Determinants of Intra-SSA Tourism Demand

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Abstract

The study examines factors that influence demand for intra- sub-Saharan Africa countries' tourism for 46 bilateral countries using a dynamic panel (system GMM) data model technique. The study employs most common macroeconomic variables and some critical social variables that help explain demand for African tourism. Results from the study suggest that while most common variables are significant, intra-SSA tourists consider internet usage important and prefer to visit less urbanized regions in SSA. However, there is enough evidence in the study to conclude that reasons for travelling within Africa are not much different than for international tourists.

Keywords: sub-Saharan Africa; tourism; panel data regression; GMM model.

JEL Classification: C33, F41, L83

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1.0 Introduction

Majority of countries in the Sub-Saharan region of the African continent wrestle with basic development challenges including high levels of unemployment, food insecurity, lack of economic transformation, high dependence on agricultural and primary commodities all which have morphed into poverty, inequality, environmental degradation, and hindered the region from reaping the full membership benefits of the global economy (ECA, 2016; Signe, 2018). SSA countries citizens are, therefore, yet to realize benefits of decent jobs, economic diversification, and social development.

Studies have documented that countries that are able to develop a vibrant tourism sector receive direct economic benefits through promotion of investments in other related sectors of the economy such as in construction, infrastructure upgrading and development, local manufacturing and development of consumer markets. At the national level, a vibrant tourism sector has potential to increase the country's tax revenue and foreign exchange earnings, which will lead to higher domestic consumption and, therefore, economic growth (Sequeira and Nunes , 2008; Signe, 2018).

The benefit of tourism sector development goes beyond the national level. At the local economy, tourism development generates employment opportunities for remote and low skilled workers especially women workers who often have difficulties in accessing formal employment in many of the developing countries. As the poor benefit through direct earnings in either formal or informal employment in the tourism sector, the local economy also benefits from indirect and induced effects when tourism related spending impact the non-tourism sectors of economy through supply-chain linkages generating economic opportunities, which alleviates poverty and inequality (Ashley and Mitchell, 2009; Schubert, et al., 2011).

Tourism development in SSA countries offer a lot of hope to the region which is highly dependent on agricultural and raw commodity exports by diversifying the region's economies export earnings. As noted by AfDB (2016) report, SSA countries have low human and physical capital that makes the region unable to thrive or compete in the traditional sectors such as manufacturing and finance. However, the low levels of capital and expertise requirements that characterizes the tourism sector creates huge opportunities for formation of small and medium sized (SMEs) and their ability to thrive especially because they are very few large corporations who are established in the region. This creates opportunities for domestic SMEs to grow and generate employment opportunities that can alleviate poverty and lead to overall economic growth (Signe, 2018).

This study looks at factors that influence the demand for intra-SSA countries tourism. The second section of the article contains the overview of tourism development in SSA region. The third section provides the research methodology of the study including the data issues while the fourth section presents the results of the study. The fifth section comprises the study conclusions and discussions. The last section includes concluding remarks and policy implications.

2.0 SSA Intra-regional tourism

SSA tourism market is small compared to other developing regions of the word with only $42.1 billion of SSA countries GDP attributed to the Transport and Tourism sector in 2018 which was just 1.6% of the global total. In addition, SSA region received 37.4 million tourist arrivals in 2017, which is equivalent to 3.0% of the total global travel (Calderwood and Soshkin, 2019).

Several challenges have been cited for the low tourist uptake within the SSA region among them is the low economic status of countries in the region as majority of the economies are classified as either low or lower-middle income who lack a middle class with economic resources to facilitate them for regional travel. Due to the foregoing, most SSA countries have low investments in their air travel and road infrastructure, which hinders both inter-regional travel and tourism. The region has weak domestic airline sector and the lack of airport density hinders SSA countries ability to handle tourist and business travel, something that has not been helped by SSA regions huge size and its geographic barriers (Calderwood and Soshkin, 2019).

SSA region also has some of the lowest investments in modern technology that is a vital component of modern tourism as most modern tourists and tourism industry depends on technology. In addition, the regions health and hygiene concerns have substantial gap when compared to the world averages and always act as repellants to those who wish to visit the region (Calderwood and Soshkin, 2019).

Despite the foregoing, SSA countries have made great strides in recent years and some of the world's fastest growing economies and now from the region. This has created a sizeable middle class who can now afford to contribute to tourism in the region. The region has also made great improvements in air transport competitiveness as well as in modern technology adoption (Calderwood and Soshkin, 2019).

In the recent past, there has been interest in the regions research that has mostly focused on determinants of the tourism demand into Africa. A study by Naudé and Saayman (2005) tried to investigate factors that influence tourism arrivals in 43 African countries while accommodating for the tourists' source country. The results of their study showed that the main determinants of tourism travel to African countries were tourism infrastructure, political stability, marketing and information, and their overall level of development. Kareem (2007) study on the factors that determine demand for tourism in Africa found out that crime rate, political instability, prevailing exchange rates, and consumer price index (CPI) were important determinants of prospective tourists to the region. The study also reaffirmed infrastructure and source country's income as important determinants to tourist arrivals in the region.

Fourie and Santana-Gallego (2013) study used gravity model specification to identify factors that influence African-inbound and within-African tourism demand. The results of their study confirmed that African-inbound and intra-African tourism are influenced by the same factors including income, distance, repeat tourism, and standard dummy variables, which disproved the belief that determinants of African-inbound and intra-Africa tourism were different.

Viljoen, et al (2019a) study looked at the determinants of African-inbound tourism when investigated collectively and when segregated based in different African regions. The results from their study showed that tourism to Africa was influenced by the incomes of tourist's origin countries, infrastructure related to telecommunication, and geographical factors including conservation efforts although these factors were not common when the study was looked at the perspective of African regions. These results were consistent with Viljoen, et al (2019b) study that tried to determine if trade theory could be used explain intra-African tourism. Results from four theoretical models of international trade to bilateral African tourism flows affirmed that cultural and geographic proximity including the destination country's level of development influence intra-African tourism.

Intra-African tourism studies have received little research attention even when majority of African outbound tourism goes to other African countries, which makes the continent as the principal destination for African tourists (Viljoen, et al., 2019b). A 2017 study documented that 4 out of 10 international tourists to Africa originate from within Africa while 2 out of 3 international tourists to SSA currently originate from the African continent. The surge in intra-regional tourist arrivals is attributed to the region's trade integrations which have created open skies, streamlined or eliminated the strangest visa requirement conditions, facilitated convertible currencies, and enacted tourism policies that cater for intra-regional tourism (UNCTAD ,2017; Calderwood and Soshkin, 2019).

While most of the earlier studies looked at determinants of African-inbound tourism especially from the developed countries, few studies have tried to explain factors that influence intra-African tourism. The challenge with the few studies that try to explain intra-African tourism is that they group all countries in Africa as one homogenous group. Africa as a continent is very diverse in geography, natural resources, politics, economic development, history, and cultural heritage, among others, all that influence the tourism industry. As noted Signe (2018), at the beginning of the century when most SSA countries were colonies or just emerging from colonization, North Africa countries already had well-developed tourism sectors. Indeed, by 2013, four northern African countries of Algeria, Egypt, Morocco, and Tunisia received more international tourist than were received by all 48 SSA countries combined. Also, the four North Africa countries also received more than three times more intra-African visitors than all of the 48 SSA countries combined in 2013 (UNCTAD (2017). This study is an attempt to reverse this trend and looks at the determinants of intra-African tourism from the perspective of SSA countries. Although SSA countries are not without differences especially geographically, most of them exhibit the same economic and social welfare indicators (UNCTAD, 2006).

3.0 Methodology and Data Specification

The study adopts the gravity equation model that has been extensively used to approximate patterns of international trade flows. The basic rationale that the gravity model hinges on is that bilateral trade flows between countries is proportional to their economic size and inversely proportional to the distance between them. In simple terms, the Gravity Model of Trade equation can be represented as follows:

$$TD_{ijt} = \beta_0 \frac{Y_{it}^{\beta_1} Y_{jt}^{\beta_2}}{D_{ij}^{\delta}} u_{ijt} \quad (1)$$

In equation (1), TD_{ijt} is value of trade flow between country i from country j at time t, and Y_{it} and Y_{jt} are country i and j's respective economic sizes at time t. D_{ij} is a measure of distance between country i and country j while β_0 is a constant term of proportionality. In the model β_1 and β_2 parameters are hypothesized to have positive a positive sign while δ is hypothesized to have a negative sign. The log-normally distributed error term (u_{ij}) is predicted to have a mean of zero and constant variance. The multiplicative nature of equation (1) allows it to be estimated through conversion of the variables into natural logarithms and converting them into a log-linear equation which can be approximated using the ordinary least squares methodology. The linear form of equation (1) takes the following form:

$$Log\left(TD_{ij}\right) = \beta_0 + \beta_1 Log\left(Y_i\right) + \beta_2 Log\left(Y_j\right) - \delta Log\left(D_{ij}\right) + u_{ij} \quad (2)$$

where β_0,β_1, β_2 and δ are coefficients to be estimated. The error term, u_{ij}, is expected to capture other random events that affect trade between countries' i and j.

3.1 Model

As in traditional economic studies that incorporate the gravity models, the same basic idea is incorporated when using the gravity model in tourism demand models. The basic assumptions are that the amount of projected tourism travel between two countries is proportional to the economic size of the two countries and inversely proportional to some form of distance between the two countries (Park and Jang, 2014). Tourism related studies have extensively used the gravity model because of the equation's simplicity as well as its effectiveness in forecasting as attested by the high consistent and statistically significant results (Getz, 1986; Keum, 2010; Park and Jang, 2014; Lorde and Airey, 2016; Porto, et al., 2018).

Most tourism studies that incorporate gravity model agree that to explain the key determinates of tourism demand the model has to go beyond that economic size of origin and destination countries and the physical distance between them. Thus, to overcome the limitations of the traditional gravity models, researchers have augmented the model to include more representative variables including those related to transportation infrastructure, political, social and economic stability, urbanization rates, costs of transportation, price competitiveness, and dummy variables that capture culture and history, common border, among others (Keum, 2010; Park and Jang, 2014; Lorde and Airey, 2016; Porto, et al., 2018).

To evaluate the determinants of intra -SSA countries tourism demand, this study follows Keum (2010), Park and Jang (2014), and Porto, et al. (2018) and proposes an extended gravity model which can expressed as follows:

$$ln\, TA_{ijt} = \beta_0 + \beta_1 ln\, TA_{ijt-1} + \beta_2 lny_j + \beta_3 TC_{ij,t} + \beta_4 lnRP_{ij,t_i} + \beta_5 lnRER_{ij,t} + \beta_6 lnUR_{i,t} +$$

$$\beta_7 lnPS_{i,t} + \beta_8 lnLinder_{i,t} + \beta_9 lnLinder2_{i,t} + \beta_{10} lnInternet_{i,t} + \beta_{11} RTA_{ij} + \beta_{12} Lang_{ij} + \beta_{13} Border_{ij} + u_{ij} \quad (3)$$

where *i* denote tourist destination country in SSA and *j* denotes the country of origin in SSA and *t* is time in years.

$TA_{ij,t}$ is the number of tourist arrivals to destination country *i* by tourists from country *j* at time *t*; $TA_{ij,t-1}$ is the lagged dependent variable; $y_{j,t}$ is the level of income per capita of origin country *j* at time *t*; $TC_{ij,t}$ is transportation cost between destination *i* and tourist origin county *j* at time *t*; $RP_{ij,t}$ is the relative price between destination *i* and tourist origin county *j* at time *t*; $RER_{ij,t}$ is currency exchange rate between destination *i* and tourist origin county *j* at time *t*; $UR_{i,t}$ is the urbanization rate for destination *i* at time *t*, and $PS_{i,t}$ is the political stability (lack of violence index) for destination *i* at time *t*.

Also, $Linder_{i,t}$ is Linder's hypothesis (absolute value) between origin and destination country *i* at time *t;* $Linder2_{i,t}$ is Linder's hypothesis (absolute value as a ratio) between origin and destination country *i* at time *t;* $Internet_{i,t}$ is a measure of internet usage for destination *i* at time *t;* RTA_{ij} is dummy denoting 1 if destination *i* and origin country j belong to the same trading block, and zero otherwise*;* $Lang_{ij}$ is a dummy denoting 1 when destination *i* and origin county *j* share a common language, and $Border_{ij}$ is a dummy denoting 1 when destination *i* and origin county *j* share a common border.

The dummy variables *RTA, lang* and *Border* are not converted into natural logarithm (*ln*). Based on previous studies and consumer demand theory, the expected signs for β_1, β_2, β_5, β_7, β_8, β_9, β_{12}, β_{13}, $\beta_{14} > 0$ and β_{10}, β_{11}, $\beta 3$, $\beta 4$ <0 while β_6 can assume either of the sign.

3.2 Variable Description and Data

A description of the data and corresponding data sources are all provided on Appendix 1.

**** Appendix about here ****

Personal Income

The income that people possess is one of the most important determinants of their ability to purchase a product or service. Personal income influences the tourists' decision and ability to travel to another country and normally increases when economy improves. Tourism related studies normally use the origin country income or private consumption as a proxy for personal income (Song, et al., 2010; Chasapopoulos, et al., 2014). In the study, we use origin country's GDP per capita in constant 2010 US dollars as a measure of tourists' personal income and data was obtained from World Bank's World Development Indicators.

Habit Persistence

The study includes lagged tourist arrivals variable to capture the tourist expectations and habit persistence. Studies have documented that once a tourist has visited a certain destination and have liked it, there is a likelihood of them visiting the same destination again. There is, therefore, less uncertainty for the tourist if they are revisiting a destination where they had quality experience when compared to a destination where they have never visited before (Song, et al., 2010; Lorde et al., 2016; Porto, et al., 2018). The lagged tourist arrivals variable is expected to have a positive influence on tourism demand.

Relative Price

The cost of tourism goods and services vary between tourists destination choices due to variations in price levels and exchange rates. This makes the cost of living in the tourist's destination country as an important factor that influences their choice. While a tourist may have a strong desire to visit a certain destination, if they feel that the associated cost to that destination is prohibitive, they might substitute a low-cost destination or spend less if they manage to get to their choice destination (Tisdell, 2013). As in previous literature, the study uses relative price to calculate the price differences between the tourists' country of origin and destination country using the following equation:

$$RP_{it} = \frac{CPI_{jt}/EX_{jt}}{CPI_{it}/EX_{it}} \tag{4}$$

where CPI_{jt} and CPI_{it} are consumer price indices for the origin country *i* and destination country *j*, respectively. In addition, EX_{jt} and EX_{it} represent the annual average market rates against the US dollar for origin country *i* and destination country *j* at time *t*, respectively. The relative price reflects tourism costs in the destination country relative to its cost in the tourist's origin country that makes intra-Africa tourism to be considered as a substitute for Africa-outbound tourism (Song, et al., 2010).

Relative Exchange Rate

Just as in the relative price, tourists prefer to visit destination that will offer the best value for their money. One of the challenges to travel in SSA countries is that most of the region's currently do not trade openly among each other. However, all currencies in the region are traded against the US dollar. The relative exchange rate is a price related variable and in this study is approximated as the ratio between the destination countries' nominal exchange rate to the US dollar, EX_{jt}, and origin countries' nominal exchange rate to the US dollar, EX_{it}:

$$RER_{ijt} = \frac{EX_{jt}}{EX_{it}} \tag{5}$$

A higher *RER* is an indication that origin country's currency is stronger relative to the destination country's currency and would therefore give more value to the tourist that would encourage more tourists to travel to destination *j*, increasing the overall tourist demand while the reverse holds true. The variable for *RER* is expected to have a positive sign assuming that most tourists exhibit rational demand behavior (Martins et al., 2017).

Transportation Costs

One of the most important determinants of whether or not to someone will visit another country is the transportation cost. Intra-Africa travel involves travel through ground (private car, bus, rail, etc.) transportation or through the air. Due to non-availability of reliable data for both ground and airfare cost particularly for SSA countries this study uses geographical distance between the capital cities of tourist origin country and that of the destination country as a proxy for transportation cost. As noted by Behrens and Brown (2018) distance is time invariant and the study uses oil prices multiplied by distance to create a time varying variable for transportation cost. This is consistent with other studies that have suggested the use of oil prices as a proxy for transport cost per distance as no country can individually influence oil prices (Storeygard, 2016; Lorde et al (2016). The prices for oil in dollars was obtained from U.S. Energy information Administration (eia.gov, 2020) while data for distance between the two countries capitals were obtained from Geobytes (Geobytes.com, 2020).

Political Stability

Another important factor that influences tourism across the borders is perceived political stability and safety. If a destination country has incidences of political instability and unrest, fewer tourists want to visit the place. Indeed, a country's level of political instability has a worse effect on its tourism sector than is caused by a one-off terrorist attack (Saha and Yap, 2014). Thus, sustained political volatility especially when coped with incidences of terrorism causes huge dent to a country's tourism industry.

The study the World Bank's governance index[1] of Political Stability and Absence of Violence to control is used to quantify the impact of political stability on intra-SSA countries tourism. The governance indicator takes into account the likelihood of a government to be destabilized or overthrown through unconstitutional or violent means such as domestic violence and terrorism. The governance index ranges from -2.5 that depict weak governance or political instability to 2.5, which signifies strong governance or political stability. The governance indicator variable that is used in the study is scaled from 1 to 6 with 1 depicting political instability and 6 depicting strong political stability. As in previous studies, it is expected that the governance index and intra-Africa tourism will have a positive relationship (Naude and Saayman, 2005; Saha and Yap, 2014).

ICT Development

In the recent past, Information and Communication Technology (ICT) has changed the way sectors of the economy operate in regards to performance enhancement, speed of operation and cost reduction. Studies have shown that ICT is now the biggest driver of the tourism sectors in terms of the promotion of local tourist attractions and services. Because of this, many countries have invested in ICT, particularly the internet, in their drive to develop their tourism sector

[1] The index is an average of several other indexes from the Economist Intelligence Unit, the World Economic Forum, and the Political Risk Services, among others.

(Wagaw and Mulugeta, 2018). As noted by Ramos and Rodrigues (2013), it is now cheaper for countries to make available online their tourist destination profiles and this has allowed cheap, fast and topical research that has enabled easy sharing, communication, and booking of tourist related services and products. The development and use of ICT has, therefore, positively impacted tourist's destination choice, their satisfaction, purchase decision behavior and the prospects of recurrent visits, all which have enhanced tourism demand and affirmed the internet as one of its core determinants. This study argues that those SSA countries who have invested more in ICT will attract more intra-SSA tourism when compared to those SSA countries that have low ICT investments. In the study two variables of mobile phone subscribers (MP_{jt}) per thousand people and internet users as a percentage of the population (IU_{jt}) are used to proxy for ICT.

Urbanization

Studies have shown that urbanization can influences tourism development. However, the debate is not settled between those that urge that the level of urbanization impacts positively on tourism and those argue against (Naudé and Saayman, 2005; Liu, et al., 2019). In the study, we use the rate of urbanization as a proxy of how developed a SSA country is as majority of SSA countries productivity and economic activities are concentrated their urban areas (Saghir and Santoro, 2018). The study posits that SSA countries that are more urbanized will attract more intra-African tourism when compared to the other SSA countries.

Linder Hypothesis

Linder Hypothesis is an economic hypothesis that posits countries with related per capita income will tend to consume similar quality goods and services that will lead to them to trade more with one other. Thus, Linder's hypothesis anticipates more trade among developing countries, or among developed countries, respectively, than trade between developing and developed countries (Lorde et al., 2016). The Hypothesis has been incorporated in empirical research that focuses on international trade with the empirical tests time and mostly build on gravity models and has been validated when both manufacturing and service products are considered (Hallak, 2010; Lorde et al., 2016).

Studies that have incorporated Linder's hypothesis in their tourist demand models have, however, had mixed results. Some empirical studies have obtained evidence that support Linder hypothesis in terms of its explaining bilateral flow of tourism and those who fail to get similar results (Keum, 2010, Lorde et al., 2016). This study predicts that Linder hypothesis variable will be negative as the more income per capita is similar between pairs of SSA countries; the more tourists are expected to visit among each other.

In the study, Linder's hypothesis is constructed using the absolute value of the differences between the origin and destinations countries' GDP per capita, LH_{1t}, as in McPherson et al. (2001) and in absolute values of the difference between origin and destinations countries' GDP per capita as a share of their combined GDP per capital's, LH_{2t}, as in Choi (2002) as described in equation 6 and 7, respectively.

$$LH_{1t} = |y_{it} - y_{jt}| \tag{6}$$

$$LH_{2t} = \frac{|y_{it} - y_{jt}|}{y_{it} + y_{jt}} \tag{7}$$

Common Language

The tourists' proficiency with language (s) which is spoken in a destination country is an important determinant when they make international travel decisions (Basala and Klenosky, 2001). As noted by Okafor et al. (2018), irrespective of how developed the tourist's country of origin might be, common language remains as one of the import important influencers when tourists are deciding their destination locations. This study, therefore, argues that there will be more intra-SSA tourism among countries who share a common language.

RTA

A country enters into a regional trade agreement (RTA_{ij}) to promote trade with other members within the block. Studies have shown that policies that promote trade (movement of goods and services) also enhance inter-regional travel and, therefore, facilitate tourism among countries within the block ((Viljoen, et al., 2019b). In the study, a dummy variable RTA_{ij} is used to capture if countries belong to the same regional trade block and takes a value of one (1) if country *i* and *j* belong to the same regional trade block and zero (0) if otherwise. The study considers the three main RTAs in SSA comprising of Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC), and Economic Community of West African States (ECOWAS).

Border

Shared border ($Bord_{ij}$) is a transport related variable and as is the case with TC_{ij}, it is expected that citizens from countries who are neighbors will visit each other more as a result of shared culture, common language, and low transport costs, among other things. In the study, a dummy variable takes a value of one (1) when the tourist originating and destination country share a common border and zero (0) if they do not.

3.3 Methodology

The study considers a sample of 46 bilateral countries that account for most of SSA countries. The period considered for the empirical analysis ranges from 1995 to 2018 (24 Years). The period was based on the availability of data. There are challenges in obtaining consistent data for SSA countries and our data consists of unbalanced panel of 800 pairs. Over 10,000 observations are considered for the analysis using the panel data framework. Table 1 shows descriptive statistics of the dataset and the sources of data.

**** Table 1 about here ****

The purpose of the present paper is to examine the determinants of number of African tourists visiting the Sub-Saharan African countries. The study employs a gravity model estimates bilateral tourism flows among SSA countries using panel data methodology. Some of the advantages associated with using panel data as compared to cross-section analysis include the ability of panel data to capture the relevant association among the variables under study over time. In addition, as panel data methodology combines variation across individual units over time and, therefore, it generates more variability that alleviates against issues related to multi-collinearity. Perhaps the biggest advantage of using panel data technique is its ability to control for individual-specific effects or unobserved variables. When there are omitted variables, which might be correlated with explanatory variables included in the model specifications, standard methods estimates are biased (Kennedy, 2008).

The present study begins with gravity model estimations and moves onto OLS as benchmark then continues with fixed and random effect panel models. Finally, we apply Generalized Method of Moments (GMM) models. One of the main reasons utilizing GMM in the present study is it is a dynamic panel data estimator. In addition, it is widely known that GMM controls for endogeneity of the lagged dependent variable, omitted variables bias, unobserved panel heterogeneity, and measurement errors. In the study, we do not apply difference GMM technique since the dataset is unbalanced. However, we use dynamic one and two-step system GMM techniques. System GMM[2] corrects endogeneity first by improving efficiency with more instruments and second by transforming the introduced instruments to have them uncorrelated with the fixed effects. System GMM has equation system in the original and transformed form.

4.0 Empirical Results

Table 2 displays gravity models as comparison with the employed models. We tried 4 different models. As in GMM models, all models have 9504 observations and 782 number of groups. Except the first model, all other models have country effect. Estimated R-squared in all models are almost 47 percent. In all four models of the included variables are significant with correct signs.

**** Table 2 about here ****

Table 3 displays first two models; OLS and fixed models. OLS presents a benchmark for the other models. In the pooled OLS model 1, there are 10698 observations with an R-Squared of 0.48, and implication that 48% of the variation in the dependent variable is explained by the independent variables. GDP per capita is positive as expected and a one percent increase in per capita GDP should yield an increase number of tourists travel in Sub-Saharan Africa on average by 0.19 percent, ceteris paribus. The estimated coefficient for GDP per capita is also statistically

[2] Arellano and Bover (1995) and Blundell and Bond (1998)

significant at one percent level of significance. The remaining variables included pooled OLS model are all statistically significant at one percent level except mobile usage. However, Linder, political stability, urban percentage, and life expectancy variables are expected to have positive signs but have negative signs.

**** Table 3 about here ****

Country-fixed effect panel model is the second model in table 3 although the year effect is not included in this model. There are 803 number of groups for the same number of observations as in the OLS model. The estimated R-squared is almost 25 percent. Although most of the estimated coefficients have the correct expected signs, this model fails to explain much of the variations due to the failure of estimated coefficients to be statistically significant.

**** Table 4 about here ****

Table 4 shows the third and fourth models for random effect panel models. The only difference between the third and the fourth model is the employed year effect. Results do not change much as both models perform almost the similar. Most of the included variables are statistically significant and have the correct expected signs.

**** Table 5 about here ****

To overcome possible omitted-variable bias, unobserved panel heterogeneity, or measurement error problems, the study conducts GMM estimations. As mentioned before, since the study has an unbalanced dataset, difference GMM technique is not employed. Table 5 displays dynamic one-step GMM with and without year effect. One of the important differences in these models compared to the other estimated models is inclusion of the lagged dependent variable *lntourists* as an explanatory variable. Both models 5 and 6 in Table 3 have 9504 observations and 782 number of groups. Model 5 uses 29 instruments with no year effect. Arellano-Bond test for AR(2) has a *p*-value of 0.32 which we fail to reject H-null of no second-order serial correlation which implies that the error term is not correlated and the moment conditions are correctly specified. However, the Hansen test for overall validity of instruments is rejected at 1 percent level of significance. The choice of instruments in this model therefore is not supported. One of the significant variables in the model is the lagged number of tourists, which has a positive effect on the incoming tourists indicating that previous year' tourists a positive effect of on current year tourist arrivals. GDP per capita is positive and statistically significant at the 10 percent level. Exchange rate and relative price levels are also significant at the 10 percent level and have negative effect on the dependent variable as expected. Most of the remaining control variables are not significant in the model 5.

In the next column in Table 5 model 6 has year effect included and uses 51 instruments. The AR (2) is 0.37, which indicates that the error term is not correlated. In this model Hansen test is 0.12, which also fails to reject the null and does support the choice of instruments. Lagged number of tourists, relative prices, border, and language coefficients are all statistically significant with the correct expected signs. However, although transportation cost and internet usage are significant, they do not have the expected signs.

**** Table 6 about here ****

Table 6 shows the dynamic two-step GMM results. We use two-step system GMM, which is an augmented two-step difference GMM and expected to be more robust to one-step system GMM according to Hwang and Sun (2018). In addition, Roodman (2009) indicates that two-step GMM is more efficient and robust to heteroscedasticity and autocorrelation. As in table 4 models, models 7 and 8 have 9504 observations and 782 number of groups. Model 7 has no year effect included and uses 224 instruments. Arellano-Bond test for AR (2) has p-value of 0.07 and we fail to reject H-null of no second-order serial correlation at 5 percent level of significance. We, therefore, conclude that the moment conditions are correctly specified, as the error term is not correlated. Model 7 fails Hansen test for overall validity of instruments and the choice of instruments is not supported. Most of the employed variables are significant and except the transportation cost all the variables have correct signs.

The final GMM model in table 6 is similar to model 8 but with the year effect. This model too has the same number of observations, groups, and instruments as model 7. Model 8 passes AR (2) test also at five percent level. However, the model fails Hansen test and no support for choice of instruments. Again, most of the variables are significant with correct signs except the language dummy and mobile usage. We may argue that while common language may increase relations and trade between countries, visitors may prefer to experience different cultures and languages. Compared to previous models, models 7 and 8 in table 5 outperform the other models.

5.0 Conclusion

The present paper examines factors that influence the demand for intra-SSA countries tourism. This study draws attentions to relatively smaller but developing tourism market in the world. The study is different from earlier works since we employ a large bilateral dataset for sub-Saharan African region for over a period of 24 years. We empirically test common and new variables to study determinants of African tourist demand. After carrying out dynamic system GMM estimations, the study concludes that common macroeconomic determinants have significant effect on intra-SSA countries visitors. GDP per capita, exchange rates, relative prices, and transportation costs are crucial when tourists make travel decisions within the region. Globalization, border, regional trade agreements are relevant and have positive effect in explaining tourism in SSA. In addition, technology development including the internet development are important determinants when tourists choose regional travel destinations. Our results also suggest that intra-SSA tourists prefer to visit less urbanized regions.

Our contribution to literature is to draw attention to growing tourism market of SSA region and to understand some of the factors that influence the decisions of tourists while choosing destinations for their travel within SSA region. We have enough evidence to conclude that the reasons for destinations choice within SSA are not any different from for those who chose international tourism destinations.

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Table 1. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Ob se rvations
lnTA	6.6484	2.8549	0	14.6080	N = 10739
LnY	7.1092	1.0737	4.7680	10.2627	N = 10739
lnRER	-0.3368	3.2314	-22.3075	21.1138	N = 10739
lnRP	0.3403	3.1092	-14.3984	14.9026	N = 10739
lnTC	7.9085	1.0869	1.1257	9.9624	N = 10739
lnPS	1.1064	0.3627	-6.9078	1.5644	N = 10738
lnIU	1.0172	2.4389	-9.2103	4.1109	N = 10738
lnMP	2.5873	2.7367	-8.5172	5.2166	N = 10738
lnUR	3.6047	0.3969	2.5533	4.2297	N = 10738
$lnLH_1$	7.1432	1.5912	-2.4613	10.2440	N = 10739
$ln\ LH_2$	-1.0172	0.9602	-9.6519	-0.0268	N = 10739
lnglobal	3.8848	0.1995	3.1095	4.2858	N = 10739
lnlife	4.0538	0.1433	3.6131	4.3123	N = 10699
lnto	4.2160	0.5012	2.6581	5.4162	N = 10739
Lang	0.5325	0.4990	0	1	N = 10739
RTA	0.5989	0.4901	0	1	N = 10739
Border	0.1542	0.3612	0	1	N = 10739

Table 2. Gravity model estimations

VARIABLES	(1)	(2)	(3)	(4)
L.lntourists	0.554***	0.553***	0.543***	0.535***
	(0.0214)	(0.0216)	(0.0221)	(0.0235)
L.lngdp_pc	0.418***	0.436***	0.296***	0.242***
	(0.0638)	(0.0656)	(0.0655)	(0.0641)
L.lntc	0.192***	0.188***	0.102***	0.0644***
	(0.0185)	(0.0184)	(0.0185)	(0.0178)
lnlinder			0.0388*	0.0383*
			(0.0224)	(0.0227)
L.lnglobal			0.858***	0.733***
			(0.140)	(0.134)
lnrer				0.00836**
				(0.00328)
L.lnps				0.0803**
				(0.0344)
L.lnup				0.642***
				(0.150)
L.lnrer		0.00838**		
		(0.00348)		
Constant	-1.401***	-1.489***	-3.369***	-4.538***
	(0.361)	(0.369)	(0.470)	(0.573)
Observations	9,545	9,545	9,545	9,545
R-squared	0.467	0.467	0.470	0.473
Number of groups	782	782	782	782
Country FE		Yes	Yes	Yes

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 3

VARIABLES	(1) OLS	(2) Fixed Effects
lngdp_pc	0.187***	0.462***
	(0.0226)	(0.121)
lnlinder2	-0.138***	0.0592
	(0.0221)	(0.0382)
lnrer	-0.0732***	0.00783
	(0.0175)	(0.0157)
lnrp	-0.125***	-0.0103
	(0.0189)	(0.0279)
lntc	-0.763***	0.0276
	(0.0311)	(0.0299)
lnps	-0.835***	0.0471
	(0.103)	(0.0514)
lniu	0.255***	0.0325**
	(0.0230)	(0.0155)
lnmu	0.00212	0.0158
	(0.0193)	(0.0114)
lnup	-1.274***	0.526
	(0.0591)	(0.391)
lnglobal	5.773***	1.487***
	(0.146)	(0.270)
lnlife	-7.573***	1.423***
	(0.235)	(0.341)
border	2.296***	
	(0.0723)	
rta	0.387***	
	(0.0453)	
language	0.471***	
	(0.0404)	
Constant	23.91***	-10.35***
	(1.082)	(1.397)
Observations	10,698	10,698
R-squared	0.481	0.246
Number of Groups		803
Country FE	NO	YES
Year FE	NO	NO

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4

VARIABLES	(3) Random Effects	(4) Random Effects
lngdp_pc	0.271***	0.112
	(0.0764)	(0.0721)
lnlinder2	0.0301	0.0400
	(0.0351)	(0.0356)
lnrer	-0.00243	-0.00853
	(0.0160)	(0.0165)
lnrp	-0.0272	-0.0355
	(0.0270)	(0.0275)
lntc	-0.0330	-1.185***
	(0.0288)	(0.169)
lnps	-0.0123	0.0154
	(0.0504)	(0.0477)
lniu	0.0534***	0.0823***
	(0.0146)	(0.0224)
lnmu	0.0288**	0.0444***
	(0.0112)	(0.0132)
lnup	-0.102	-0.446**
	(0.219)	(0.218)
lnglobal	1.946***	1.324***
	(0.256)	(0.272)
lnlife	1.156***	-0.784*
	(0.293)	(0.413)
border	3.832***	2.487***
	(0.243)	(0.300)
rta	0.730***	0.167
	(0.173)	(0.181)
language	0.801***	0.820***
	(0.170)	(0.154)
Constant	-8.786***	12.26***
	(1.206)	(2.368)
Observations	10,698	10,698
R-squared		
Number of Groups	803	803
Country FE	NO	NO
Year FE		YES

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5

VARIABLES	(5) Dynamic one-step GMM	(6) Dynamic one-step GMM
L.lntourists	0.449***	0.390***
	(0.103)	(0.0958)
lngdp_pc	0.787*	0.120
	(0.406)	(0.248)
lnlinder2	0.267	0.458
	(0.399)	(0.283)
lnrer	-0.306*	-0.112
	(0.159)	(0.0959)
lnrp	-0.486*	-0.238*
	(0.253)	(0.137)
lntc	-0.127	1.946*
	(0.0816)	(1.170)
lnps	-0.958***	-1.720***
	(0.346)	(0.645)
lniu	-0.00926	-0.899***
	(0.0907)	(0.289)
lnmu	0.00958	-0.368
	(0.0966)	(0.269)
lnglobal	3.114	3.240
	(2.117)	(3.031)
lnlife	-1.212	1.151
	(1.562)	(4.010)
border	11.82	11.80**
	(7.853)	(5.896)
rta	-6.267	0.301
	(7.392)	(1.903)
language	-5.200	4.166**
	(5.345)	(1.671)
Constant	-1.892	-34.81
	(6.519)	(24.63)
Observations	9,504	9,504
Number of Groups	782	782
Year Effect	NO	YES
Number of instruments	29	51
Arellano-Bond test for AR(2)	0.315	0.365
Hansen test	0.000	0.116

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6

VARIABLES	(7) Dynamic Two-step GMM	(8) Dynamic Two-step GMM
L.lntourists	0.768***	0.711***
	(0.0106)	(0.0145)
lngdp_pc	0.0964***	0.0849*
	(0.0362)	(0.0502)
lnlinder2	0.0345**	0.0119
	(0.0167)	(0.0209)
lnrer	-0.00368	-0.00922
	(0.00631)	(0.00701)
lnrp	-0.0176	-0.0299**
	(0.0110)	(0.0120)
lntc	-0.0361***	-0.701***
	(0.0123)	(0.1000)
lnps	-0.0709	0.0529
	(0.0639)	(0.0818)
lniu	0.0346***	0.0628***
	(0.0107)	(0.0207)
lnmu	-0.0160*	-0.0568***
	(0.00854)	(0.0113)
lnup	-0.395***	-0.445***
	(0.0603)	(0.0805)
lnglobal	1.372***	1.576***
	(0.118)	(0.148)
lnlife	-0.821***	-1.638***
	(0.128)	(0.264)
border	1.806***	0.627***
	(0.165)	(0.241)
rta	0.386***	0.526***
	(0.0934)	(0.117)
language	-0.272***	-0.306***
	(0.0883)	(0.113)
Constant	0.395	0
	(0.562)	(0)
Observations	9,504	9,504
Number of Groups	782	782
Year Effect	NO	YES
Number of instruments	224	224
Arellano-Bond test for AR(2)	0.071	0.074
Hansen test	0.000	0.000

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

APPENDIX. VARIABLE DESCRIPTION AND DATA SOURCES

Variable	Definition	Source	Sign
Tourist Arrivals (*TA*)	Tourist arrivals to destination country	WTO	
Income per capita (*y*)	Income per capita of tourist origin country	WDI	+
Transportation Cost (*TC*)	Distance between capitals cities multiplied by average annual fuel prices	Calculated geobytes.com, eia.gov data	-
Relative price (*RP*)	Relative price between destination and tourist origin county	Calculated USDA data	+
Real exchange rate (*RER*)	Exchange rate between destination and tourist origin county in USD	Calculated USDA data	+
Urbanization Rate (*UR*)	Percentage of people living in urban areas as defined by national statistical office	WDI	+
Mobile phones (*MP*)	Mobile phone subscribers per thousand people	WDI	+
Internet users (*IU*)	Individual using internet as a percentage of the population	WDI	
Political Stability (*PS*)	Index of political instability and/or politically-motivated violence, including terrorism	WGI	+
Linder's hypothesis (LH_1)	Differences between the origin and destinations countries' GDP	Calculated WDI data	-
Linder's hypothesis (LH_2)	Differences between the origin and destinations countries' GDP/combined GDP's	Calculated WDI data	-
Regional Trade Block (*RTA*)	Countries are members of common trading block	FI&T	+
Language(*Lang*)	Share common Language	Author	+
Common Border (*Border*)	Share common border	Author	+

Notes: WDI: World development indicators published by the World Bank; WTO: World Tourism Organization (2020) Database; USDA: USDA Economic Research Service International Macroeconomic Data; WGI: World governance indicators published by the World Bank (2020) Database.