

# The Magnitude Of The Informal Remittances Flow To Kenya: An Augmented Gravity Model Approach.

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## **Abstract:**

**Background:** In Kenya remittances are now a proper source of external finances. Kenya received \$4.19 billion in form of diaspora remittances in year 2023. Over the years, remittances are proving to be more stable, well diversified and are promising more growth relative to foreign direct investments, official development assistance, private capital and exports. On the micro scale the remittances are helping achieve Kenya's developmental goals of having a globally competitive human resource and an adequately and decently housed population as outlined in the country's development blueprint - The Kenya Vision 2030. Though the remittances are these important, official remittance data in Kenya, as well as in many African countries, only include remittances sent through formal channels such as banks and Money transfer Operators. Remittances through the informal channels such as hawalas and hundis are not recorded. This means that the recorded remittances are grossly understated impeding the capacity of policy makers to design appropriate policies aimed at encouraging remittances. The study employed panel data analysis and a thought experiment on remittance data between 2013Q1 and 2022Q4. Through a thought experiment, the study asks what impact a reduction of the costs of sending remittances would have on remittances if the transaction costs were reduced to that of the informal channels of sending remittances. The analysis revealed that the size of the informal remittances in Kenya is between 20% and 26% of the formal remittances. On the determinants of remittance flows to Kenya, the study establishes that Kenyan migrants send more when the economic freedoms and economic conditions improve in their host nations but send less when economic freedoms back at home improve. Accurately measuring informal emittances in Kenya is vital for creating effective government policies. This data would reveal the true extent of remittances' impact on the economy, allowing policymakers to develop strategies that fully utilize their potential for development. By encouraging people to send money through official channels, the government can increase tax income, improve access to financial services, and better monitor these transactions. Additionally, understanding the size of informal remittances is essential for combating financial crimes like money laundering and ensuring that resources are used efficiently.

**Key Word:** Magnitude, Formal remittances, Informal Remittances, Formal Channels, Informal Channels.

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## **I. Introduction**

Remittances are essentially money transfers made by immigrants to their families or other people back home as a form of payment or gift. They basically consist of "household income from foreign economies, primarily resulting from migration of people to those economies, whether temporary or permanent." (International Monetary Fund, 2009). Chami et al., (2008), avers that remittances constitute current transfers by migrants who are employed in and are residents of a foreign country to their home country. Remittance flows are an important and growing part of global trade and finance (Peters & Kamau, 2015). Globally, as at 2020 the estimated number of international migrants was almost 281 million individuals, this represents 3.6 per cent of the world's population with nearly two thirds being labour migrants (McAuliffe & A. Triandafyllidou (eds.), 2021).

Remittance flows by migrants to LMICs increased by 3.8 percent to reach \$669 billion in 2023. This represents a 77.8 percent of the world remittances, which stood at \$794 billion in 2022. Compared to FDI, ODA and portfolio investment flows, remittances represent an even larger source of external finance for LMICs. Since 2015, remittances have exceeded FDI inflows and ODA as a source of external finance for LMICs (Ratha et al., 2022, 2023).

The life and wellbeing of people in developing countries are significantly impacted by remittances, which are also widely thought to improve those countries' growth prospects. These flows improve financial service accessibility and help struggling households. Despite all of its advantages, remittances have the potential to create reliance, lower labour effort, and lessen the chances of creating sustainable economies in the poor countries (Chami et al., 2008).

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Sander & Maimbo (2005) argues there are no estimates of unrecorded inflows for the African continent, either formal or informal. Further, if global estimates are extrapolated, the total flows would be 2.5 times the official data and that unrecorded flows appear to be outstandingly high in certain countries. Informal remittances in Sudan for example were estimated to account for 85 percent of total remittance receipts. This means that the informal remittances make up a significant part of the remittances where formal financial systems are absent in the continent and the large number of migrations from one region to another. It is certain, however, that the official figures grossly underestimate the level of remittances (Sander & Maimbo, 2005). Literature further observes that the choice of sending remittances between formal and informal means is dependent of costs and that high transaction costs shift the means from formal to informal and vice versa (Ahmed & Martínez-Zarzoso, 2016).

The African situation may be true for Kenya for a number of reasons. First, there is a large number of informal and unregulated channels of receiving remittances in Kenya (The Diaspora and Consular Affairs Directorate., 2017). These informal channels range from the hawalas, pockets of friends and relatives as well as some transport service providers. Second, the financial institutions providing remittance services may not be adequate especially for intraregional migrants who wish to be anonymous (The Diaspora and Consular Affairs Directorate., 2017). Freund and Spatafora (2008) found out that a 1% reduction in transaction cost can increase the recorded remittances by 14% to 23%. The cost of sending remittances to Kenya through the formal means may be high and costly due to screening and delays occasioned by regulations such as the Proceeds of Crime and Anti-Money Laundering Act of 2012.

### Global Remittance Trends

Remittances globally have become a vital source of income for low- and middle-income countries (LMICs) and continues to grow. Figure 1 shows that the reported global remittances have been on the rise from \$7.46 billion in 1974 to \$471.41 billion in 2022.

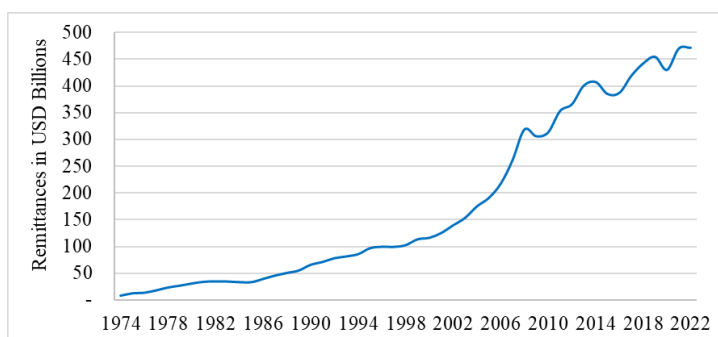


Figure 1: Global Remittances Trends

A comparison of remittances to Kenya with alternative sources of external funding such as FDI, exports and ODA reveals the growing prominence of remittances. The reported remittances from overseas Kenyans have grown from \$7.26 million in 1970 to \$4.189 billion in 2023 (Ratha, Plaza, et al., 2023). Figure 2 shows that that prior to 1980 remittances were the second to FDI in providing external finances in Kenya. However, after 1980, remittances have overtaken FDI with the exception of 2007 due to the Global Financial Crisis (GFC), which was the most severe global economic crisis after the 1929's Great Depression, and 2011 when there was the downgrade of the United States' credit rating, which led to a crash in US and global stock markets. Figure 2 further shows that shows that prior to 1995 the ODA and remittances commoved. However, after 1995 remittances become erratic and generally assume an upward trend unlike ODA that slightly recovers and assume a downward trend.

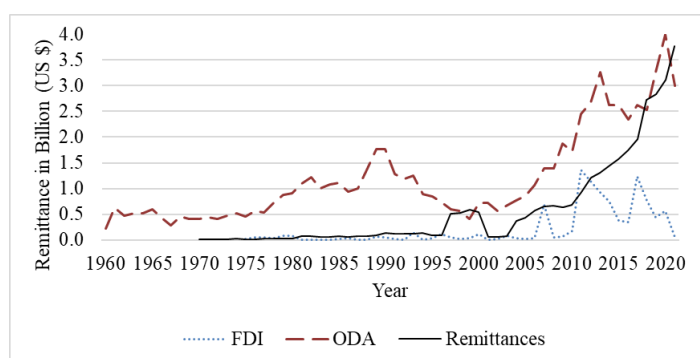
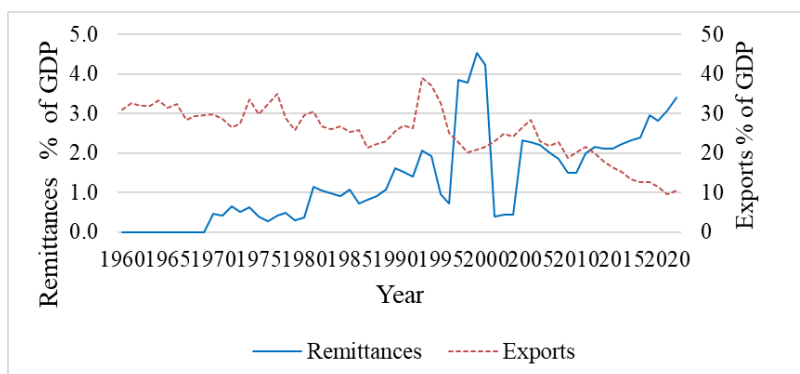


Figure 2: A Comparison of remittances, ODA and FDI flows to Kenya

Figure 3 shows that the exports to GDP ratio have generally been going down while the remittances to GDP ratio have been on the rise over the period 1960 and 2022. It is estimated that remittances contributed to about 3.44 and 3.58 percent of Kenya’s GDP in 2021 and 2022 respectively. However, the ratio of remittances to GDP has generally been rising over the same time. Figure 3 further shows that relative to the trend in remittances exports are more volatile.

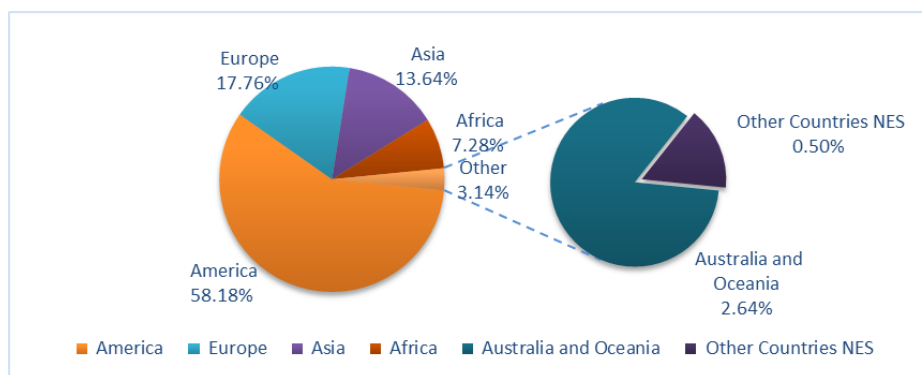


**Figure 3: Remittance and Exports as percentage of GDP.**

From a social planner’s perspective, remittances to Kenya are more appealing. To begin with, the comparison with FDI in Figure 2 reveals that past 1980 remittances are more than FDI. Secondly, the comparison shown in Figure 3 means that the contribution of exports to external finances is waning and volatile unlike that of remittances that are growing and more stable.

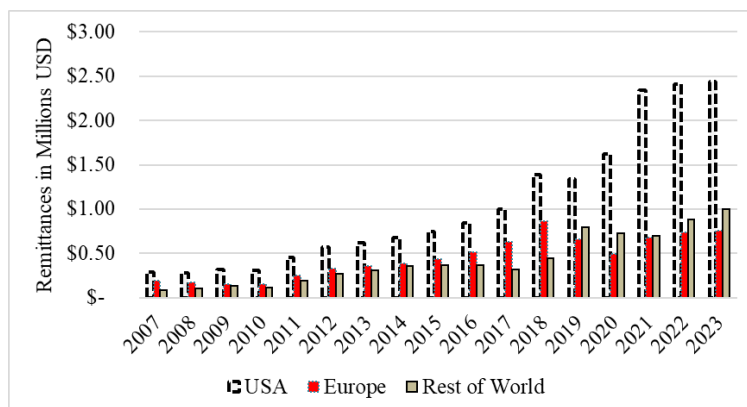
Lastly, the comparison in Figure 2 shows that remittances and ODA were important as sources of external finances for development prior to 1995 after which ODA assumes a general downward trend while remittances assume a general upward trend. This means that relative to ODA remittances are the promising source of external finances for Kenya. This has led to the inclusion of remittances as a flagship project in the country’s development blueprint - *The Kenya Vision 2030*.

Other than being promising, stable and more than some of the alternative remittances to Kenya has additional attractions. First, the remittance is well diversified. According to the Central Bank of Kenya Statistics, Figure 4 shows that in the year 2023 the America remittance corridor contributed 58.18%, Europe contributed 17.76%, Asia stood at 13.64%, Africa at 7.28% while the rest of the world contributed 3.14% of the total remittances to Kenya. Country wise, the dominant source is the United States of America (USA) at 55.86 % of the total remittances in the year 2023 followed by Saudi Arabia at 8.83% and United Kingdom (UK) at 7.98 % then the rest of the world. This has been collaborated by a report by IOM (2022) that as at 2022 out of 531,000 Kenyans who migrated abroad between 2016 -2022, around 374,000 migrated either Europe and North America. Unfortunately, a lot of migration to Saudi Arabia and the entire Gulf region is undocumented.



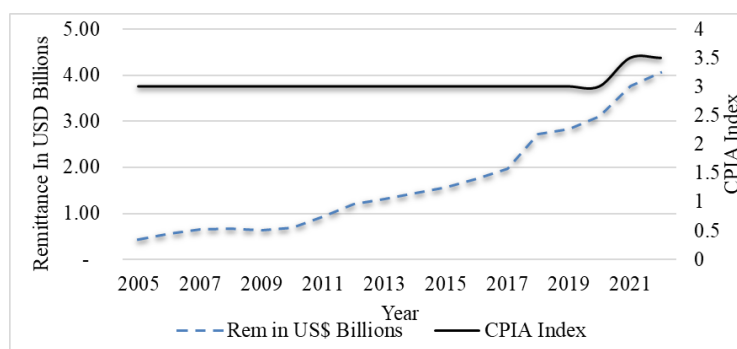
**Figure 4: Kenya Remittance Corridors.**

The remittances have the characteristic that those from the USA can be easily obtained by combining those from Europe and the rest of the world. This means that the contribution from the dominant source, the USA, can easily be substituted with what comes from Europe and the rest of the World. This makes remittances attractive since harsh economic conditions are hardly experienced the world over at once. For instance, Figure 5 shows that remittances from the USA stagnated during the global financial crisis of 2007 to 2011 unlike those from the rest of the world that showed some resilience against the crisis.



**Figure 1: Sources of Remittance to Kenya**

Second, remittances are inelastic to the economic environment. Figure 6 shows the trend in remittances and Country Policy and Institutional Assessment index (CPIA). The CPIA index has a minimum and maximum value of one and six respectively. A value of one (six) means that a country’s policy and institutional framework quality is low (high). The quality of a country’s policy and institutional framework supports sustainable economic growth and poverty reduction and, consequently, the prudent use of external sources of finance including remittances. Therefore, it would be expected that remittances should respond to variations in the CPIA index. Figure 1.6 however, shows that despite the stagnant average quality of Kenya’s policies and institutional framework the remittances have been rising. This is unlike the alternatives to remittances such as private capital and ODA that have been found to be procyclical with the quality of policies and institutions in a country (Ratha, 2003).



**Figure 2: Remittances’ Response to Economic Environment.**

Third, remittances directly go to households and are put in important uses that are in line with the development goals in the country. According to literature, remittances are either for altruistic reasons, compensation for services rendered, insurance, loan repayment and investment (Rapoport & Docquier, 2006). In Kenya, the remittances are utilized for consumption, education (human capital investment), housing (rent), debt repayment, food clothing, health care and investments. Kenya National Bureau of Statistics (2018) reported that out of the remittances received 29.4% was used on education, 22.8% on consumption, 11.4% on investment or business 9.8% on health and 26.6% went to other uses. Therefore, the remittances to Kenya largely help in achieving the flagship projects of the social pillar in *The Kenya Vision 2030*. In particular, the remittances are aiding in the achievement of a universally competitive and adaptive human resource base and a suitably and decently-housed nation in a sustainable economic environment.

Overall, therefore, remittances are important to Kenya both on the macro and micro scenes. In the macro scene the remittances are providing an alternative to the traditional sources of external finances such as ODA, FDI and exports. Further, the remittances are more stable, well diversified and are promising growth compared to these alternatives. On the micro scale the remittances are helping achieve the country’s developmental goals of a globally competitive human resource and an adequately and decently housed population.

**Statement Of the Problem**

According to Ratha, Chandra, et al. (2023), remittance flows to LMICs increased by an estimated 3.8 percent to reach \$669 billion in 2023 while those to high-income countries have shown almost no change since 2021. Thus, remittances continue to be a main source of external finance for LMICs during 2023, compared to

FDIs and ODAs. Remittances are becoming increasingly crucial as a source of external finance for LMICs emphasises the importance of improving the timeliness of reporting and resolving discrepancies in the classification of remittance flows data.

Despite the significance of remittances to any country, official remittance data only includes remittances made through authorized channels (IMF, 2009; CBK, 2021; Fernandes et al., 2023). CBK carries out a survey on remittance inflows to Kenya every month through formal channels. These formal channels include commercial banks and other money transfer operators (MTOs) in Kenya. Therefore, a significant amount of remittances are not captured in the national statistics since the reported amount excludes remittances through informal channels and in-kind remittances.

Sander & Maimbo (2005) argues that the current data on remittances to Africa likely underestimates the true volume of financial flows. This is due to the prevalence of unrecorded transfers, encompassing both formal and informal channels. While global estimates suggest unrecorded remittances may be 2.5 times official figures, anecdotal evidence suggests this ratio might be even higher in Africa. Sudan, for instance, exhibits a remittance landscape where informal transfers are estimated to constitute a staggering 85% of total receipts. Consequently, existing data on remittances to Africa should be interpreted with caution, as they likely significantly underestimate the actual contribution of migrant workers to their home economies.

Due to high recording thresholds and transfers through informal channels, Schioppa & Siegfried (2006) notes that BOP data underestimates the true remittance flows. These informal channels include hawala, in-kind remittances, and cash carried by friends and relatives. Further, only aggregate amounts have been used in empirical research since bilateral remittance flows are not recorded in the BOP data.

Whereas studies have broadly covered remittances, much focus is emphasized on the formal remittances. The informal remittances are always overlooked and the area not sufficiently covered. Owing to the above, this means that the remittances into any country, Kenya included are grossly understated. Such inaccuracies in remittances data impede the capacities of policy makers to design appropriate policies aimed at encouraging remittances for investment and economic development. Given the role played by remittances in harnessing social and economic development, it is imperative to determine the magnitude of the informal remittances in Kenya. Without the accurate figures on informal remittances, the the remittance market's full size is often underestimated. As such this study seeks to establish the true size of informal remittances in Kenya with a view of informing policy and aiding proper recording of remittance flows.

### **Research Objectives**

The study main objective was to estimate the magnitude of informal remittance flow to Kenya and determine the factors influencing remittances to Kenya. The specific objectives that informed this study were as follows;

- i. To estimate the magnitude of informal remittances to Kenya.
- ii. To examine how economic conditions in the host country influence remittances to Kenya.

### **Research Questions**

The study sought to answer the following research questions;

- i. What is the magnitude of informal remittances to Kenya?
- ii. How do economic conditions in the host country influence remittances sent to Kenya?

## **II. Literature Review**

### **Theoretical Literature**

#### **Altruistic Theory**

Altruism, coined by a French philosopher, (Comte & Congreve, 1891), has been suggested as the underlying motivation to a migrants' decision to remit. Proponents of altruism principle argue that migrants' remittance decision are based on their family members obligation to assist one another (Stark & Lucas, 1988; Becker, 1981; Stark, 1995; Rapoport & Docquier, 2006). Altruism doctrine posits that migrants are ready to remit in order to compensate for the income deficit of their family member for either consumption or investment. Altruistic theory proposes that a migrant will freely sacrifice their own interest or welfare for the sake of the well-being of relations due to concern and love they may have for their relations' welfare.

Pure altruism suggests that an individual must forego something, either a physical resource, time or energy, so that another person may benefit without expecting anything in return. The altruism theory suggests that by remitting, migrants maximize their utility. The altruistic theory claims that the migrants tend to purposely improve their family's well-being back at their home country theory (Becker, 1981; Lucas & Stark, 1985; Stark, 1995; Osili, 2007).

### **The Tempered Altruism Theory**

The theory postulates that the decision to remit is as a result of beneficial informal agreements between migrant and those that they leave behind (Lucas & Stark, 1985). These informal arrangements that explain migrant decisions are as result of either risk and investment or the lack of formal insurance contracts and incomplete capital markets. Johnson & Whitelaw (1974) and Rempel & Lobdell (1978) argues that under risk and investment, families invest in the migrant's future prospects and remittances are return on investment for such families. On the other hand, Harris & Sabot (1982) and Lucas & Stark (1985) argue that the need to expand family income due to risky milieu that both families and migrants face. These include food insecurities due to crop failures, famine job insecurities in urban areas among others. Therefore, remittances are claims on informal agreements and because such informal agreements are mutually beneficial, they are self-enforcing and ensure that there is no delinquency.

### **Intention to Return**

The theory is based on empirical studies in Botswana and Kenya by (Lucas & Stark, 1985) and (Hoddinott, 1994) respectively. The sole motive for remitting funds and other resources is that the migrants intend to return their home countries (Collier et al., 2011; Verheyden & Delpierre, 2009). Lucas & Stark, 1985; Hoddinott, 1994) avers that the motive, intention to return, is often attributed to the motivation to inherit. This means that the migrants have an incentive to keep contact and interest in their origins. Further, migrants who plan to eventually return to their home country are more likely to send larger amounts of money back home as remittances.

### **Gravity Model of Remittance Theory**

Remittances are as a result of immigration (Borjas, 1999). Just like international trade, immigration is as a result of the differences in GDP and hindered by migration costs (Borjas, 1999). This is the gravity model which states that trade flows between two countries are inversely proportional to the distance between them and proportional to the two countries' economic sizes (GDPs) (Lueth & Ruiz-Arranz, 2008). The gravity model can be used to explain remittances since remittances are as a result of immigrations. Specifically, the baseline is that remittances are inversely proportional to the distance between the two countries, and directly proportional to the economic size of the host and home country as measured by the GDP (Ahmed & Martínez-Zarzoso, 2016).

### **Empirical Literature Review**

Various approaches have been proposed to estimate remittances. The approaches are broadly grouped into the direct and indirect approaches (Freund & Spatafora, 2005). The indirect approaches constitute of shadow economies and models-based approach and the experimental approach (Aggarwal & Spatafora, 2005; Cagan, 1958; El Qorchi et al., 2003; Freund & Spatafora, 2005). The direct approach holds that the size of informal remittances can be measured using household surveys.

Schiopu & Siegfried (2006) using a panel data of remittances from twenty-one Western European sending nations to seven European countries for the period 2000–2005 and discovered the contrary finding regarding the relevance of geographical distance. According to the study's findings, remittances are not explained by geographic distance. If there is no shared boundary between the nations, the outcome is favourable.

Lueth & Ruiz-Arranz (2008) modelled remittance flows for eleven countries in Europe and Asia between 1980-2004 based on a data of bilateral remittance for a group of thirty- three developing nations that sent money home to eleven home countries using a gravity model of remittance. The economic size (GDP) of the host and home nations, gravity variables, the immigrants' stock, political risk, among others are some of the variables that they considered and that are commonly mentioned in the trade literature as determinants of remittances. Their findings showed that more than half of the variance in remittances can be explained by gravity variables, economic activities in the home and host countries, and other factors.

De Sousa & Duval (2010) studied remittance inflows to Romania from different nations between 2005 and 2009 and discovered that the economic size and geographic proximity of the home and host countries seem to have a beneficial influence on bilateral flows. The loan repayment hypothesis, which states that a decrease in the physical distance between the countries of origin and destination of migrants generates decrease in remittances in exchange for the low migration costs borne by the family, supports the positive relationship between remittances and distance.

Frankel (2011) using the same data used by Lueth & Ruiz-Arranz (2008), discovered that remittances are inversely correlated with distance, but income per capita in the host nation is positively and highly significant across all specifications. Additionally, the study discovered that similar language and borders are not statistically significant gravity variables.

Chisasa (2014) studied the prevalence of sending informal remittances from South Africa to Zimbabwe found out that a migrant's choice of remittance channel is influenced by convenience, quick delivery, and excellent

customer service. This is related to the fact that official MTOs need legal documentation, which is typically challenging for migrants to provide.

Freund & Spatafora (2005) using historical worker remittance data from the BOP, along with information on transaction costs, migration, and other nation characteristics, empirically estimated informal remittances for over 100 countries, drawing on ideas from the literature on shadow economies. The study found that informal remittances are about 35–75 percent of official remittances to developing countries.

Ahmed & Martínez-Zarzoso (2016) using a gravity model on remittance flows to Pakistan, examined the effect of transaction costs on foreign remittances. The study found out that transaction costs significant and have a negative effect on remittance flows; a high cost will either prevent migrants from remittances back home or remit through informal channels. The study suggests that remittances are enabled by the existence of migrant networks and improvements in home and host country financial services. Additionally, distance, which has been used in previous studies as an indicator of the cost of remitting, is found to be a poor proxy.

### III. Methodology

#### Theoretical Framework

The study is anchored on the gravity model of remittances. The gravity model of remittances states that remittances between two countries are inversely proportional to the distance between them and directly proportional to the two countries' economic sizes (GDPs). The gravity model of remittances is given by:

$$Rem_{ijt} = A \frac{[GDP_{it} * GDP_{jt}]^{\beta}}{D_{ij}} X_{ijkt} \dots \dots \dots (1)$$

Where:

- $Rem_{ijt}$  are remittances from host country  $i$  to home country  $j$  in year  $t$ ,
- $GDP_{it}$  is the income of the host country  $i$  in year  $t$
- $GDP_{jt}$  is the income of the home country  $j$  in year  $t$
- $D_{ij}$  is the cost of distances (Costs of sending remittances) between country  $i$  and  $j$ .
- $X_{ijkt}$  Are a host of  $k$  control variables that explain remittances between country  $i$  and  $j$

Log linearizing equation (1) yields:

$$\ln(Rem_{ijt}) = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(D_{ij}) + \sum_{k=1}^K \beta_k \ln(X_{ijkt}) + \gamma_i + U_{ijt} \dots \dots (2)$$

Where:

- $\gamma_i$  is host country  $i$  unobserved heterogeneity,
- $U_{ijt}$  is the error term.

#### Empirical Model

Following Freund & Spatafora, (2005); Lueth & Ruiz-Arranz (2008); De Sousa & Duval (2010) and Ahmed & Martínez-Zarzoso (2016, equation (2)) can be further modified by introducing the control variables and dropping the GDP of the home country since we are considering remittances sent by migrants. To estimate the impact of the cost on remittances to the home country  $j$  equation (2) is further transformed by introducing the transaction costs in log form and excluding the physical distance between the two countries.

$$\ln(Rem_{ijt}) = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(Cost_{ijt}) + \beta_3 EF_{jt} + \beta_4 EF_{it} + \beta_5 EX_{ijt} + \beta_6 d + \gamma_i + U_{ijt} \dots \dots (3)$$

Where:

- $Cost_{ijt}$  is total cost (fee plus exchange rate costs) charged to send remittances from host country  $i$  to home country  $j$  in year  $t$ .
- $EF_{jt}$  is the degree of economic freedom in home country  $j$ .
- $EF_{it}$  is the degree of economic freedom in host country  $i$ .
- $EX_{ijt}$  is the bilateral exchange rate between host country  $i$  and home country  $j$  in year  $t$ .
- $d$  is the country where the remittances are sent from.

Equation (3) forms the basis of estimations in this study. It is through the coefficients of costs ( $\beta_2$ ) that the thought experiment will be conducted and the size of informal remittances established.

### IV. Empirical Findings And Discussions

Table 1 shows that descriptive statics of the variables under consideration. Kenya received on average \$145 million quarterly from UK and \$328 million quarterly from US respectively for the period 2013Q1 and 2022Q4. Further, the minimum remittances per quarter during the period under review was \$85 million from UK and \$151 million from the US. The maximum remittances per quarter during the period was \$242 million and \$668

million. This means that US was the main host nation for Kenya in terms of diaspora remittances. This corroborates finding from Figure 5.

The mean GDP of UK was \$2.83E+06 trillion while United States of America GDP is \$1.93E+07. This means that United States of America GDP is roughly six times UK’s GDP. The minimum GDP for UK and USA for the period under review was \$2.32E+06 and \$1.72E+07 respectively while the maximum GDP for the two countries was \$3.04E+06 and \$2.14E+07. From this, we can deduce that Kenya receives a huge chunk of remittances from countries which are well endowed in terms of GDP.

The average cost of sending \$200 to from UK between 2013Q1 to 2022Q4 is \$13.37 while the cost of sending the same amount from US is \$13.29. The minimum amount charged for \$200 from UK was \$7.59 and \$10.20 for funds originating from US. The maximum amount charged for the same amount, \$200, from UK is \$19.55 while US charged \$24.78. This mean cost of sending \$200 to Kenya represents about 6.7% of the total value of the transaction. In addition, we observe that US’ costs of sending \$200 are higher compared to UK.

The average value of Kenya Shilling for the period 2013Q1 to 2024Q4 is \$0.0099 and £0.0072. This means that Sterling Pound (£) was the strongest currency followed by US Dollar (\$) and the Kenyan Shilling (KES) was the weakest. Due to Sterling Pound being the strongest currency, migrants in the UK had a hire motivation to send remittances back home considering the bilateral exchange rate between Kenya and the UK.

Lastly, the mean Economic Freedom for the three, that is UK, US and Kenya, are 76.56%, 75.42% and 55.22% respectively. This means that Kenya received remittances from countries that are economically free. Plainly put, a huge fraction of remittances originates from countries where individuals have the liberty or the freedom to trade or produce goods and services without unwarranted interference from the government.

**Table 1: Descriptive Statistics**

Variable	Country	Mean	Std. Dev.	Min	Max
Remittances (USD '000)	UK	145,136.50	41,665.11	85,551.74	242,060.60
	US	328,077.70	162,316.20	151,499.20	668,999.30
GDP (USD Millions)	UK	2.83E+06	1.55E+05	2.32E+06	3.04E+06
	US	1.93E+07	1.26E+06	1.72E+07	2.14E+07
Cost In USD/ \$200	UK	13.37	3.19	7.59	19.55
	US	13.29	2.34	10.20	24.78
Bilateral Exch. Rate	UK	0.0072	0.0004	0.0063	0.0079
	US	0.0099	0.0009	0.0082	0.0118
Economic Freedom (%)	UK	76.56	2.02	72.70	79.30
	US	75.42	1.27	72.10	76.80
	Kenya	55.22	1.42	52.60	57.50

The regression results in Table 2 show that costs of sending remittances, economic freedom at host, regional source of remittances and GDP of the host nation are significant determinants of remittances to Kenya. However, the home country’s economic freedom is insignificant in determining remittances to Kenya.

The coefficient of the cost of sending remitting funds is 0.371 and significant at five per cent meaning that an increase in cost by a single unit would reduce remittances by 0.371 percent. As a result of this increase in cost, Kenyan migrants will either use informal channels such as Hawalas and Hundis. Subsequently remittances sent through the formal channels such as the MTOs and banks will decrease. Thus, cost is major determinant of remittance channel. On the other hand, bilateral exchange rate’s coefficient is 0.0105 and significant at one per cent. This means that a unit appreciation of the host country’s currency, holding other factors constant, would increase amounts remitted through the formal channels by 0.0105 units. Therefore, bilateral exchange rates equally play a role on the channel that a migrant uses.

**Table2: Regression Output**

Variables	Pooled OLS	Fixed Effects	Random Effects	Hausman & Taylor
Cost of Sending Remittances	-0.371** (0.156)	-0.371** (0.156)	-0.371** (0.156)	-0.371** (0.156)
Host County’s Econ. Freedom	0.0361** (0.0140)	0.0361** (0.0140)	0.0361** (0.0140)	0.0361** (0.0140)
Kenya’s Economic Freedom	-0.0346 (0.0211)	-0.0346 (0.0211)	-0.0346 (0.0211)	-0.0346 (0.0211)
Host County’s GDP	3.777*** (0.535)	3.777*** (0.535)	3.777*** (0.535)	3.777*** (0.535)
Bilateral Exchange Rate	0.0105*** (0.00300)	0.0105*** (0.00300)	0.0105*** (0.00300)	0.0105*** (0.00300)
Source	6.048*** (1.087)	6.048*** (1.087)	6.048*** (1.087)	6.048*** (1.087)
Constant	-51.69*** (9.338)	-51.69*** (9.338)	-51.69*** (9.338)	-51.69*** (9.338)



Observations	80	80	80	80
Number of ID	2	2	2	2

Notes: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Standard errors in parentheses. Cost and GDP are in natural logs. The endogenous variables in the Hausman and Taylor approach are GDP and Bilateral Exchange Rate.

With respect to the regional source of remittances the coefficient of the dummy is 6.048 and is significant at one percent. This means that the ranking of the remittances from the US and UK is significant. Since the dummy set to one for the US and zero for UK. The finding implies that the US remits 6.048 times as the UK. This is consistent with the trend in Figure 1.5. Kenya, therefore, benefits more from migrants who go to the US unlike those who go to the UK

The coefficient of the host countries GDP is 3.777 and significant at one per cent. This means that other things being equal an increase in the income of the host (sending) nation increases remittances to Kenya by 3.777 per cent other things being equal. Therefore, Kenyan migrants tend to send more home when economic conditions improve in their host countries. This finding is consistent with those of De Sousa & Duval, (2010) and Freund & Spatafora, (2005). De Sousa & Duval, (2010) establishes that increase in sending country GDP increases remittances by about 0.7 percent to Romania while Freund and Spatafora, (2005) establishes a one per cent increase in income boosts remittances to developing countries by 0.3 per cent.

The coefficient of the total cost of sending remittances in Table 2 is 0.371 and is significant at five per cent level of significance. This implies that when the cost of sending remittances decreases by one per cent, the remittances increase by 0.371 per cent other factors held constant. This implies that transaction costs deter remittances either by quantity or the means chosen. This view is also held by Ahmed & Martínez-Zarzoso (2016), De Sousa & Duval (2010) and Freund & Spatafora, (2005)

The actual average costs of sending a remittance of \$200 formally to Kenya is  $\$13.33 \left\{ \frac{13.37 + 13.28}{2} \right\}$  or 6.7 % of the amount transacted. Informal channels in Kenya, the Hawala, charge two to three per cent of the transacted amount (Mohapatra & Ratha, 2011). This would translate to \$4 or \$6 for every \$200 sent. Therefore, a reduction of the formal costs to the informal level would mean reducing the costs from \$13.33 to either \$4 or \$6 for every \$200 sent. This would imply a 69.99% or 54.99% reduction in the formal transaction costs.

The estimates in Table 4.6 shows that a one per cent reduction in the costs of sending remittances via the formal channel increases remittances by 0.371. Therefore, a reduction in the costs by 69.99% or 54.99% would cause an increase in the remittances by 25.97% and 20.40%. The size of the informal remittances flows to Kenya is therefore, between 20% and 26% of the formal remittances. The sample estimates emanating from this thought experiment are shown in Table 3. These results show that in December 2023 informal remittances to Kenya were between the \$74 million and \$96 million

**Table 3:** Sample Estimates of Informal Remittances to Kenya

Year	Month	Total Formal (USD '000)	Estimates of informal Remittances (USD '000)	
		Remittances	Minimum	Maximum
2023	December	372,569.94	74,513.99	96,868.18
	June	345,862.82	69,172.56	89,924.33
2022	December	357,298.68	71,459.74	92,897.66
	June	326,059.79	65,211.96	84,775.55
2021	December	350,562.38	70,112.48	91,146.22
	June	305,901.72	61,180.34	79,534.45
2020	December	299,579.26	59,915.85	77,890.61
	June	288,544.37	57,708.87	75,021.54
2019	December	250,307.74	50,061.55	65,080.01
	June	295,316.98	59,063.40	76,782.41

## V. Summary, Conclusion And Policy Recommendations

This study sought to establish the size of informal remittances in Kenya with a view of informing policy and aiding proper recording of remittance flows. Arising from the results the study estimates that the informal remittance flows to Kenya are between 20% and 26% of the formal remittances.

The study establishes that Kenyan migrants tend to send more when the economic freedoms and economic conditions improve in their host nations. However, the Kenyan migrants reduce remittances when economic freedoms back at home improve. Importantly, the Kenyan migrants hardly consider the bilateral exchange rate when sending remittances. The regional dummy shows that Kenyan migrants in the US remit more than those in the other regions of the world. The costs of sending the remittances have a negative effect. This

means that for Kenyan migrants' costs influence the choice between formal and informal channels of sending remittances since remittances are assumed to be almost cost inelastic.

Accurately measuring informal remittances in Kenya is vital for creating effective government policies. This data would reveal the true extent of remittances' impact on the economy, allowing policymakers to develop strategies that fully utilize their potential for development. By encouraging people to send money through official channels, the government can increase tax income, improve access to financial services, and better monitor these transactions. Additionally, understanding the size of informal remittances is essential for combating financial crimes like money laundering and ensuring that resources are used efficiently. This knowledge helps policymakers create targeted social programs, support businesses started with remittance money, and promote a positive environment for official remittance services.

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