124)	-0.050 (0.126)
Constant	18.300** (7.835)	17.934** (8.107)	16.462** (8.159)	17.246** (8.444)	17.243** (8.540)
Observations	60	60	60	60	60
R2	0.036	0.037	0.062	0.065	0.065
Adjusted R2	0.019	0.003	0.012	-0.003	-0.022
Residual Std. Error	7.686 (df = 58)	7.751 (df = 57)	7.716 (df = 56)	7.774 (df = 55)	7.846 (df = 54)
F Statistic	2.170 (df = 1; 58)	1.087 (df = 2; 57)	1.236 (df = 3; 56)	0.955 (df = 4; 55)	0.750 (df = 5; 54)
Note:				*p<0.1; **p<0.05; ***p<0.01	

With these non-significant models, more study must be done to verify how well the data fit the model. That said, the diagnostics test could be beneficial, as it will help identify the extreme value and determine how fit the models are.

4.6. Diagnostic test

The goodness of fit test is used to show that the study is reliable, and tests like the diagnostic plot to examine the residuals and leverage points in the data using Residuals vs leverage or Cook's Distance. Goodness-of-fit tests can be interpreted with the help of hat-value diagnostic plots and Cook's distance output (Influence Plot Output). The main focus in all these diagnostics was on the Cook's Distance and Hat-Values. According to Fox and Weisberg, these two measures are described as common leverage measures (Fox and Weisberg, 2019). However, leverage points from the data are cases far from the independent variable and are known to influence the coefficients.

The outliers have more or more extreme values of the dependent variable (migration outflow), while the leverage consists of counties with extreme values in remittance inflow. It's important to note that Cook's Distance is often used to identify influential data points. A data point with a large value for Cook's Distance indicates that it strongly influences the fitted values. A general rule of thumb is that any point with a Cook's Distance over $4/n$ (where n is the total

number of data points) is considered an outlier. As seen on the diagnostic, a country, Lesotho (presented by point 21) with the highest cook's distance, is considered an outlier.

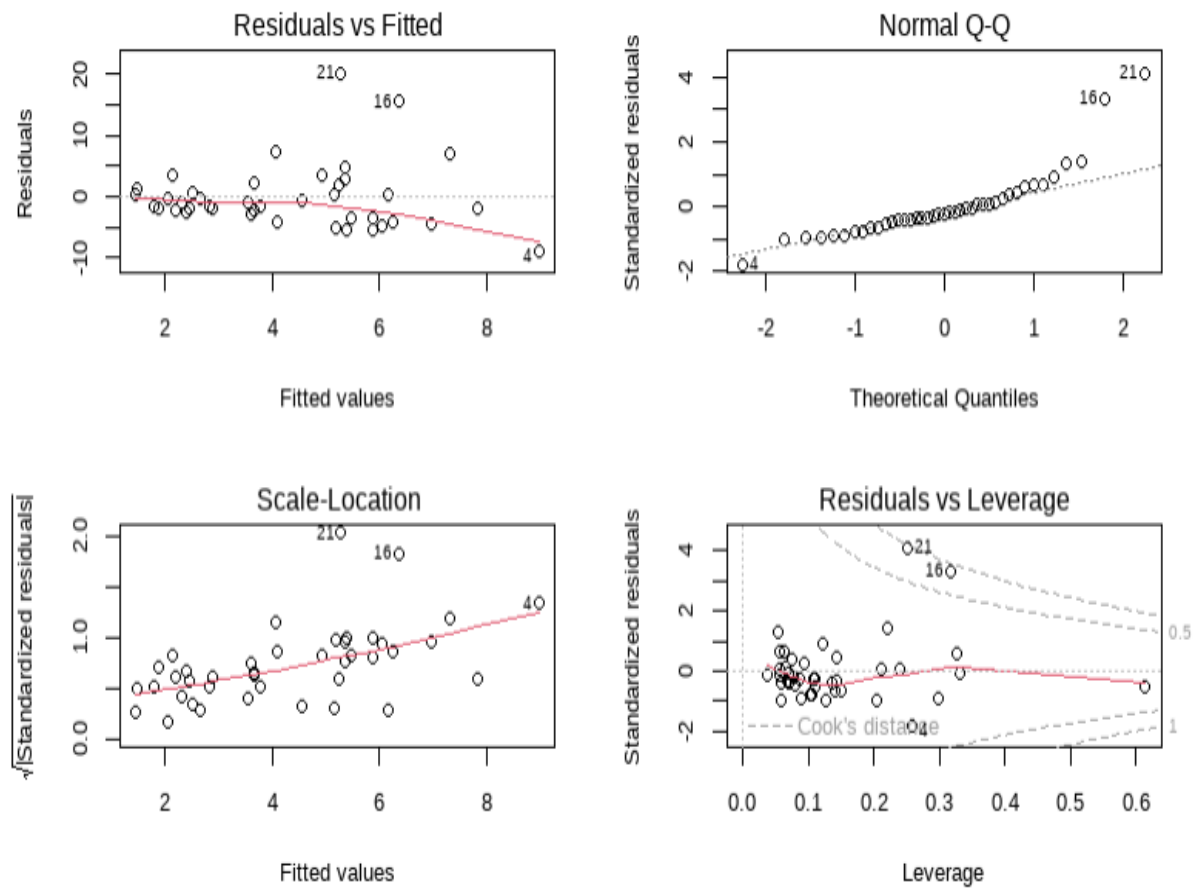


Figure 5: diagnostic plot for African countries during COVID-19 (2005-2020)

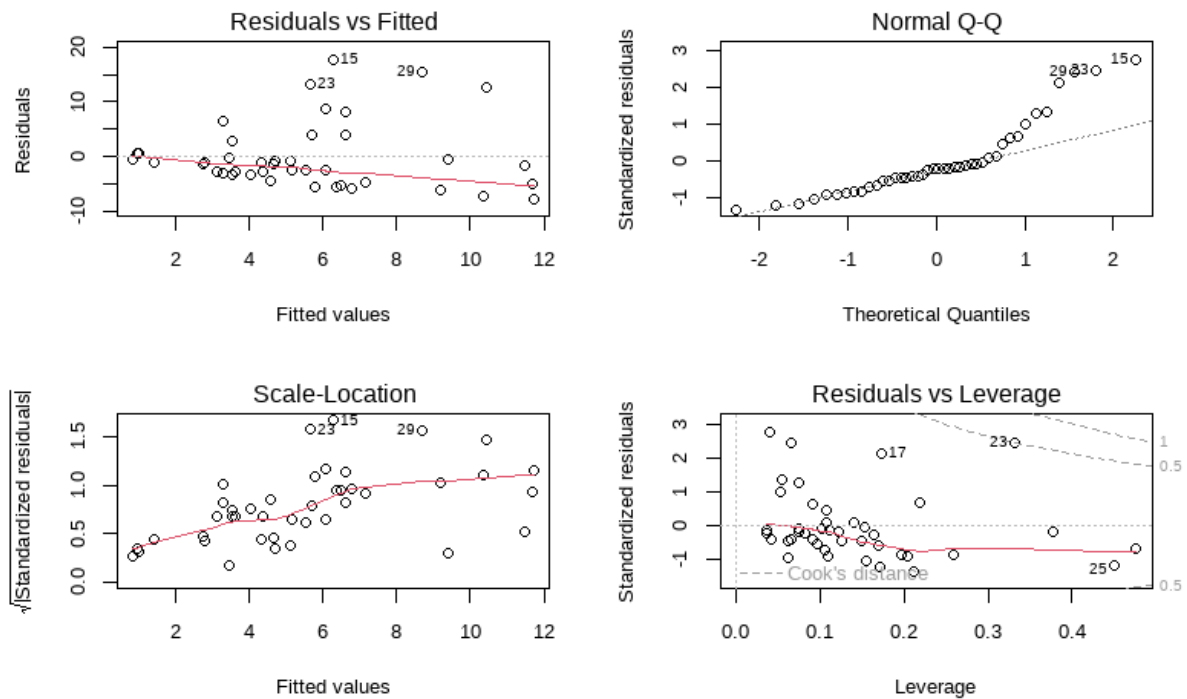


Figure 6: Diagnostic for non-African countries during COVID-19 (2005-2020)

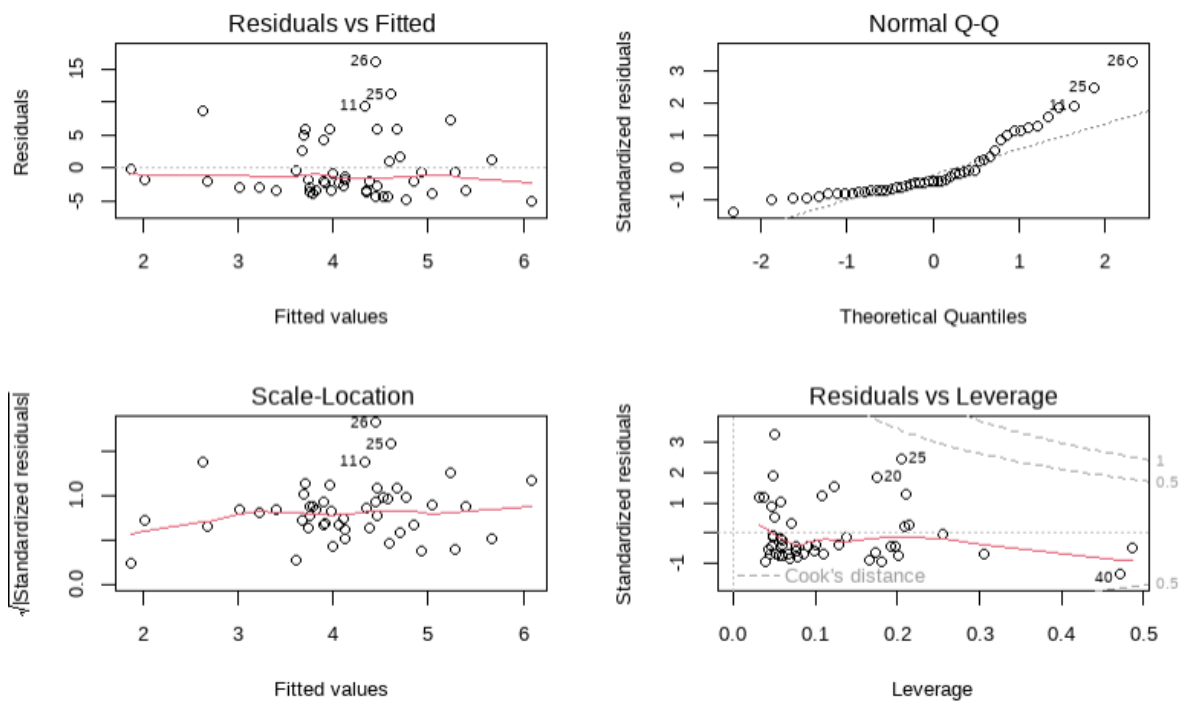


Figure 7: Diagnostic for African countries before COVID-19 (2005-2020)

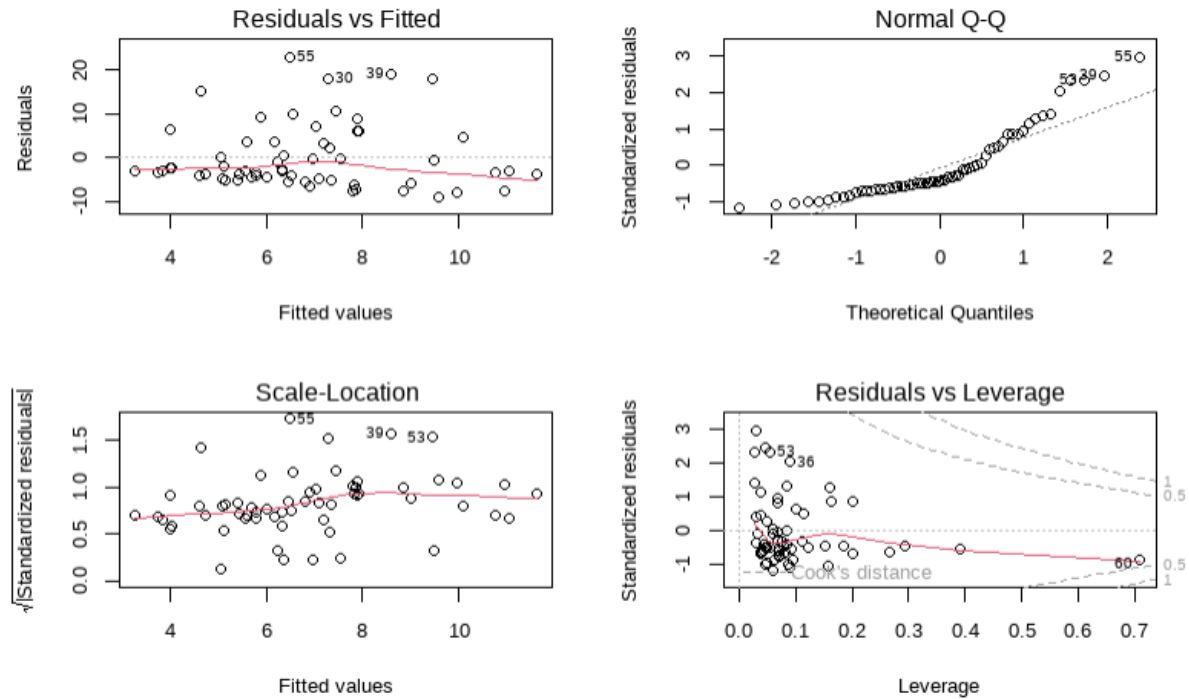


Figure 8: Diagnostic plot for non-African countries before COVID-19 (2005-2020)

From the main diagnostic, the main focus is on the residuals vs leverage, where the cook's value is identified of the extreme value. Every point outside the cook distance is more influential and considered an outlier. In these examples, outliers are 16 and 21 whereby point 16 is Gambia and point 21 represents Lesotho.

The non_African countries outliers during the COVID period are Haiti (17), 23 Lebanon (23), and Maldives.

In the other second section, based on the pre-COVID-19 period, the diagnostics test was performed for both African and non_African countries. The extreme points for African countries happen to be Gambia (20), Lesotho (25) and Sierra Leone (40), controlling for the other variables and not only based on migration and remittances. For the non-African countries, the extreme points were Moldova (36), Tajikistan (53) and Yemen republic (60).

CHAPTER V: DISCUSSION OF THE RESULTS

The findings of this study show that there have been changes in certain regions during the pandemic and in other regions there were no changes influenced by the pandemic.

Examining the effect of the COVID-19 pandemic on Migration and remittances in developing countries gave ideas on the flow of remittances in general and in specific cases such as African and in non-African countries prospectively.

Based on the general cases, the results showed that there had not been a significant relationship between migration outflow and inflow of remittances, and the other variables (control variables) are not significant; they add no values to the dependent variables. The analysis of African countries showed a lack of relationship between the dependent variable and the independent variable, as well as the added variables. However, according to the literature, access to the internet, GDP growth (a measure of economic growth) and the unemployment rate were found to affect the flow of remittances and migration. For example, the literature provides evidence that remittances impact economic growth and vice-versa. Thus, remittances affect economic growth through capital accumulation, labour inputs through labour force contribution, and productivity growth. Having internet access was found to affect remittance inflow. Due to the digitalization of remittances, accessing the internet and using technology play an immense role. Subsequently, digitalization uses the mainstream web-based transfer provider, whereby the most common international money transfer is PayPal and M-Pesa (PayPal, 2019). The use of PayPal and M-Pesa transactions are doable with the availability of internet and being in possession of gadgets. Despite its crucial use in the current century, Internet access was not found to be a significant predictor of remittances in this study.

In the summary statistics, at least 95% of the population in developing countries have access to the internet, plus the digitization of remittances being common in the past years; yet the result of this study showed that internet access/ use of technology did not have an impact on the flow of remittances. One could argue that countries having a high percent of internet access are those in high-income countries, which are not many. Then the countries with low percentages of internet access are the low- and middle-income countries. In countries like the Democratic Republic of Congo, accessing the internet would be hard for almost 70% of the population because the country has problems with electricity and infrastructure.

The step-by-step p-value of 0.411 and the p-value (0.165) from summary table 3 show that the relationship between migration and remittances was not affected by the COVID-19 pandemic based on African countries during the COVID-19 period, expanding on the findings of the general case using multiple regression analysis. According to the idea, the pandemic modifies the statistical connection between migrant outflow and remittances. However, the hypothesis did not hold and was rejected based on the high p-value, and thus, the relationship was not statistically significant; change in migration outflow does not impact remittances inflow.

The relationship between migration and remittance inflow was expected to be influenced by the low unemployment rate and internet access in African countries during COVID-19. According to the results in table 3, all the variables have higher p-values, meaning that given COVID-19, nothing changed as expected. The coefficient of migration outflow and remittances is negative, yet there is no evidence to confirm that COVID-19 influenced the relationship between the two variables.

During the pandemic period, movement of people was restricted based on the pandemic's regulations; there must have been a slow movement but which could not affect remittances inflow. Considering the fact that to be a migrant, one needs to have spent considerable time in the country of destination, during the period of COVID-19, migrants could not have impacted remittances. According to the literature, some migrants started sending money home from their savings. Thus decrease in people coming into the countries did not stop those who were there already from remitting, although at a different pace. Also, migrants might be outside there for different purposes, like the functional and different economic, environmental and demographic factors pushing the person to move, as push-pull models state.

The p-value for the unemployment rate, internet access, GDP growth and inflow migration is more than 0,05, as seen in Table 3, which shows that these were not challenges to remitting money home as expected, and this answer research question three.

In the same African countries case, there was no enough evidence to conclude that the control variables affect the flow of remittances. For example, the variable 'internet-a' access to the internet was found not to affect the flow of remittances. The reason might be that Africa, especially in low-developing countries, has less knowledge about technology, and accessing the internet might be hard due to infrastructure. A piece of anecdotal evidence suggests that where there is no electricity mostly in the poorest countries, the internet is inaccessible even if people might have the gadgets. According to the study's result, GDP growth did not impact

the flow of remittances during the COVID-19 period in 2020. The unemployment rate did not affect the flow of remittances as already most migrant were attracted by cheaper labor that primarily kept the wages low (De Haas et al., 2020) as per historical-Structural theories. So with the low employment, even when some people were led off or retrenched, the changes on remittances could not be significant.

NON-AFRICAN COUNTRIES DURING COVID-19

The study found that COVID-19 affected the connection between migration and remittances; the negative coefficient in table 5 indicates that as remittances rise, migration falls. COVID-19 moderates the link between the dependent and independent variables ($P=0.0375$), so the more individuals move away, the fewer opportunities there are to send money back home. When remittance inflow increases by one unit, migration outflow decreases by 0.3143. Migration outflow decreased probably due to the hard lockdown. Migrants who had visited home or different countries were stuck due to cross-border bans, and also, those who were in the host countries might not be able to work due to paper expiration; the immigration offices closed the papers/documents could not be renewed. This occasioned the loss of jobs, thus, the decrease in number of working migrants. The case of Lebanon, where net migrants were substituted for out-migrant because of lack of data, remittances decreased in 2020 during the COVID-19 period, thus, there is a relationship between remittances inflow and out-migrant was affected negatively. The literature gives insights on this topic that several studies noted a significant reduction in remittances due to COVID-19 in Africa (Bisong et al., 2020), the Philippines (Ang and Opiniano, 2020; Murakami et al., 2020) and Bangladesh (Das, 2020).

The variable "access to the internet" has a statistically significant coefficient. This may indicate that fewer than expected migrants in non-African nations actually have access to the internet. Because of this, sending money back home is more difficult. Unemployment was also considered a barrier to sending money home, but the high p-value in the summary table (0.0202) and the step-by-step pvalue (0.7978) show that this was not the case. According to the literature, this result is not shocking because people had to dip into their funds to maintain their regular money transfers back home (Quayyum and Kpodar 2020). Furthermore, during COVID-19, people were obtaining funds in most non-African nations, mainly in the United States and Europe (Greig, Deadman, and Noel, 2021; Chetty, Friedman, and Stepner, 2020). The source countries maintained a steady supply of funds. Prior to the advent of the work-from-home option, unemployment rose in most regions of the world. The rise in the jobless

rate can be attributed in large part to the rise in telecommuting jobs at the end of 2020. The p-values provide support for the hypothesis that neither unemployment nor lack of internet connection impeded respondents' ability to send money home.

PRE COVID-19

Moving to the pre-pandemic part, regression analysis was performed separately for African and non-African regions. For the African case, following the main concern of having a relationship between the dependent and the independent variable, the high p-value proved that the hypothesis could not be supported. Thus, change in migration outflow does not influence change in remittances inflow, and none of the control variables was significant. The incident of financial crisis can explain this that despite the crisis, remittances remained relatively consistent. The literature state that when migrants lost their jobs in formal sectors, they followed an alternative way and became self-employed in commerce and other small business so that they could keep the flow of remittances despite their financial condition (Sirkeci, Ratha and Cohen 2012).

Additionally, during the ebola epidemic, remittances remained steady because from mainly in America were sending money home to support their families (Bangura, 2016). Although the technology was used to send money home whereby migrants could access the internet to make E-wallets and other mobile money transfers, this variable still did not add value or impact the remittances. In non-African countries, migration outflow also did not influence remittances; there is no relationship between the two, according to the output results.

Tajikistan is one of the outliers for non-African countries before COVID-19, which does not fall under this outcome. After gaining independence in 1991, the country has been a Central Asian labour exporter. With productivity, development, and job creation failing to keep pace with the country's fast population increase, just around half of Tajikistan's working-age population was employed in 2017 (World Bank, 2019a). Due to a shortage of economic prospects in Tajikistan, many Tajiks seek work overseas, with Russia being a popular destination due to historical and cultural links.

Tajikistan was a major labour exporting and the world's most remittances-dependent country. Remittances have significantly reduced poverty (Murakami, Yamada, and Sioson, 2019).

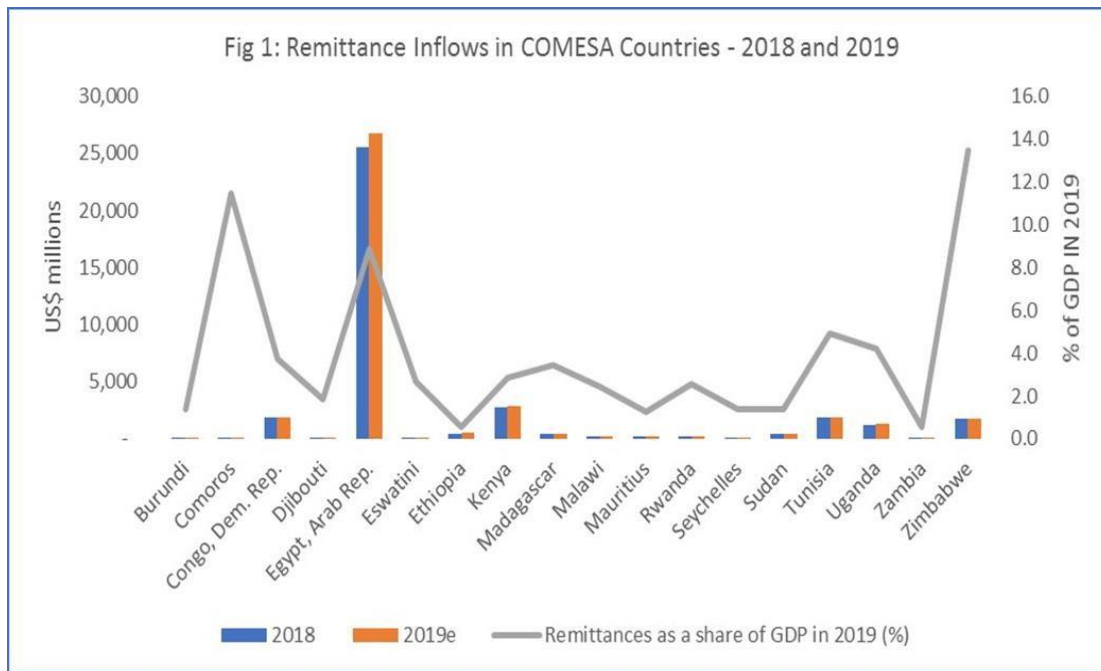
Prior to the 2008 global financial crisis, Tajikistan was the labour-exporting country with the greatest proportion of GDP (45 percent) earned from remittances (Ratha et al., 2008). While remittances significantly reduced poverty from 72 percent in 2003 to 52 percent in 2007 (World

Bank, 2009), the Tajik economy and Tajik families grew too reliant on external funding. According to the 2007 Tajikistan Living Standards Survey (TLSS), 23 percent of families directly depended on remittances. Remittances contribute to up to 35 percent of household spending in homes with migrants and even more in those in the bottom deciles of the consumption distribution. Tajikistan's migration model is mostly seasonal low-skill migration, with 96 percent of migrants travelling to Russia, where 55 percent work in construction and another 30 percent in other low-skilled sectors (Danzon and Ivaschenko, 2009). There is high migration outflow in this country as people migrate in numbers to Russia in most cases; more reasons why the country was found a 'y' outlier.

5.1. Remittances and migration flow before and during the COVID-19 era

According to the Common Market for Eastern and Southern Africa study, India (\$79 billion), China (\$67 billion), Mexico (\$36 billion), the Philippines (\$34 billion), and Egypt (\$26.7 billion) were the top remittance beneficiaries internationally in 2018. (Lungu 2020).

South Sudan (34.4 percent of yearly GDP), Lesotho (21.3 percent), Gambia (15.5%), Zimbabwe (13.5 percent), Cabo Verde (11.7 percent), Comoros (11.5 percent), and Senegal (10.5 percent) received remittances that accounted for more than 10% of its GDP in 2019. (Kalantaryan and McMahon, 2020). In contrast, the United Arab Emirates, Russia, Saudi Arabia, and the United States of America topped the list of remittance source nations in 2020. (World Bank, 2020). According to 2012 remittance data, East Asia and the Pacific received 31% of all remittances, followed by South Asia (22%), Latin America and the Caribbean (17%), and Europe and Central Africa (11%). (World Bank, 2019). The Middle East, North Africa (11%), and Sub-Saharan Africa (8%). (Ratha, Kim, Plaza, Seshan, and Yameogo, 2020).



Source: Common Market for Eastern and Southern Africa

Figure 9: Remittance inflow COMESA countries - 2018 and 2019

In the COMESA region, Egypt (US\$ 26,791 million), Kenya (US\$ 2,819 million), Tunisia (US\$ 1,912 million), DR Congo (US\$ 1,823 million) and Zimbabwe (US\$ 1,730 million) received the most remittances. The largest share of remittances to GDP was contributed by Zimbabwe with 13.5%, followed by Comoros (11.5%) and Egypt (8.2%). According to the World Bank, foreign direct investment will drop by 35% because of travel restrictions, disruptions of international trade, and falls in multinational company stock prices (Lungu, 2020). Therefore, diaspora remittances will stay a vital source of income for many countries in the region.

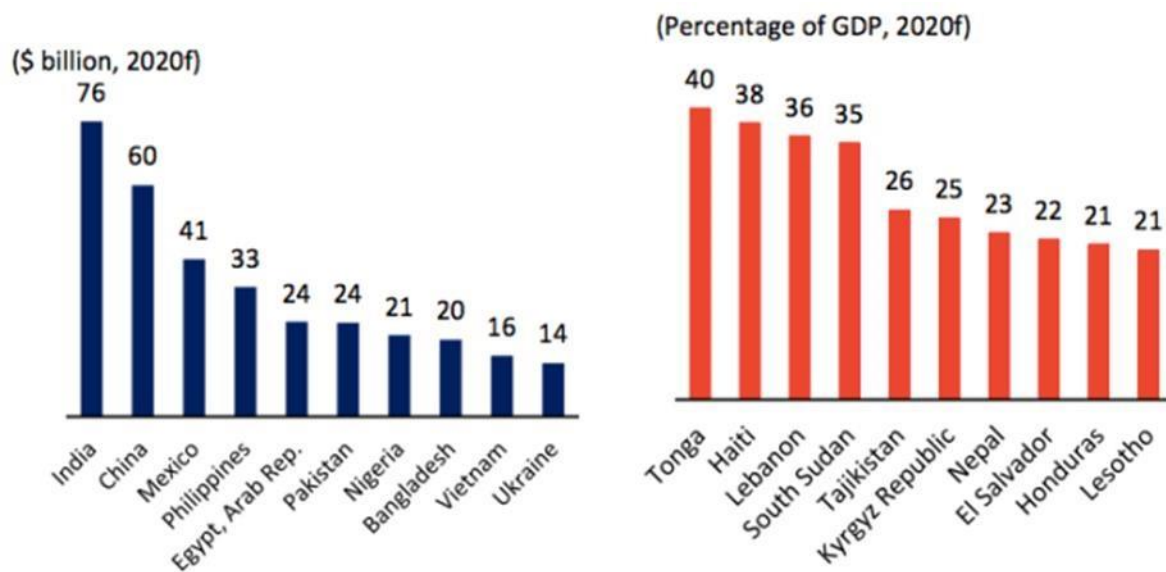


Figure 10: Top Remittance recipients in 2020. Source: World Bank

In the top 10, India ranked first with an estimated 76 billion dollars, followed by China with 60 billion dollars and Mexico with 41 billion dollars. According to the World Economic Forum, Vietnam is expected to rank third among East Asian and Pacific nations (US\$33.3 billion) by 2020 - the world's fourth-largest recipient.

World Bank figures predicted that remittances to low- and middle-income countries (LMICs) would have declined by 7% in 2020, reaching US\$508 billion. Further declines were predicted to occur in 2021, when remittances were expected to decrease by 7.5% to US\$470 billion (World Bank, 2020). Migrant workers' money sent home by 2021 is expected to reduce by 14% due to the Covid-19 pandemic and economic crisis.

According to data from the World Bank, remittances peaked in 2019 and have been declining steadily since then. In 2020, it was reduced by 20% on average, and in some recipient countries, it was even 50% of the gross national product. This was brought on by businesses closing across the nation and people losing their jobs.

Remittances are declining for several reasons, including poor economic growth and low job opportunities in migrant-hosting countries, weak oil prices, and the depreciation of currencies in remittance-source countries against the US dollar (Lungu, 2020).

The result of the remittance prediction is that, in 2020, India topped the list of remittances inflows with approximately US\$83 billion, followed by China (US\$60 billion), Mexico (US\$43 billion), the Philippines (US\$35 billion), and Egypt (US\$30 billion) (Migration Data

Portal, 2021). African countries received an estimated US\$7 billion in remittances in 2019 (World Bank, 2020).

This study found that remittances remained steady in African countries before and during the pandemic, while non-African countries had a change in remittance inflow during the pandemic. According to the literature, the countries are classified as low- and middle-income countries, but the research report focused on African and non-African countries, respectively. The countries (Lesotho, Lebanon, and Tajikistan) that were projected to have declined remittances in the percentage of their GDP happen to be outliers in this study. However, as expected, remittances decreased in Tajiskhan and Lebanon (non-African countries).

CHAPTER VI: CONCLUSION AND FUTURE WORK

This research report aimed to explore the impact of COVID-19 on remittances and migration outflow in developing countries using data drawn from the World Bank and the United Nations Department of Economics and social affairs. This study focused on the statistical analysis of the inflow of remittances, migration outflow and factors that potentially affect the inflow of remittances. The other aim of using multiple regression analysis was to determine to which extent the control variable- unemployment rate, GDP growth, access to the internet and migration inflow possibly affect remittances.

The results in the general case established that, based on all countries and years, there is no statistical relationship between migration outflow and remittance inflow, primarily in African countries. For the counterpart, the non-African countries, the statistical relationship was identified. Moreover, during the COVID-19 period for African countries, COVID-19 did not cause changes in the two main variables (dependent and independent variable); in other words, the pandemic did not affect the relationship between migration outflow and remittances inflow; thus, the relationship between migration outflow and remittances was influenced negatively by the pandemic. The independent variable affected the dependent variable for non-African countries, but the control variables did not. In other words, there is no difference for the African countries when comparing migration and remittances before and during the pandemic.

In most cases, there was no statistical relationship between migration and remittances; an increase or decrease in migration did not change the dependent variable in African countries and non-African countries before the pandemic. However, for the non-African countries during the COVID-19 period, migration outflow influenced the inflow of remittances. We expected to have changes in the COVID-19 period compared to the non-COVID-19 period in both contexts, but the result proved otherwise. The literature showed a change in remittances during COVID-19 in different countries. Still, with the data in this study, based on region, change was only observed non-African developing countries during the pandemic. NO change was observed in African countries before and during COVID-19 and in non-African countries before COVID. In conclusion, COVID-19 impacted the statistical relationship between migration outflow and remittances inflow in non-Africans developing countries.

A lack of adequate data causes biased results. Future study should focus on migration outflow because most study focus on migration inflow ignoring the consequences of their absence in

countries of origin, creating an obstacle to the new studies. Online data source should be updated frequently to provide with updated and reliable data.

It would be crucial for organisations such as the UN, Statistics South Africa, and other secondary data sources to have updated data at least after every three months to make the students' and researchers' jobs easier. Scholars often get stuck to finishing on time or having accurate results because of data unavailability. Working on this aspect would be helpful for the academic society and add to the scarce literature on migrant outflow and remittances. Therefore, there is a call to conduct a qualitative study with both senders of remittances to understand what affected their sending frequency and conduct the same qualitative study with the receivers of remittances to understand how this halt in the routine affects them.

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