Remittances and Economic Growth: Evidence from Ethiopia, Kenya, and Uganda

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The purpose of this study is to analyze the possible effect of international remittances on the economic growth in three selected economies of Intergovernmental Authority on Development (IGAD) member countries, namely, Ethiopia, Kenya, and Uganda. Remittance inflows have emerged as a key link between human mobility and development. However, empirical findings on the nexus between remittances and economic growth are either conflicting or at most mixed. This paper explores the effects of remittances from international migration inflows on the economic growth of three IGAD member countries. The study uses quantitative analysis that encompasses the above-mentioned countries using the World Bank's annual data from 1990 to 2017. The novelty of this study is that it uses different approaches to solicit the short-run and the long-run nexus between economic growth and remittance flow. The pooled estimation result from fully modified least squares (FMOLS) shows that the logarithm of remittances impacts the dependent variable, economic growth, positively but not statistically significant. The Kao panel residual cointegration test shows that the null hypothesis is not sufficiently supported by the data. There is a statistically significant long-run relationship between the variables in the series. This implies that international remittances have a long-run impact on the economic growth of the countries considered in this study. In addition, remittances Granger cause economic growth, significantly at a five percent level of significance in the long run. To verify the results from dynamic panel regression, fixed-effects and random-effects estimation are used as a robustness check. Both fixed-effects and random-effects estimation results confirm the same findings as in the panel regression results. The findings from this paper will present important policy inputs for policymakers on how remittances impact the economic growth of the countries included in this study.

Keywords: Economic growth, remittances, migration, Ethiopia, Kenya, Uganda

INTRODUCTION

Migration has been an integral part of human dynamics since the very existence of humans (Faist, 2016). However, in recent years, more than any time in human history, migration has become one of the topical issues under discussion among policymakers, politicians, the media, and citizens of both developed and developing nations. When supported by appropriate policies, migration can contribute to inclusive and sustainable development in both origin and destination countries, while also benefiting migrants and their families. International migration is in large part related to the broader global economic, social, political and technological transformations that are affecting a wide range of high-priority policy issues (Kotze and Hill, 1997; Koser, 2016; Triandafyllidou, 2018).

Remittance inflows have emerged as a key link between human mobility and development. There are also diverse theories that have emerged to explain the impact of remittances on economic growth (development) of the countries of origin of migrants. Among these are the developmental (neo-classical), the structuralist (dependency), the pluralist, and the 'big push' theory.[1] The big push theory states that a 'big push' or comprehensive investment package could jumpstart economic development in the developing countries (Pragyandeepa, 2016). According to this theory, if remittances are managed properly and if smooth inflow is facilitated, remittances can play a 'big push' role for many African countries. These four theories are considered reliable guides to ascertain how remittances impact economic growth in this study's three IGAD (Intergovernmental Authority on Development)[2] member countries.

Remittances are classified as current private transfers from migrant workers resident in the host country for more than a year, irrespective of their immigration status, to recipients in their country of origin (World Bank, 2019). Many recent empirical studies suggest that remittances may have the potential to positively affect a country's economic growth and the development of financial systems in developing or emerging countries (Yaseen, 2012; Ratha, 2013; Fromentin, 2018; Adeoye et al., 2020; Azizi, 2020; Donou-Adonsou et al., 2020). Furthermore, remittances from international migrants have proven to be a more sustainable source of foreign currency for developing countries than other capital inflows, such as foreign direct investment, public debt or official development assistance. However, the nexus between remittances and development remains complex, especially with regards to the movement of people, which contributes to the spread of global interdependence in social, economic and political spheres. Workers' remittances and compensation of employees comprise current transfers by migrant workers and wages and salaries earned by non-resident workers.

[1] For a detailed discussion of the first three theories, see De Haas (2007) and for details on the 'Big Push' theory, see Rosenstein-Rodan (1957).

[2] The Intergovernmental Authority on Development (IGAD), in the Horn of Africa, comprises member countries like, Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan, and Uganda. IGAD is also an AU-recognized Regional Economic Community (REC) and building-block of the African Economic Community (AEC) under the AEC Treaty, implying a commitment to establishing a Free Trade Area (FTA) and regional infrastructure, including transport development.

Remittances inflow is one of the major sources of capital flows in the world. Although developing countries, and especially sub-Saharan Africa (SSA), do not have a bigger share of this capital flow, remittances are recognized as being very useful in promoting household welfare and health in developing countries. Tah (2019) found that remittances have a significantly positive impact on financial access in sub-Saharan Africa. The objective of this study is to analyze and understand the possible effect of international remittances on the economic growth in the three selected economies, namely, Ethiopia, Kenya and Uganda. These countries were chosen because they are among the top recipients of remittance inflows in East Africa. Furthermore, the study tests the causal relationship between international remittances and economic growth in these countries, in relation to potential policy lessons. This study analyzes the economic dynamism between international remittance flows and economic growth among the three major economies in the East African region. There are studies that assess the importance of remittance inflows in Africa as a continent, while there are also specific country-level studies (Tah, 2019).

The motivation for this study is to research other sub-regions within SSA in relation to their status as dominant migration destinations. Sub-regional analysis facilitates better corridor-specific policy interventions towards the realization of policy goals and objectives relating to remittance inflows (Eyden et al., 2011). Given the significant increase in migration and remittance flows to the continent, the literature on international migration and development in sub-Saharan Africa has also increased. However, the results from many studies are inconclusive or at best, they are mixed. Therefore, there is still room for further investigation of the topic under discussion. The next section provides a context on immigration in the three selected countries. Section three presents the literature review; section four discusses data and methodology. Section five presents the result of the data analysis. The last two sections present the overall discussion of the findings and conclusion, and policy implications, respectively.

CONTEXT

Geographically sub-Saharan Africa is the region of the African continent that falls south of the Sahara Desert. It is composed of all African countries and regions, situated completely, or partially, south of the Sahara. This study comprises a purposefully selected group of three IGAD countries in SSA. This section highlights the context of migration and remittance flows in Ethiopia, Kenya, and Uganda.

Ethiopia

Ethiopia is among the largest remittance receiving countries in sub-Saharan Africa (Ratha and Mohapatra, 2011). The history of immigration in Ethiopia began with revolution and an unstable political environment during the 1970s. Most of the people who migrated at that time formed part of a well-educated urban section of

the population, who migrated to western countries in order to seek political asylum (Geda and Irving, 2011). Political migration was followed by more economically oriented migration, initially driven by the aspirations of the urban population. Currently, as the Middle East has become an important destination region for Ethiopian migrants, the migrants are increasingly from rural areas, migrating to find better (employment) opportunities abroad (Geda and Irving, 2011).

Remittances are an extremely important source of foreign exchange for Ethiopia, perhaps larger than the export earning of the country in its foreign exchange generation capacity. However, the remittance industry in Ethiopia is besieged by several problems (Reinert, 2007). The size and scale of remittances also create the possibility for harnessing these flows for productive investment, thus contributing to the long-term development of Ethiopia. According to studies by Isaacs (2017) and Adugna (2019), the volume of remittances in Ethiopia could be between US$ 2 to 4 billion per year (an average of about US$ 3 billion). This is about the size of Ethiopia's total export and development aid combined. However, a non-conducive policy environment, as well as the lack of the deepening of liberalization of the financial sector, remain key challenges in the sector. However, there are disparities between the report released by the National Bank of Ethiopia and the World Bank reports on the amount of remittance flows to the country (NBE, 2017; World Bank, 2018a)

Remittances play a large role in financial household dynamics in Ethiopia, notably as risk-reducing instruments and as insurance against external shocks (Aredo, 2005). The diaspora has had an influential voice in Ethiopian politics and development over the past decades. The role of the diaspora in the current socio-economic transformation[3] led by Prime Minister Abiy Ahmed is significant. A few years before the transformation in the country, the Ethiopian diasporas, especially those living and working in the United States of America, declined the volume of remittances and avoided the formal channels of sending remittances home as a way of bringing about change. The Ethiopian government increasingly recognizes the importance of remittances from its migrants, for the development of the country and has taken several initiatives to optimize the effects of these financial flows. One of their goals was to stimulate its diaspora members to send money through the official channels. However, most financial transfers are still made through informal channels (ICMPD, 2008). This situation is directly related to the immigration status of the diasporas in host countries. Most Ethiopian diasporas in Europe and North America have legal documented immigration status that allows them to send remittances through official channels. However, those in countries in the Middle East and the rest of Africa, especially those in South Africa, are in a dire situation because of their unfavorable immigration status in those countries.

[3] Since taking over as head of the Ethiopian government in April 2018, Abiy Ahmed has increased his openness, by lifting the state of emergency, releasing political prisoners, announcing economic openness, and privatizing national enterprises. Regarding foreign policy, Abiy Ahmed surprisingly initiated an historic rapprochement with Eritrea. Abiy Ahmed is applying his manifest skills to the vital purpose of transforming Ethiopia into a prosperous society (Collier, 2019; Financial Times, 2020).

All Ethiopian migrants in South Africa, with exception of few professionals, are unable to send money through formal channels and remit informally, as they do not have the required official identification and thus lack access to formal financial services. Complicated formal banking procedures and their cumbersome requirements make the lives of Ethiopian migrants in South Africa very difficult (Dinbabo, 2020). To ease the flow of remittances, countries like Mexico issue official identification to their nationals living abroad, irrespective of their migratory status in the destination country. The Ethiopian government may need to explore such options as well. Likewise, the European Investment Bank and Mediterranean developing countries have signed an agreement to allow migrants in European Union (EU) countries access to simplified banking facilities upon presentation of consular registration cards (UNCTAD, 2013). The South African government should also consider the introduction of simplified banking facilities, in order to facilitate remittance outflows through formal channels and make the process much easier and less costly, for the benefit of both the host nation and the African diaspora.

Another discouraging factor with respect to remittance flows to Ethiopia for the last two-and-a-half decades, was that the former government of Ethiopia had introduced indirect (implicit and hidden) remittances tax, requiring recipients to convert remittances to the local currency at uncompetitive officially-fixed exchange rates (Adugna, 2019). In addition, the former Ethiopian government adopted a more opportunistic approach, damaging the trust of migrants and diasporas, by issuing diaspora bonds, which were embezzled by government officials due to poor governance, lack of economic and political stability, and unfavorable investment regulation. However, in recent years, the current Ethiopian government has put in place several positive measures to improve the operations and flow of formal remittances, as well as to reduce the costs of transfers and to increase access to international remittance services (Isaacs, 2017). However, the Ethiopian government should make continued efforts in ensuring that the Ethiopian diaspora community is recognized by host nations, through its diplomatic channels.

Kenya

After Kenya gained its independence from Britain in 1963, the inflow of remittances to Kenya from the diaspora grew substantially and ranks among the top-four leading sources of Kenya's foreign exchange (Makori et al., 2015). This has been attributed to the surge in the numbers of Kenyans living in the diaspora (Ngugi, 2015). From the mid-1980s when Kenya began to experience an economic downturn and political instability, a significant number of Kenyans left the country to join the diaspora (Makori et al., 2015). They moved to countries where political and economic climates were favorable and promising and became the initial remitters of funds to Kenya from their destination countries. In fact, as far back as the post-independence period, Kenya started experiencing a gradual increase in remittances (Ngugi, 2015).

Kenya has experienced a steady growth in the annual volume of diaspora re-

mittances recorded over the post-independence period. Remittances have become a major source of foreign exchange and a key driver of economic growth, as underscored in the "Kenya Vision 2030", Kenya's national development policy blueprint (Aboulezz, 2015). Ratha et al. (2011) found that remittances received in Kenya from within Africa were used primarily for the construction of houses, while inflows from outside Africa were devoted to long-term investments. The volume of emigrants from Kenya and the volume of remittances have been increasing over time. The Kenyan government has been very keen to encourage the diaspora to participate in national development (World Bank, 2012). The importance of the diaspora has also been recognized in the "Kenya Vision 2030". Although remittances have the potential to contribute to national development, there has been a lack of administrative structures and mechanisms to enable the government to tap directly into these foreign inflows from the diaspora as an asset for investment and national development (Government of Kenya, 2011).

Studies comparing poverty levels between Kenyan households that have no remittances and those that receive remittances have recorded higher poverty levels in the former than in the latter (Makori et al., 2015; Ocharo, 2015). It is well understood that remittances do facilitate household incomes and are efficient anti-poverty forces in poor or developing countries such as Kenya (Kamuleta, 2014; Nyamwange and Paterson, 2015). Indeed, recipients of remittances are able to identify and utilize the remittances to meet their most pressing poverty needs. Studies conducted around Kenya on the well-being of households receiving remittances and those that do not receive remittances reveal that the households that receive the remittances are better off financially than those that do not receive the funds (Kamuleta, 2014; Nyamwange and Paterson, 2015). The reason for this is that the recipient households can invest the remittances in income-generating activities, which result in the reduction of their poverty standing and improvement of their living standards while the non-remittance receiving households have no funds to invest. Furthermore, studies carried out across Kenya indicate that remittance-receiving households experience higher income levels and have a higher purchasing power than the non-remittance-receiving households (Ngugi, 2015).

Uganda

Remittance inflows in Uganda have been increasing steadily while outflows have remained relatively stable. Mobile money is increasingly successful in Uganda and has driven a lot of the growth in remittance volume and value. The regulatory requirements for cross-border remittances are relatively clearly outlined, compared to many other SSA markets (Macmillan et al., 2016). There are no caps on outward remittances and no foreign exchange controls exist. According to interviewees, the regulator comes across as mostly open-minded and eager to advance the sector. However, regulation around mobile money is unclear and lags the rapid technological advances in the market, preventing inclusive development (Macmillan et al., 2016).

Uganda's remittance market is thriving, yet costs are high (World Bank, 2018b). Informal inflows and the costs of sending remittances are high, despite the significant developments in the market structure, regulation and access which have taken place in recent decades.

Remittances to Uganda have surpassed traditional foreign currency earners with positive impacts on the economy. The positive role played by remittances include that the aggregate flows into the economy have a direct effect on the national reserves, foreign exchanges and GDP of the economy as well as improvement on savings and credit ratios as a result of improved investment. Ugandan migrants are sending remittances to improve conditions in their households and communities. There is evidence that remittances in Uganda have the potential to significantly contribute to development compared to the official aid (Bank of Uganda, 2016). In Uganda, remittances tend to be more stable than other sources of foreign exchange, and they are often countercyclical, helping sustain consumption and investment during downturns and performing the role of a shock absorber (Ratha et al., 2011; UNHCR and UNCDF, 2018).

Remittances play a key role for Ugandans and refugees alike, providing vital funds from friends and families abroad. Uganda is a net recipient of remittances, given the large flows that the Ugandan diaspora remits home as well as the inflows that are supporting the enormous refugee population. Uganda's open border policy towards refugees from crisis-ridden neighboring countries is particularly commendable, given the current global rise in anti-immigration sentiments and policies. The remittance sector in the country is further advanced than in most countries in Africa, yet challenges remain. While formal remittance flows into Uganda are the sixth highest in Africa, it is estimated that both domestically and regionally a large proportion of personal transfers are still made informally (Cooper et al., 2018).

LITERATURE REVIEW

Migrants remit money home from host countries for two main reasons, namely altruism and self-interest motives. Altruism refers to the migrant's assistance to the family back home to meet basic family needs, while self-interest motives refer to returns seeking purposes for remitting back home (Docquier and Rapoport, 2006). Remittance inflows sometimes involve a complex arrangement that incorporate features of both self-interest and altruism, such as risk diversification, consumption smoothing and intergenerational financing of investments (Docquier and Rapoport, 2006). Migrants also remit home, aimed at maintaining good family ties to improve their standing for inheritance purposes or to ensure that their assets back home are properly taken care of. This is referred to as "enlightened self-interest"(Lucas and Stark, 1985: 906).

This section presents empirical studies that have analyzed the relation between remittances and economic growth. There are positive and negative externalities associated with international migration. One of the positive outcomes of migration is

remittance inflows, which have emerged as a key link between human mobility and development. A great deal of literature is available on remittances both in developed and developing countries. These include research in the area of development economics (Corden and Neary, 1982; Barajas et al., 2011; Koyame-Marsh, 2012; Siddique et al., 2012; Ahmed, 2013; Alvarez-Tinajero, 2013; Marwan et al., 2013; Richard and Alfredo,2013; Kemegue et al., 2014; World Bank, 2014; Adarkwa, 2015; Asongu and Nwachukwu, 2016; Hien et al., 2019; Tchamyou, 2020).

The empirical studies show that remittances can stimulate economic activity and motivate entrepreneurial communities (Ahmed, 2013; Asongu and Nwachukwu, 2016; Tchamyou, 2020). Remittances help households move out of poverty and increase educational and housing spending. Siddique et al. (2012) investigated the relationship between remittances and economic growth in Bangladesh, India and Sri Lanka and found that there is no causal relationship between economic growth and remittances in India, that there was a two-way relationship between remittances and economic growth in Sri Lanka, and that remittances did not lead to economic growth in Bangladesh.

Studies from sub-Saharan African countries show mixed results. For example, a study undertaken by Koyame-Marsh (2012) found that remittances do not lead to economic growth in all ten ECOWAS (Economic Community of West African States) countries studied. Marwan et al.'s (2013) study on Sudan found a long-run positive relationship between growth, export and remittance. Richard and Alfredo (2013) also found evidence of the strong role of remittances in promoting social welfare in Ghana. Adarkwa (2015) examined the impact of remittances on economic growth in four selected West African countries and found mixed results.

From another angle, Barajas et al. (2011) show that the growing consumption of recipients may increase the local market price and appreciate the exchange rate. As a result, the macroeconomic mechanism known as 'Dutch Disease'[4] may yield the failing of the tradable sector of the domestic economy, the rising of the current account deficit, and inflation with weaker monetary control (Hien et al., 2019). Meanwhile, the growing pressure on wages may lead to job losses in the tradable sector, while the sudden rise of prices would increase the labor costs in the non-tradable sector, thus leading to the loss of national competitiveness. In addition, the assessment of the impact of remittances on national growth suggests a wide range of multifaceted causal links and presents both positive and negative aspects, which may vary depending on the socioeconomic factors pertaining to each country at national and local levels (Yaseen, 2012). Table 1 presents a summary of positive and negative effects of remittances.

In general, sub-Saharan Africa lags woefully behind other regions in efforts at effectively harnessing the benefits of remittance inflows while minimizing negative externalities associated therewith. This has been attributed to several factors, such as

[4] An economic model developed by Corden and Neary (1983), when a country experiences a resource boom due to a tradable resource discovery and/or to an increase in a resource price.

inadequate awareness of the drivers and constraints to these inflows through formal channels, overregulation, underdeveloped financial systems and markets, lack of the requisite structures and enabling environment (Kemegue et al., 2014). In 2013, inflows of remittances to sub-Saharan Africa increased by 3.5% (World Bank, 2014). However, the increase was not distributed evenly across the continent. East African countries experienced significant gains in remittance inflows while those in the West African sub-region experienced only a marginal increase (World Bank, 2014).

Table 1: Summary of positive and negative effects of remittances

	Positive effects	**Negative effects**
National level	• Increase national income if remittances are transferred through formal channels. • Recipient countries gain creditworthiness in international credit markets. • Recipient countries may stabilize national balance of payments accounts.	• Large remittance flows could lead to currency appreciation, with negative consequences on exports.
Local/household/ individual level	• Boost local economies by stimulating consumption, demand for local goods or services, fostering job creation. • Potentially increase local capital to be reinvested in businesses. • Afford basic needs (food, healthcare, education, housing). • Face risks (unemployment, disability, accidents, illness). • Afford social/family events (town festivities, weddings, funerals); strengthen social networks; gain prestige, power and resources (social or material advantages); Redress relative deprivation (access to what others in the immediate environment have). • Partly redress social (class, gender) disadvantages.	• Generate a demand for imported (rather than locally produced) goods. • Increase the price of land, property, construction materials. • Exacerbate structural inequalities between recipients and non-recipients. • Foster dependency links between senders and recipients. • Put pressure on senders, leading to the deterioration of their living conditions.

Source: Adapted from Alvarez-Tinajero (2013).

DATA AND METHODOLOGY

Data

This study uses data from the World Bank for the period from 1995 to 2017 to evaluate the nexus between inflow remittance and economic growth among three IGAD member countries, namely, Ethiopia, Kenya, and Uganda. The descriptive statistics for the data used in this study are presented in Table 2. The variable name GR stands for the real GDP growth rate. Most studies use GDP as a proxy variable for economic growth. However, using GDP growth rate better mimics the growth trend in respective countries. $GR_{i,t-1}$ is the lag of the logarithm of GDP growth rate, INF is inflation, measured as the annual percentage change in the consumption price index, INV is investment, lnGEXP is the logarithm of government expenditure, lnPOP is the logarithm of population size as a measure of human capital, lnREM is the logarithm of remittances over time, and OPN is openness to international trade, defined as the ratio of the sum of exports plus imports of goods to total output. In the analysis, many variables in this study are transformed to logarithm (log) forms. In time series analysis, logarithmic transformation is often considered to stabilize the variance of a series and mimics normal distribution (Luetkepohl and Xu, 2009).

Table 2: Descriptive Statistics of Variables

	G	INF	INV	lnGEXP	lnPOP	lnREM	OPN
Mean	6.339514	8.245000	22.86067	19.88665	17.52654	19.55574	17.22065
Median	6.081430	7.114000	21.47600	19.80179	17.41449	19.86758	14.15700
Maximum	13.57260	39.24500	39.41700	23.61567	18.34440	21.40123	125.9680
Minimum	-3.458139	-8.999000	12.35200	15.94040	16.73840	16.03824	-22.65600
Std. Dev.	3.585341	7.624076	6.616714	2.154349	0.476774	1.307967	22.08911
Skewness	-0.213900	1.538381	0.760696	-0.141375	0.299412	-0.837405	1.794977
Kurtosis	2.883122	7.925549	3.055465	2.052124	1.839402	2.799826	9.949993
Jarque-Bera	0.565438	96.96656	6.663418	2.812946	4.903541	8.179549	175.9217
Probability	0.753732	0.000000	0.035732	0.245006	0.086141	0.016743	0.000000
Sum	437.4264	568.9050	1577.386	1372.179	1209.331	1349.346	1188.225
Sum Sq. Dev.	874.1174	3952.604	2977.101	315.6030	15.45734	116.3329	33179.17
Observations	69	69	69	69	69	69	69

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018).

The larger values of skewness and kurtosis show asymmetric distribution around the mean. This fact is also evidenced in the Jarque-Bera test that rejected the null hypothesis of normality at 1 percent level of significance for most of the variables.

Methodology

Since the main objective of the study is to analyze the impact of international

remittances on economic growth in the three east African countries, the effect of international remittances on economic growth can be modelled as follows:

Methodology on panel unit root tests

As a common accord in the literature, panel unit root tests are superior to time series unit root tests. Therefore, this paper uses panel unit root tests, as outlined in Im, Pesaran and Shin (IPS) (2003) and Levin Lin and Chu (LLC) (2002). Following IPS (2003) and LLC (2002) we have the following panel unit root regression:

$$\Delta y_{i,t} = \alpha_i + \beta_i y_{i,t-1} + \sum_{j=1}^{\text{wij}} \delta_{i,j} \Delta x_{i,t-j} + \varepsilon_{i,t} \text{ , i = 1, …, N, and t = 1} \quad (1)$$

where:

Using equation (1), LLC (2002) test and IPS (2003) test are carried out, respectively. The LLC test examines:

H_0: $\beta_1=\beta_2=...=\beta_N=0$ (no cointegration) against

H_1: $\beta i<0$, for some i (there is cointegration)

H_0 and H_1 are the null and the alternative hypotheses respectively, where the appropriate lag order w_{ij} from equation (1) must be determined. The conventional t-statistics for testing $\beta_i=0$ is:

$$t_{\beta i} = \frac{\hat{\rho}}{\hat{\delta}(\hat{\rho})} \quad (2)$$

The IPS adjusted t-statistics is expressed as:

$$t_{\beta i} = \frac{t_{\beta i} - NTS\hat{N}\sigma\varepsilon^{-2}STD\left(\hat{\hat{\sigma}}\right)\mu^* M\hat{\hat{T}}}{\hat{\delta}(\hat{\rho})M\hat{T}} \quad (3)$$

Note that the IPS test also examines similar null and alternative hypotheses as specified in the LLC test.

Dynamic Panel Model Specification

Following from Giuliano and Arranz (2009) and Barguellil et al. (2013), the dynamic panel model used in this study is specified as follows:

$$GR_{i,t} = \beta_0 + \beta_1 GR_{i,t-1} + \beta_2 Inf_{i,t} + \beta_3 lnInv_{i,t} + \beta_4 lnGEXP_{i,t} + \beta_5 lnPOP_{i,t} + \beta_6 lnREM_{i,t} + \beta_7 OPN_{i,t} + \varepsilon_{i,t} \quad (4)$$

where:

GR - is the real GDP growth rate

$GR_{i,t-1}$ - is the lag of GDP growth rate

INF - is inflation, measured as the annual percentage change in the consumption price index

INV - is investment

lnGEXP - is the logarithm of government expenditure

lnPOP - is the logarithm of population size as a measure of human capital

lnREM - is the logarithm of remittances over time

OPN - is openness to international trade, defined as the ratio of the sum of exports plus imports of goods to total output

ε - is the error term

RESULTS AND DISCUSSION

The Panel Co-integration Test

Given the nature of the data used in this study, the unbalanced panel data analysis is employed. For the analysis of the long-run relationship among variables in this study, an array of panel cointegration tests are employed to ensure the veracity of the findings. Table 3 presents a summary of the panel unit root test.

Table 3: Panel Unit Root Test: Summary

Null: Unit root (assumes common unit root process)			**Null: Unit root (assumes individual unit root process)**	
Variable	**Levin-Lin-Chu (LLC)**		**Im, Pesaran and Shin (IPS) W-stat**	
	Level	First difference	Level	First difference
G	-3.6445***		-2.71078***	
INF	-3.1507***		-2.84007	
lnREM	-1.68116**		-0.31627	
INV	0.04313	-2.04313**	0.32596	
lnGEXP	2.43817	-1.80750**	4.48814	-2.28552***
OPN	-4.4806***		-5.18781***	
lnGDPP		-2.96322***		
D(lnPOP,2)	-6.31624***		-6.05418***	

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018). Note: *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

Most of the variables are stationary at level, since the null hypothesis of unit root is rejected. That makes our estimation reliable. Table 4 presents a summary of the pooled estimation result from the panel fully modified least squares.

Table 4: Pooled Estimation Result from Panel Fully Modified Least Squares (FMOLS)

Dependent Variable: G (Growth rate)				
Sample (adjusted): 1996- 2016				
Periods included: 21 Cross-sections included: 3				
Total panel (balanced) observations: 63 Cointegrating equation deterministic: C				
Coefficient covariance computed using default method				
Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth)				
Variable	Coefficient	Std. Error	t-Statistic	Probability
GT_1	0.198874	0.097510	2.039522	0.0464**
INF	0.138120	0.039452	3.500981	0.0009 ***
INV	0.031040	0.082528	0.376110	0.7083
lnGEXP	0.060569	1.354254	0.044725	0.9645
lnPOP	-2.554559	5.488141	-0.465469	0.6435
lnREM	0.635389	0.540616	1.175305	0.2451
OPN	0.064385	0.014339	4.490131	0.0000***
R-squared	0.419647	Mean dependent var		6.269976
Adjusted R-squared	0.321097	S.D. dependent var		3.672979
S.E. of regression	3.026373	Sum squared residual		485.4234
Long-run variance	3.462648			

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018).

The logarithm of remittances impacts the dependent variable, economic growth, positively but is not statistically significant. However, the first lag of economic growth, inflation, and openness has affected economic growth during the study period positively and significantly at five percent and one percent levels of significance respectively. Table 5 presents the results from the Kao panel residual cointegration.

Table 5: Kao Panel Residual Cointegration Test for long-run relation between remittance and economic growth

Series: G, GT_1, INF, INV, LNGEXP, LNPOP, LNREM, OPN				
Sample: 1995 2017				
Included observations: 69				
Null Hypothesis: **No cointegration**				
Trend assumption: No deterministic trend				
Automatic lag length selection based on SIC with a max lag of 5				
Newey-West automatic bandwidth selection and Bartlett kernel				
			t-Statistic	**Prob.**
ADF			-3.447484	0.0003***
Residual variance			11.10221	
HAC variance			1.559893	

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018).

The Kao panel residual cointegration shows that the null hypothesis is not sufficiently supported by the data. There is a statistically significant long-run relationship between the variables in the series. This implies that international remittance, our variable interest, has long-run impact on the economic growth in the countries considered in this study. Table 6 presents a summary of the Granger causality test.

Table 6: Granger Causality Test

Pairwise Granger Causality Tests			
Sample: 1995 2017 Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
lnREM does not Granger Cause G	63	4.29316	0.0182**
G does not Granger Cause LNREM	0.24848	0.7808	

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018).

There is not enough evidence to accept the null hypothesis. Therefore, remittances Granger causes economic growth – significantly at 5 percent level of significance in the long run.

Robustness Check

To verify the above dynamic panel regression result, fixed-effects and random-effects estimation are used as a robustness check. As shown in Tables 7 and 8, both fixed-effects and random-effects estimation results confirm the same findings, as shown in other panel regression results. That is, the logarithm of remittances impacts

economic growth in the panel of countries included in this study positively, affects economic growth, but is not statistically significant. However, in the random-effects analysis, the estimation result is negative but not statistically significant. The other variables like inflation and openness have affected economic growth during the study period positive and statistically significant in both models (see Tables 7 and 8). These findings are in line with economic theories on growth.

Table 7: Fixed-effects Estimation Results

Fixed-effects(within)regression				**Number of obs. = 66**	
Group variable: i				**Number of groups = 3**	
R-sq:				**Obs. per group:**	
Within = 0.3450				**min = 22**	
Between = 0.2236				**avg. = 22.0**	
overall = 0.0011				**max = 22**	
				F (7,56)	**= 4.21**
corr(u_i,χb) = -0.9435				**Prob> F**	**= 0.0009**
G	**Coef.**	**Std.Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**
Gt_1	0.13875	0.1273	1.09	0.280	-0.1161 0.3937
lnREM	0.7595	0.7387	1.03	0.308	-0.7204 2.2394
INV	-0.0132	-0.1086	-0.12	0.904	-0.2307 0.2043
lnGEXP	1.5202	1.6533	0.92	0.362	-1.7917 4.8322
OPN	0.0633	0.0184	3.44	0.001***	0.0264 0.1001
INF	0.1108	0.0529	2.09	0.041**	0.0048 0.2168
lnPOP	-8.9945	6.5789	-1.37	0.177	-22.1737 4.1846
_cons	116.3416	89.7058	1.30	1.30	-63.3503 296.0334
Sigma_u	9.0418				
Sigma_e	2.9079				
rho	0.9063				
F_test that u_i=0: F(2,56) = 2.47				Prob> F= 0.0942	

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018).

Table 8: Random-effects Estimation Results

Fixed-effects(within)regression				**Number of obs. = 66**	
Group variable: i				**Number of groups = 3**	
R-sq:				**Obs. per group:**	
Within =0.3033				**min = 22**	
Between =0.9807				**avg. = 22.0**	
overall = 0.4073				**max = 22**	
				Wald chi2(7)	**= 39.85**
corr(u_i,χ) = 0 (assume)				**Prob> chi2**	**= 0.0009**
G	**Coef.**	**Std.Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**
Gt_1	0.2144	0.1192	1.80	0.072	-0.0192 0.4481
lnREM	0.0291	0.0571	0.06	0.955	-0.0419 1.0426
INV	0.1320	0.0887	1.49	0.137	-0.9376 0.3059
lnGEXP	-0.0268	0.4648	-0.06	0.954	-1.7917 0.8839
OPN	0.0564	0.0185	3.04	0.002***	0.0200 0.0927
INF	0.1198	0.0527	2.27	0.021**	0.0165 0.2230
lnPOP	-0.0225	1.6846	-0.01	0.989	-3.3243 3.2793
_cons	0.3749	31.7787	0.01	10.991	-61.9103 62.6602
Sigma_u	0				
Sigma_e	2.9079				
rho	0 (fraction of variance due to u_i)				

Source: Author's estimation from World Bank. 2017. Migration and Remittances Data, Annual Remittances Data (updated as of Dec. 2018). Note: ** and *** indicate significance at 5% and 1% levels, respectively.

CONCLUSION

Human migration is one of the topical issues under discussion among policy-makers, politicians, the media, and individual citizens of both developed and developing nations. When supported by appropriate policies, migration can contribute to inclusive and sustainable development in both origin and destination countries, while also benefiting migrants and their families. However, sub-Saharan Africa lags woefully behind other regions in efforts at effectively harnessing the benefits of remittance inflows while minimizing negative externalities associated therewith. This study investigated the effect of remittances on economic growth in three IGAD member countries, namely, Ethiopia, Kenya and Uganda, for the period ranging from 1995 to 2017. The pooled estimation result from panel fully modified least squares (FMOLS) shows that the logarithm of remittances impacts the dependent variable, economic growth, positively but not statistically significant. The Kao panel residual cointegration test shows that the null hypothesis is not sufficiently supported by the data. There is a statistically significant long-run relationship between the variables

in the series. This implies that international remittances, our variable interest, has a long-run impact on the economic growth in the countries considered in this study. In addition, remittances Granger cause economic growth – significantly at 5 percent level of significance in the long run. In this study, the impact of human capital is captured using the population size of the respective countries. However, the result comes with a negative effect. Such result is not surprising, given that the countries included in this study have relatively higher population growth rates that may hamper capital formation because of high levels of consumption. Education and training could better capture the effect of human capital on economic growth.

The countries included in this study are known for poor governance, lack of economic and political stability, and unfavorable investment regulation that deters the inflow of remittances. The trust deficit between the diaspora and governments should also be addressed to promote diaspora investment appetite in local financial instruments, like bonds and other financial assets. Policymakers in Ethiopia, Kenya and Uganda should formulate policies that can stimulate additional remittances from their diaspora. Governments, institutions, and civil society are interested in mobilizing remittances, as illustrated by the growth initiatives targeting the financial and human capital of migrants and diasporas. Remittances can serve as a 'big-push' towards economic growth in the countries included in this study; countries need to design appropriate policies suitable for money transfer. In addition, there should be strong collaboration with host countries to harness mutual benefit in both ends. The migrant-sending countries should also create a strong collaboration with migrants and diasporas, with respect to their rights, and improve their quality of life in host countries. Future studies in this area may focus on the channels through which remittances impact economic growth.

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