A Critical Evaluation of Tanzania's Tourism Sector

Evelyn F. Wamboye

1 Introduction

Tanzania is endowed with rich and diverse natural resources (particularly wildlife, forests, mountains, and the rift valley) that form the mainstay of the country's tourism industry. Almost a third of Tanzania's land area is under government protection and is reserved for the purpose of either forest reserve, national park, conservation area, or game reserve. In total, Tanzania has 16 national and 2 marine parks, 28 game (including marine) reserves, 44 game-controlled areas, multiple forest reserves, and one conservation area; which host the world's renowned biodiversity, wildlife, and unique ecosystems. Thus, it is not surprising that the tourism sector is one of Tanzania's three growth sectors, and the second largest foreign exchange earner after agriculture. For example, in 2016 alone, it generated US$2.1 billion in revenues (4.7% of total gross domestic product [GDP]), employed approximately 3.9% of the country's total labor force (equivalent to 470,500 jobs); and contributed about 21.4 and 8.7% of total export earnings (US$2446.6 million) and investment (US$1.2 billion), respectively (World Travel and Tourism Council [WTTC]—Tanzania 2017). These economic benefits are amplified when linkages with allied sectors such as hospitality, manufacture

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of arts and crafts, transportation, and logistics are taken into consideration. For instance, the total contribution of the sector in 2016 to Tanzania's GDP and employment in percentage terms, more than tripled that of direct contribution to roughly 13.5 and 11.6%, respectively (WTTC—Tanzania 2017).

Despite the aforementioned attractions and the increasing importance of tourism in the Tanzanian economy, tourism demand (both domestic and international) for Tanzania lags that of other African countries like Egypt, Morocco, Tunisia, and South Africa; and the sector's total contribution to GDP growth also lags that of Uganda, Botswana, Senegal, Namibia, and Kenya (WTTC—Tanzania 2017; Naudé and Saayman 2005). Moreover, the Tanzanian tourism products are becoming increasingly noncompetitive (even though its wildlife resources is considered the finest in the world (Tourism Statistical Bulletin 2015; World Economic Forum—Travel and Tourism Competitiveness Report [WEF-TTCR] 2017)) partly due to underdevelopment of the sector (in comparison to North African countries, South Africa, Botswana, and Kenya). Therefore, there is an urgent need for Tanzania to offer demand-driven tourism products that encourage local tourism and ensure international tourists come to Tanzania and stay longer. This could be achieved by first investigating and understanding factors that influence domestic and international tourists' decision to visit Tanzania's attractions, and second, use the research findings to inform policies that guarantee a thriving and sustainable tourism sector.

There are several reasons why this chapter focuses on tourism in Tanzania. First as previously mentioned, tourism is the biggest foreign exchange earner for the country, yet, its products are relatively noncompetitive; and thus, it befits to empirically investigate factors that determine tourism demand and use the findings to inform policies that could help stimulate the sector. Second, given the few opportunities that Tanzania has for diversifying its export earnings away from the primary sector, and the potential that the tourism sector has in contributing to economic growth and employment, this sector emerges as a viable option for export diversification, employment creation and ultimately, contribute to economic growth and development. Third, Tanzania like many other African economies has a huge informal sector that forms the economic backbone of many households, and therefore, the trickle-down effects through horizontal linkages could yield greater indirect benefits to the informal sector than manufactures or agriculture sectors. Last but not least, the government of Tanzania has already identified tourism industry as a robust source of growth in its second 5-year development plan (Ministry of Natural Resources and Tourism [MNRT] report 2017). This is

based on the fact that annual tourist numbers have been increasing, doubling from about 500,000 in 2000 to over 1 million visitors in 2013. Consequently, the findings in this study will provide some crucial information that could help enhance the government's development plan.

A few studies have attempted to investigate the importance of tourism in the economy. However, most have focused on developed countries (Lim 1997a, b; 1999). Studies on African countries are more recent and very few compared to those for developed and other developing nations (Seetanah et al. 2010; Kweka et al. 2003; Naudé and Saayman 2005; Saayman and Saayman 2008, 2015; Saayman and Cortes-Jimenez 2013; Saayman etal. 2012; Fayissa et al. 2008; Muchapondwa and Stage 2013). In the case of Tanzania, we could only find 3 studies (Luvanga and Shitundu 2003; Kweka et al. 2003; Odhiambo 2011). Furthermore, these studies evaluate the impact of tourism sector on poverty alleviation (Luvanga and Shitundu 2003), economic potential of tourism (Kweka et al. 2003), and tourism impact on economic growth (Odhiambo 2011) rather than the factors that determine tourism demand. Thus, not only is this research timely (falling within the scope of the increasing importance of services sector in economic development of African economies), but also, relevant as Tanzania has recently placed tourism industry at the center of its development plan.

Tourism sector in Africa is undoubtedly under-developed. The essential infrastructure is either absent or below-par, and the business model required to drive the sector is missing. Christie and Crompton (2001) single out lack of price and quality competitiveness as the greatest obstacle to Africa's tourism sector's growth. They point out that a seamless tourism industry structure and operation that consist of tour operators, travel agents, and transport services (that sell integrated tour 'packages' to tourists) is not well developed in African countries. What is even more alarming is the dismissal amount of research that has been done on these issues, and the African tourism industry in general. As alluded above, more than 90% of the available research is on developed countries; and the little that is available is largely on South Africa.

It is for the above-mentioned reasons that this study attempts to contribute to the tourism demand literature (especially in Africa), and specifically to the debate on how to expand and increase the efficiency of the tourism sector in Tanzania by seeking answers to the following questions:

I. What are the recent trends in the flow of tourists in Tanzania?
II. Where are these tourists coming from, and what is the most commonly used mode of transportation?

III. What is the contribution of the tourism sector to Tanzania's gross domestic product and employment?
IV. What are the key factors that influence international tourists to visit Tanzania?
V. What policy implications are arising from the empirical analysis, and how do these policies fit in the current national policies related to the key determinants of international tourism demand?

The rest of the chapter is organized as follows; the next section provides trends and economic impact of the tourism sector in Tanzania. Among other things, it summarizes the sector's contribution to gross domestic product and employment. This is followed by a review of relevant literature, and the methodology. The last two sections provide discussions of the empirical results and policy implications, and study limitations, respectively.

2 Trends and Economic Impact of Tourism Sector in Tanzania

The United Nations World Tourism Organization (UNWTO) recognizes tourism as one of the largest and fastest growing industries in the world. The growth of tourism industry is demonstrated by the ever-increasing number of destinations and tourists arriving at those destinations, and investments in tourism development; turning modern tourism into a key driver for socio-economic progress through job creation and enterprises, infrastructure development and, foreign currency earned through exports (UNWTO 2016). For example, in 2016 alone, travel and tourism directly contributed US$2306 billion (3.1% of total GDP) to the global economy and roughly 109 million jobs (3.6% of total employment) worldwide (WTTC 2017). Both GDP and employment contributions are expected to increase by 4.0 and 2.0% per year over the next ten years. Indirect effects are even larger, where they amounted to US$3639 billion in contributions to the global economy and supported approximately 125 million jobs. This was equal to 7.1% of the World's GDP, and roughly 6% of all jobs created in 2016 (see Fig. 1).

The Global Impact of Travel and Tourism in the Economy

Travel and tourism's impact includes people traveling for both leisure and business, domestically and internationally. In 2016, 76.8% of all travel spend was as a result of leisure travel, compared to 23.2% for business travel

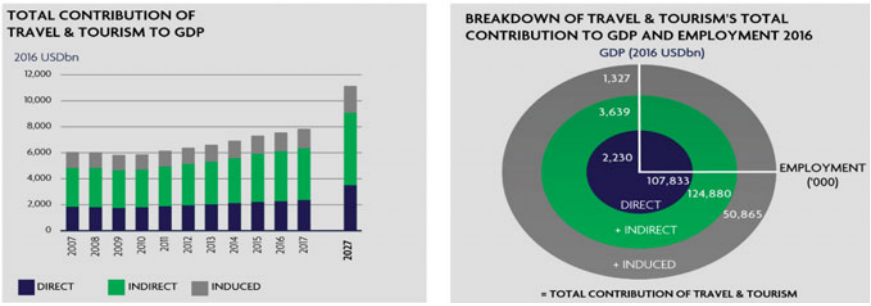


Fig. 1 Global contributions of travel and tourism to GDP and employment (*Note* All values are in constant 2016 prices & exchange rates *Source* Travel and Tourism Economic Impact [WTTC 2017])

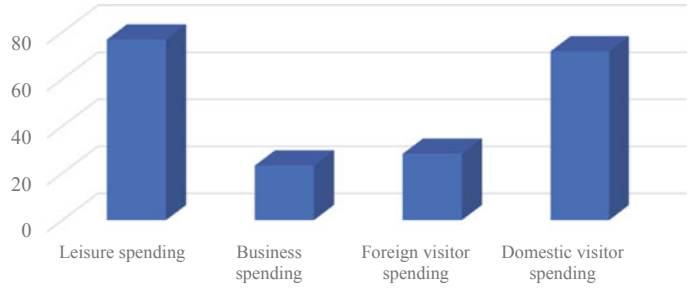


Fig. 2 Global spending by type of activity and tourist (*Data source* Travel and Tourism Economic Impact [WTTC 2017])

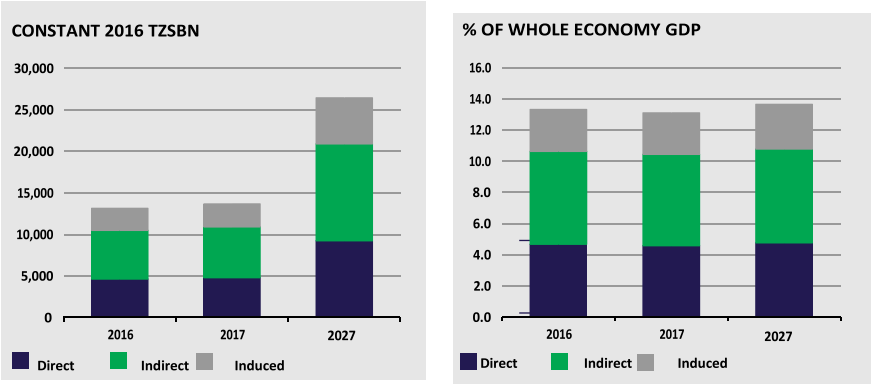
(see Fig. 2). Moreover, domestic tourism generated 72% of the sector's contribution to GDP, thus making a significantly larger contribution than international tourism, which contributed only 28% of the sector's share in global GDP.

The Impact of Travel and Tourism in Tanzanian Economy

In developing countries, tourism plays an important role in stimulating investments in new infrastructure, as well as generating government revenues through various taxes and fees. In Africa, tourism has been identified as a key sector for the achievement of shared economic growth and poverty alleviation (Mitchell and Ashely 2006; World Bank 2006). In the case of Tanzania, the most recent data reported in World Travel and Tourism (2017) shows that the direct contributions of the tourism industry to Tanzania's total GDP and employment was 4.7% (US$2.1 billion) and 3.9% (470,500 jobs), respectively. The total contributions are even greater when indirect effects are taken

into consideration. For example, in 2016, the sector's share in the country's GDP was 13.3% (US$5.9 billion), and 11.6% (1,389,000 jobs) of all jobs created. The outlook is good as well, since the sector's contribution in total GDP and employment is projected to increase by 6.8 and 3.8% per annum until 2027, respectively (see Figs. 3 and 4).

The increasing number of tourists traveling to Tanzania and the revenues that result from their spending, explain the observed contribution of the tourism sector to GDP and employment. Specifically, both the number of arrivals and revenues have been increasing steadily since 2011, albeit the revenues lagging the number of visitors (see Fig. 5).



[1]All values are in constant 2016 prices & exchange rates

Fig. 3 Total contribution of travel and tourism to Tanzania's GDP (*Source* Travel and Tourism Economic Impact [WTTC-Tanzania 2017])

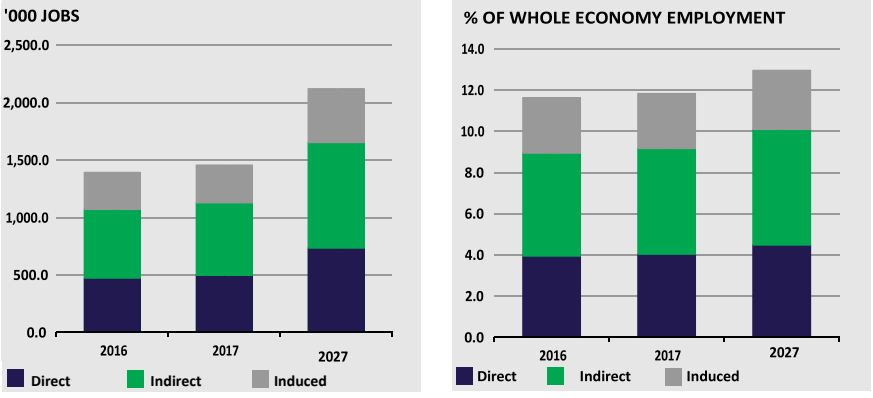


Fig. 4 Total contribution of travel and tourism to Tanzania's employment (*Source* Travel and Tourism Economic Impact [WTTC-Tanzania 2017])

In terms of the salient characteristics of these tourists, evidence in Fig. 6 shows that most of them arrive in the second half of the year, between July and December, with the peak being in August. Furthermore, majority of them tend to be from Africa (44.3% in 2016; compared to 31.8% for Europe and 9.2% for Americas), particularly, East Africa (Tourism Statistical Bulletin 2016). They travel for leisure and holiday (73%, 2016) with very few traveling to visit friends and relatives (11%). Business travelers account for a very

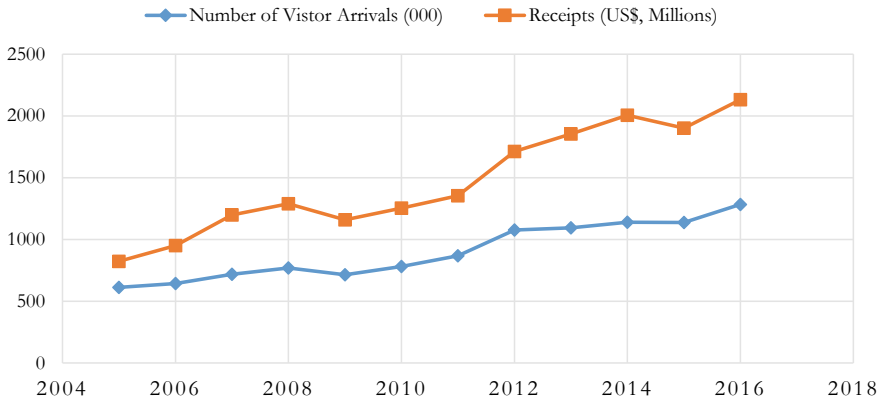
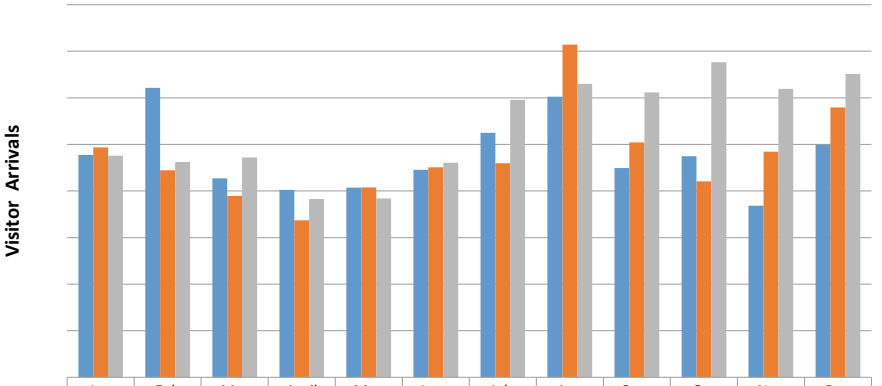


Fig. 5 International visitor arrivals and receipts, 2005–2016 (*Data source* Tourism Statistical Bulletin 2017)



	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2014	95,486	1,24,264	85,484	80,519	81,421	89,093	1,04,955	1,20,536	89,856	94,981	73,628	99,933
2015	98,710	88,939	77,841	67,447	81,538	90,236	91,896	1,42,885	1,00,829	84,121	96,873	1,15,865
2016	95,127	92,475	94,345	76,558	76,770	92,077	1,19,140	1,26,054	1,22,350	1,35,314	1,23,895	1,30,174

Fig. 6 Monthly trends of international visitor arrivals in Tanzania, 2014–2016 (*Source* Chat 2, MNRT Tourism Statistical Bulletin 2016)

small proportion of all the tourists (only 5% in 2016). Over half of these tourists travel by air, followed by road (see Fig. 7).

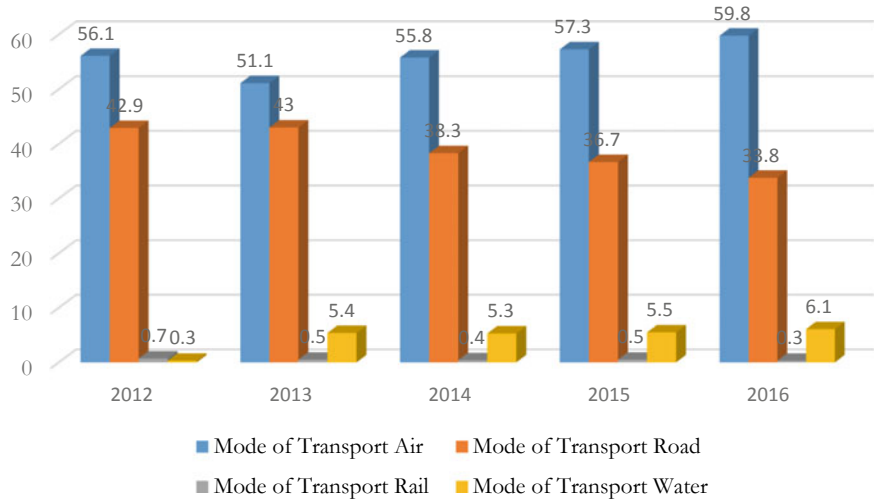


Fig. 7 International visitor arrivals by mode of transportation (in percent), 2012–2016 (*Data source* MNRT Tourism Statistical Bulletin 2017)

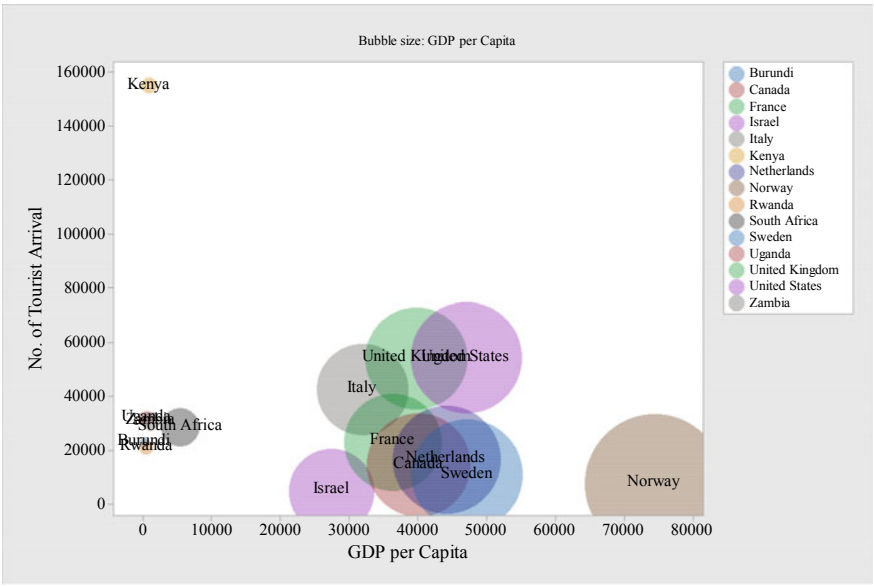


Fig. 8 Bubble plot of average no. of tourist arrival versus GDP per capita, 2000–2016 (*Data source* Author's calculation)

3 Literature Review

Theoretical Literature

The gravity model holds that bilateral exchanges between countries/regions i and j are positively related to the countries'/regions' economic masses, and negatively related to the distance between them. This model has been used to explain international trade flows (including trade in services), investment, and migration (Head and Ries 2008; Bergstrand and Egger 2007; Eichengreen and Tong 2007; Gil-Pareja et al. 2006; Anderson and Van Wincoop 2003; Karemera etal. 2000). The basic gravity model is usually formulated as shown below:

$$F_{ij} = \beta \frac{(GDP_i)^{\alpha}\left(GDP_j\right)^{\lambda}}{\left(Dist_{ij}\right)^{\xi}} U_{ij} \tag{1}$$

where F_{ij} is the international flow between countries/regions i and j.

GDP is the gross domestic product of each country/region.[1]

Dist is the distance between country/region i and j.

U_{ij} is a log-normal distributed error term.

$B, \alpha, \lambda, and\, \xi$ are parameters to be estimated.

For empirical analysis, Eq. (1) can be transformed using natural logarithms to yield Eq. (2):

$$lnF_{ij} = \beta + \alpha lnGDP_i + \lambda lnGDP_j + \xi lnDist_{ij} + \varepsilon_{ij} \tag{2}$$

where ε_{ij} is a normal error term with $E\left(\varepsilon_{ij}\right) = 0$ and $\beta = ln(B)$.

Earlier studies on tourism (a tradable service subsector) used the gravity model to explain the movement of international tourists and travelers (including business travelers and medical tourists) (Durden and Silberman 1975; Gordon and Edwards (1973); Kliman 1981; Pyers 1966; Quandt and Baumol 1969). But, the initial problem with the use of the gravity model was that it lacked a theoretical grounding. To address this problem, some economists (in late 1990s and early 2000s) attempted to apply the gravity model in empirical analysis within the context of Heckscher-Ohlin (H–O) theory (Deardorff 1998; Anderson and Van Wincoop 2003). However, that attempt was immediately abandoned as there seemed to be no clear strong theoretical support of H-O theory for the gravity model in explaining international tourism flows. This is evidenced by the fact that much of the

literature on tourism has ignored the gravity model in their empirical analysis (Lim 1997a, 1999; Li et al. 2005; Song and Li 2008).

Notwithstanding lack of theoretical foundation, recent studies have re-induced the gravity model in the tourism demand literature (Keum 2010). Particularly, Kimura and Lee (2006) found that the gravity model performed better when predicting trade in services compared to trade in goods. Also, evidence in empirical studies on flow of trade and tourism support the ease of applicability of gravity equations and robustness of the results (Keum 2010; Morley et al. 2014).

The original formulation of the gravity equation that included exclusively economic masses (measured by population concentration or GDP) and distance between two geographical areas has evolved to include other relevant explanatory variables such as price levels, substitute prices, cultural effects, and destination's income (Prideaux 2005). Thus, the modified version of the gravity model, which has gained popularity in recent tourism demand literature is as shown below:

$$\ln N_{ij} = \beta + \sum_{s=1}^{s} \alpha_s lnZO_i^s + \sum_{p=1}^{p} \lambda_p lnZD_J^P + \sum_{r=1}^{r} \xi_r lnOD_{ij}^r \quad (3)$$

where N_{ij} is tourist demand measured by number of tourists arriving in country/region j.

ZO_i^s is a vector of S variables determining the push force for outbound tourists from origin country/region i (including GDP per capita of country/region i).

ZD_J^P is a vector of variables determining the pull force for inbound tourists to country/region j (including GDP per capita of country/region j).

OD_{ij}^r is a vector of r variables determining the costs (or attractiveness forces) for tourists from country/region i to visit country/region j (including distance between the two countries/regions).

$\beta, \alpha_s, \lambda_p, and \ \xi_r$ are vectors of parameters to be determined.

Different studies have applied Eq. (3) based on different specifications. For example, Eilat and Einav (2004) evaluated determinants of bilateral tourism movements over time, with the right-hand side variables including; price elasticities, exchange rates, destination risk, common border, and common language. They found all these variables to be relevant determinants of tourism demand. Gil-Pareja et al. (2006, 2007) focused on the role of embassies and a common currency on influencing tourism flow. Others evaluated the effects of different exchange rate regimes (Santana et al. 2010; Santana, Ledesma, et al. 2010), mega-events (Fourie and Santana 2011), and,

cultural affinity and ethnic reunion (Fourie and Santana 2013) on tourism flows. Also, other studies used the gravity model to understand tax implications (Durbarry 2008) and role of transport infrastructure (Khadaroo and Seetanah 2008), visa restrictions (Neumayer 2010) and religious affiliation (Vietze 2012) on tourism demand. While the gravity model has performed well in all these studies, lack of theoretical background remains a problem.

One recent study has sought to put this problem to rest. Specifically, they have proposed the consumer economic theory described in Morley (1992) as a fitting alternative to H-O in providing a theoretical background to the gravity model (Morley et al. 2014). The authors assume that individuals derive their utility from visits to different destinations and attractions (in terms of quantity and quality) as well as from the consumption of a vector of other goods and services within their country/region (Provencher and Bishop 1997; McConnell 1992). Thus, an individual's utility function can be stated as in Eq. (4):

$$U_{ijt} = f\left(N_{ijt},\ \ Q_{it},\ ZO_{it}^{s'},\ \ ZD_{Jt}^{P'}\right) \tag{4}$$

where U_{ijt} is the utility of an individual from the origin i visiting a destination j during period t.

N_{ijt} are the number of visits by an individual from origin i to destination j during period t.

Q_{it} is a vector of consumption of other goods in origin country/region i in period t.

ZO_{it}^{s} and ZD_{Jt}^{P} are vectors of sites qualities of dimension s' and P' preferred to the origin and destination, respectively.

The constraint attached to the choices of a particular destination or tourism site is:

$$\pi_{ijt} \cdot N_{ijt} + p_{it} \cdot Q_{it} \leq M_{it} \tag{5}$$

where π_{ijt} is the cost of visiting destination j for an individual from origin country/region i during period t.

p_{it} is the price vector of consumption of other goods in country i in period t.

M_{it} is personal income of an individual in country i during period t.

The constraint maximization of Eq. (4) can be solved to find an individual tourist's optimum levels of consumption of number of trips between country/region i and j and other goods in country/region i in period t (see Morley et al. 2014, for details). After several transformations, Morley et al.

(2014) arrive at a solution that is similar to Eq. (3) above (see Eqs. 14 and 15) and appears like the expression from the consumer economic theory.

Empirical Literature

Tourism started experiencing expansion and diversification in the 1950s, especially in developed countries. By the 1980s, developing nations jumped on board, and recognized the importance of tourism (particularly, international tourism) as a key driver in their development agenda. This was more so because researchers were observing (through indirect measures), the economic significance of the tourism industry in development and growth models (Bhagwati and Srinivasan 1979; Krueger 1980; Helpman and Krugman 1985; Davis et al. 1988). Since then, tourism sector has become one of the largest and fastest-growing economic sectors in the World (UNWTO 2012). This has led to increased interest in this sector among scholars and researchers, who have taken bold steps to directly estimate the importance of the sector in the economy (see Castro-Nuno et al. [2013] for a meta-analysis of panel data studies on the relationship between tourism and gross domestic product [GDP]). The findings in these studies have served to emphasize the urgency of developing this sector. For example, in addition to being a labor-intensive sector and thus, immensely contributing to job creation (especially for low-skill workers); the sector has real impact on poverty reduction and infrastructure development, and is a good source of foreign currency and tax revenues (Saayman and Saayman 2015; Naudé and Saayman 2005; Onder et al. 2009; Martins et al. 2017).

More recently, studies have gone beyond the tourism-growth/development nexus to focus on tourism demand models (see Lim 1977a, b, 1999 for a meta-analysis of studies on tourism demand). The later literature provides essential information on how to grow the sector, and in turn, amplify its beneficial effects on economic growth and development. Such information is necessary for policy formulation in African countries that heavily rely on the sector.

Lim (1977a, b, 1999) conducted extensive meta-analysis on the tourism demand literature. Among other things, the author documents the most common proxies of tourism demand and the corresponding explanatory variables. The number of tourist arrivals and tourism expenditure—which capture the quantity and value aspects of tourism demand, respectively—stand out as the popular proxies for the left-hand-side variable, with the former being preferred due to data availability. In fact, Lim (1977a, b) found that 51% of the studies used number of tourist arrivals and/or departures,

while tourist expenditure and/or receipts were used in 49% of the studies. Regarding the right-hand-side: income of tourists (proxied by nominal or real per capita personal, disposable or national income, or GDP and gross national product (GNP) was used in 84% of the studies; relative prices (measured by CPI ratio), and transportation costs were in 73 and 55% of the studies, respectively. Exchange rate, and trends were also employed, but, in 25% of the studies. Studies that were published after 1999 have also incorporated a measure of tourism infrastructure development as one of the explanatory variables (Naudé and Saayman 2005; Saayman and Saayman 2008; Cleverdon 2002; Onder et al. 2009).

A study by Brida and Scuderi (2013) provides a detailed review of 86 papers that used tourist expenditure as a measure of tourism demand. In all these studies, they do not find any conclusive evidence of the determinants of tourism demand, partly because the composition of the determinants used in the estimation models varied across the studies. In addition, there were differences in the estimation techniques, the sample size, and sample specification; not to mention the heterogeneity across countries and regions. The same is true in studies that used tourism arrivals, whereby, the findings varied across studies (Tavares and Leitao 2017; Untong et al. 2015; Gatt and Falzon 2014; Saayman and Saayman 2013; Chao et al. 2013; De Vita and Kyaw 2013; Garin-Munoz 2009; Eugenio-Martin et al. 2008).

However, there are some studies, which provide a comparative analysis of the performance of both the quantity (tourist arrivals) and value (tourist expenditure) measures of tourism demand. These studies are more appropriate in comparing the two proxies since they subject them to the same model, dataset, and estimation techniques. For example, Song et al. (2016) estimates a tourism demand model for Hong Kong for the 1981–2006 period, and find that income of tourists was a better predictor of tourist arrivals, while real exchange rate performed well when tourism demand was proxied by tourism expenditure. Also Martins et al. (2017) arrived at a similar conclusion.

Performance of Selected Tourism Demand Determinants in Literature

In this study we use tourist arrivals for the same reason as previous studies—data availability—and select the determinants that have been commonly used in related studies. Specifically; income of tourists, measures of prices (exchange rate, consumer price index), transportation cost, and infrastructure development. In addition, we include a measure of political stability, an

issue that impacts the tourism sector in African countries. To provide some context, we evaluate how these variables have fared in literature.

Income of Tourists

Income of tourists measures the ability of the tourists to afford overseas travel and tourism related expenses. As previously indicated, it has been used in more than 80% of the studies on tourism demand (Lim 1997a, b). In most of these studies, especially those that proxy tourism demand with tourist arrivals or departure, income of tourists has a positive relationship with tourism demand (Saayman and Saayman 2008; Seetanah et al. 2010; Song et al. 2010; Onder et al. 2009; Usta 2008).

Inflation and Exchange Rate

Relative prices and exchange rate are other determinants of tourism demand that are commonly used in regression models (Oh and Ditton 2006; Dwyer and Forsyth 2002; Saayman and Saayman 2013; Chao et al. 2013; De Vita and Kyaw 2013). In general terms, these variables are defined as the ratios of domestic prices (currency) over foreign price (currency), and are often proxied by consumer price index and nominal exchange rate, respectively. Since most rational tourists want to travel to destinations where they can get the most out of their money, they will travel to destinations where prices (exchange rate) are relatively favorable. Thus, the sign of the relative exchange rate is expected to be positive, while that of consumer price index negative (Martins et al. 2017). In other words, an increase in the nominal exchange rate could cause a rise in tourism demand as domestic prices in the tourist destination country become relatively cheaper than those in the tourist origin country. Conversely, the higher the cost of living in the tourist destination relative to origin country, the lower the probability of increasing the number of tourists and vis-à-vis. The performance of the two variables in empirical studies has been found to depend on the tourism demand variable used. For example, Chao et al. (2013) show that exchange rate has a dominant impact on the number of tourists arriving in the country, while rising domestic price (inflation in the destination country) can be passed on to tourists through consumption spending while they are already in the country. This implies that relative price effects are dominant in models that use tourist expenditure as a measure of tourism demand.

Transportation Cost

The distance between tourist origin and destination countries impacts the transportation costs, and could decrease the chances of a tourist choosing certain destinations if the transportation costs appear to be higher (Dritsakis 2004; Hanafiah and Harun 2010; Culiuc 2014; Kosnan et al. 2013). This variable is particularly important for African countries, and especially Tanzania, where the air transport sector (that is commonly preferred by most tourists) is underdeveloped in terms of competition of carriers, on-ground facilities (low standard airports) and safety of travelers. Consequently, the cost of air transport within Africa and to African countries, tends to be higher relative to other destinations in Asia, Europe, and Americas. Studies that incorporated this variable in their tourism demand models found significant negative effects (Seetanah et al. 2010; Culiuc 2014).

Infrastructure Development

As observed in developed nations, infrastructure development in a country is a critical component for industrialization. Yet, one of the key factors retarding Africa's industrialization is insufficient stock and poor quality of infrastructure in transport services, power and water (AEO 2018). In fact, Africa lags other developing regions in terms of its level of infrastructure development (AEO 2018). This has a huge negative impact on the tourism sector as well. A number of studies (including those on African countries) have considered infrastructure development as one of the determinants (Naudé and Saayman 2005; Saayman and Saayman 2008). According to Kester (2003, pp. 204–205), the major obstacles to tourist arrivals in Africa are insufficient air transport, deficiency in facilities and accommodation, lack of image and poor perceptions, poverty, disease, and conflict. Gauci et al. (2002, p. 4) add poor public health services and fears of personal safety as some of the factors. Other constraining factors include lack of banking and communication facilities, lack of quality tourism products, weak marketing, and fragmentation among tour operators (Cleverdon 2002).

Political Stability

In addition to the aforementioned determinants, a measure of political and social (in)stability has featured in studies on African countries (Naudé and Saayman 2005; Seetanah et al. 2010). A cross-country study by Eilat and

Einav (2004) found that political risk had significant impact on tourism demand in both developed and developing countries. Studies on other developing countries have included a measure of political risk as well. For example, Lee et al. (1996) included a measure of political unrest for the case of South Korea. Dritsakis (2004) and Salleh et al. (2008) also considered political instability as an important determinant of tourism demand.

4 Methodology and Descriptive Analysis

To evaluate the determinants of tourism demand in Tanzania, we assume an individual's utility function within the framework of consumer economic theory (Morley et al. 2014), and adopt a commonly used international tourism demand model (Lim 1997b) written as:

$$DT_{ij} = f\left(Y_i, TC_{ij}, ER_{ij}, CP_j, O_j\right) \tag{6}$$

where;

DT_{ij} is demand for tourism products by tourists from origin i in destination j. This is measured by the number of tourists arriving in country j from origin country i.

Y is the income of tourists. This is usually proxied by GDP per capita of country i.

TC is the transportation costs between country i and j.

ER is the bilateral exchange rate between country i and j.

CP is the price of goods and services paid by tourists in destination country j. It is usually measured by the consumer price index.

O are other factors in country j that impact tourism demand— which, in this study, include infrastructure development, and a measure of political stability.

Equation (6) can be transformed through natural logarithm as shown in Eq. (7) below, so that the estimated coefficients are interpreted directly in terms of elasticity. This equation is related to the gravity equation in 3 above, and Eqs. (15) and (16) in Morley et al. (2014).

$$\begin{aligned} InTA_{ijt} =& \beta_0 + \beta_1 InINC_{it} + \beta_2 InINFRA_{jt} \\ &+ \beta_3 InEXR_{jit} + \beta_4 InDIST_{jit} + \beta_5 InCPI_{jt} + \varepsilon_{it} \end{aligned} \tag{7}$$

where;

ln = is natural logarithm.

Subscripts i and j are as previously defined, referring to country of origin (*foreign country*, and tourist destination country *(Tanzania*), respectively. t is time period ($t = 2000–2016$)

TA is the number of tourists arriving in Tanzania from country *i.*

INC is income of tourists, which is measured by GDP per capita of country *i*.

INFRA is a measure of level of infrastructure development in country *i.* We use two proxies for this variable. The first proxy, which is used in the baseline specification, is the percentage of the population with access to improved sanitation facility. The second proxy is used in the robustness checks, and is measured as the percentage of the population with access to electricity.

EXR is the relative exchange rate measured as the annual currency exchange rates between Tanzania and a foreign country *i.*

Dist is a proxy for transportation cost calculated as product of the distance between country *i* and *j,* and the cost of fuel in country *i.*

CPI is the consumer price index in Tanzania, which captures the cost of living.

In other specifications presented in the robustness check section, we include *Gov, an* index (polity2 index from the polity IV project) used as a proxy for political stability in country *j.*

ε is stochastic disturbance term and β are parameters.

Hypotheses

In line with the objective of the chapter, and the discussions in the literature on the determinants of international tourism, we test three hypotheses.

1. **H01**: Income of tourists and infrastructure development are the key determinants of international tourism demand in Tanzania. We hypothesize that both factors will positively influence international tourism demand in Tanzania.

   Infrastructure development: Better and widespread infrastructure [such as roads, airports (and airline carriers), and railway line] is more likely to reduce transportation cost, make the country (and its regions) more accessible to tourists, and reduce the time it takes to reach the tourist attraction sites. Also, other infrastructure related to electricity, access to clean water and sanitation, information and communication technology, and security will reduce the operational costs of allied sectors that serve the tourism industry; and will attract potential investors in the sector

as well (which includes building accommodation and conference facilities near the tourist attraction sites). Thus, we hypothesize that good and widespread infrastructure will increase the attractiveness of the country as a tourist destination and in turn, increase the number of tourists coming to Tanzania.

Income of tourists: Moreover, in as far as tourism is a luxury 'good' rather than a necessity; and that it's a household want rather than a need, and is income elastic; it implies that only those households that have excess income (beyond what is required to cover their needs), will engage in tourism activities. This applies to business travelers as well (including medical tourism). In other words, we expect income of tourists to vary directly with demand for tourism activities; whereby, countries with relatively higher income than Tanzania, will supply more tourists.

2. **HO2**: Increasing transportation cost will negatively impact tourism demand in Tanzania. Transportation cost is impacted, among other things, by the level of development of transportation infrastructure (in terms of quality and quantity), competitiveness of transportation services (such as the number of air carriers [to the country and within country], availability and reach of vehicles [public mass transportation and for-hire vehicles), and availability and efficiency of trains), and fuel cost. As mentioned in the proceeding sections, the level of infrastructure development in Tanzania is relatively low compared to other countries. Moreover, the country is a net importer of fuel. In this regard, we expect a negative relationship between the number of tourists visiting Tanzania and transportation cost.
3. **HO3**: Other factors that are more likely to influence the demand of international tourism in Tanzania are relative exchange rate and cost of living. In particular, we hypothesize that **relative exchange rate** (between Tanzanian shilling and currency of tourists source country) will *likely* have a positive relationship with tourism demand; while the sign of **cost of living** (inflation rate) in Tanzania in the regression models cannot be determined prior to empirical estimations

   As shown in the literature review section, the performance of the two factors in empirical studies has been found to depend on the tourism demand variable used. For example, Chao et al. (2013) show that exchange rate has a dominant impact on the number of tourists arriving in the country, while rising domestic price (inflation in the destination country) can be passed on to tourists through consumption spending while they are already in the country. This implies that relative prices effects are dominant in models that use tourist expenditure as a measure of tourism demand.

Estimation Technique

Fixed effects (FE) model is our primary estimation technique, however, we also employ a number of other estimation models for two reasons: (1) to address other panel data biases that may not have been accounted for in FE model, and thus, negatively impact the FE estimates; and (2) for robustness checks.

Data Source, Variable Description, and Descriptive Analysis

Data Source and Variable Description

The chapter uses panel data drawn from various sources from Tanzania's top 15 tourist origin countries covering the period 2000–2016. Tourism arrival data is from Tanzania Tourism Sector surveys of 2007–2017, jointly compiled by the Bank of Tanzania (BoT), Ministry of Natural Resources and Tourism, and the National Bureau of Statistics. GDP per capita in current US$ of tourist origin country *i* (a proxy for tourists' income) and a measure of infrastructure development (the percentage of the population with access to improved sanitation facility) in destination country *j* are obtained from World Bank's World Development Indicators database; while Currency exchange rate (TZ (shillings) versus foreign) is from United Nations Commission on Trade and Development. Governance index (Polity2), which measures political stability is from the Polity IV project of the International Country Risk Guide (Marshall and Jaggers 2011). The index is measured on a 10-point scale with −10 signifying pure autocracy and 10, pure democracy. Finally, the proxy for transportation cost is author calculated as an interaction of the distance between country *i* (foreign) and *j (Tanzania)*, and the cost of fuel in country *i*.

The sample selection is based on the countries that had the number of tourists visiting Tanzania during much of the study period consistently above 1000. A list of the countries used in the chapter is presented in Table 1. Correlation covariance matrix is in Table 2

Descriptive Analysis

Table 3 presents summary statistics of the 15 tourist origin countries and Tanzania. On average, over 34,000[2] tourists arrived in Tanzania between

Table 1 Tanzania's top 16 tourist origin countries, 2000–2016

Burundi	Norway
Canada	Rwanda
France	South Africa
Germany	Sweden
Israel	Uganda
Italy	United Kingdom
Kenya	United States
Netherlands	Zambia

Note Germany was dropped out in the regressions due to lack of sufficient data on relative exchange rate

2000 and 2016. The median number of tourists (23,459) was less than the mean, implying that the distribution was skewed to right. In other words, most of the years (53%) had arrival values less than the mean value. The lowest number of tourists arriving within this period was roughly 799 (Israel 2000). The average income per capita for the 15 countries was US$26,445, which was largely driven by the OECD countries. About 60% (9 of 15) of the countries in the sample were OECD member countries with a mean GDP per capita of US$43,138 during the study period; this is compared to only US$2841 for the 6 African countries.

The infrastructure development is proxied by the percentage of the population with access to improved sanitation facility. As previously indicated, this variable is chosen due to data limitation on more direct measures such as roads. However, it is highly correlated with other related measures of infrastructure development such as total kilometer of rail line route (0.82), electricity consumption (Kwh) (0.92), air transport (freight in million ton-km) (0.86), percentage of the population with access to fixed line telephone (0.89), percentage of population with access to improved water sources (0.97),[3] and percentage of population with access to electricity (see Table 2). On average, only about 15% of Tanzanians had access to improved sanitation, compared to 30% (Kenya) and 66% (South Africa) of competitor countries in the region (see Table 4). This also applies to access to electricity; Tanzania had the lowest percentage of the population having access to electricity (13%), relative to Kenya (24%) and South Africa (81%). By all accounts, these percentages are very low, suggesting that infrastructure development in the country is at very low levels.

Country-level summary statistics over the 2000–2016 period are presented in Table 5. The top tourist origin country for Tanzania is Kenya, which averaged 154,798 tourists during the study period. This was almost 3 times the number of tourists from the United States (54,161) and United

Table 2 Correlation-covariance matrix, 2000–2016

	No. of Tourist Arrivals	GDP per Capita (Foreign Country)	Currency exchange rates, annual, (TZ versus foreign)	Transportation cost	Population with access to improved sanitation facility (%)	Population with access to improved water sources (%)	Fixed Tel subscriptions	Consumer Price Index (Tanzania)	Population with access to electricity (%)
No. of tourist arrivals	1.000								
GDP per Capita (Foreign Country)	−0.183	1.000							
Currency exchange rates, annual (TZ versus foreign)	−0.002	0.869	1.000						
Transportation cost	−0.262	0.928	0.759	1.000					
Population with access to improved sanitation facility (%)	0.307	0.132	0.082	0.267	1.000				

(continued)

Table 2 (continued)

	No. of Tourist Arrivals	GDP per Capita (Foreign Country)	Currency exchange rates, annual, (TZ versus foreign)	Transportation cost	Population with access to improved sanitation facility (%)	Population with access to improved water sources (%)	Fixed Tel subscriptions	Consumer Price Index (Tanzania)	Population with access to electricity (%)
Population with access to improved water sources (%)	0.302	0.132	0.082	0.270	0.995	1.000			
Fixed Tel subscriptions	−0.271	−0.111	−0.071	−0.212	−0.831	−0.803	1.000		
Consumer Price Index (Tanzania)	0.305	0.126	0.078	0.258	0.990	−0.989	0.795	1.000	
Population with access to electricity (%)	0.291	0.114	0.075	0.230	0.914	−0.893	0.75420	0.906	1.000

Data source Author's calculation

Table 3 Summary statistics for selected model variables, 2000–2016

Variable	Mean	Std. Deviation	Minimum	Maximum	*N*
No. of tourist arrivals	34,512.460	38,367.320	799.000	233,730.000	255
GDP per capita (Foreign Country)	26,445.280	24,194.840	112.849	103,059.300	255
Consumer Price Index (Tanzania)	96.284	38.244	51.710	166.190	255
Infrastructure development	12.150	1.942	9.300	15.600	240
Transportation cost	9,129.114	7,363.926	461.776	29,143.530	255
Relative exchange rate	721.010	816.372	0.487	3,042.404	255
Polity2	−0.529	1.291	−1.000	3.000	255

Data Source Author's calculation

Table 4 Average infrastructure measures, 2000–2016

	Kenya	South Africa	Tanzania
People using at least basic sanitation services (% of population)	30.386	66.495	14.784
Access to electricity (% of population)	24.516	81.021	13.371
Access to electricity, urban (% of urban population)	60.550	89.085	42.250

Data source Author's calculation based on World Bank's World Development Indicators Database

Kingdom (54,015), the countries in the second and third positions, respectively. Uganda (31,870), Zambia (30,734), and South Africa (28,503) were in 5, 6, and 7 positions. This suggests (as previously observed) that majority of Tanzania's tourists tend to be from African countries despite the relatively lower GDP per capita levels of these countries. To supplement this observation, we generate a bubble plot of the average number of tourists arriving from each country in the sample during the 2000–2016 period. In fact, evidence shows that the country with highest GDP per capita, Norway, supplied the lowest number of tourists to Tanzania. Kenya, which shares a common border and language with Tanzania supplied the highest number of tourist despite a relatively low GDP per capita of US$851. In fact, studies that directly incorporated a common language and border in the tourism demand models found that both variables have a significant and positive impact on

Table 5 Summary statistics for selected Tanzania's top tourist origin countries, 2000–2016

Country	No. of tourist arrival	GDP per capita	Transportation cost	Relative exchange rate	
Burundi	22,906.76	184.66	1672.57	1.10	Mean
	18,924.73	46.56	474.80	0.10	Std. Deviation
Canada	14,474.59	40,061.35	10,407.11	1148.05	Mean
	4090.78	10,275.11	3569.51	387.62	Std. Deviation
France	22,953.06	36,302.82	14,467.46	1657.95	Mean
	5,250.63	7487.60	3847.54	524.74	Std. Deviation
Israel	4,858.12	27,453.09	8976.67	340.26	Mean
	5,709.79	7116.31	3844.65	115.23	Std. Deviation
Italy	42,398.41	31,911.43	15,425.02	1657.95	Mean
	16,462.39	6225.12	4712.13	524.74	Std. Deviation
Kenya	154,798.10	851.14	780.94	16.43	Mean
	42,660.60	370.22	219.91	3.17	Std. Deviation
Netherlands	16,442.71	44,123.16	15,594.63	1657.95	Mean
	42,15.49	9778.27	4606.16	524.74	Std. Deviation
Norway	7,638.94	74,491.21	20,929.36	202.47	Mean
	2,660.43	22,556.09	5065.78	61.54	Std. Deviation
Rwanda	21,064.76	459.12	1759.06	2.29	Mean
	15,770.37	206.06	464.79	0.28	Std. Deviation
South Africa	28,503.00	5400.09	3311.46	157.23	Mean
	6,496.97	1657.49	1179.88	32.70	Std. Deviation
Sweden	10,865.53	47,104.22	18,614.05	179.36	Mean
	3,283.68	10,963.31	5333.91	56.98	Std. Deviation
Uganda	31,870.82	455.10	1674.51	0.61	Mean
	5,372.23	174.46	365.83	0.07	Std. Deviation
United Kingdom	54,015.88	39,810.54	9134.13	2179.35	Mean

(continued)

Table 5 (continued)

Country	No. of tourist arrival	GDP per capita	Transportation cost	Relative exchange rate	
	10,717.28	6573.11	2782.37	538.24	Std. Deviation
United States	54,161.29	46,988.56	11,839.02	1344.57	Mean
	16,503.46	6602.80	2476.72	377.06	Std. Deviation
Zambia	30,734.94	1082.71	2350.72	269.58	Mean
	15,470.89	530.95	736.14	41.96	Std. Deviation
Total	34,512.46	26,445.28	9129.11	721.01	Mean
	38,367.32	24,194.84	7363.93	816.37	Std. Deviation

Data source Author's calculation

tourism demand (Deluna and Jeon 2014; Kosnan et al. 2013; Leitao 2010; Moorthy 2014; Seetanah et al. 2010).

The relative exchange rate was more favorable to OECD member countries in comparison to African countries in the sample. For example, between 2000 and 2016, one Kenya shilling was equivalent to roughly 16 Tanzanian shillings in contrast to a British pound and American dollar being equivalent to an average of 2179 and 1344 Tanzania shillings, respectively (see Table 5). Also we generated a bubble plot of number of tourist arrivals versus relative exchange rate (see Fig. 9), and find that favorable exchange rate did not always translate to more tourists arriving in Tanzania.

5 Diagnostic Tests, Empirical Results, and Interpretations

To complement the descriptive analysis above, we estimate the empirical model in Eq. (7) using panel data for selected Tanzania's top 15 tourist origin countries during the 2000–2016 period. Fixed effects (FE) model is our primary estimation technique, however, we also employ a number of other estimation models for two reasons: (1) to address other panel data biases that may not have been accounted for in FE model, and thus, negatively impact the FE estimates; and (2) for robustness checks. The FE model assumes that time variant characteristics are unique to each country, and that they are not correlated with another country's characteristics. This assumption holds if the

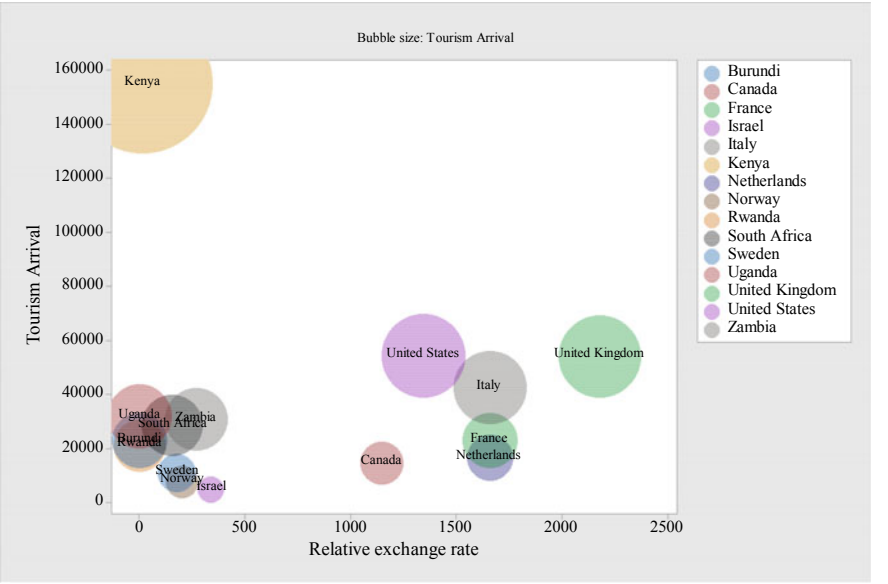


Fig. 9 Bubble plot of No. of tourists arrival versus relative exchange rate, 2000–2016 (*Data source* Author's calculation)

country's error terms are not correlated. However, if the error terms are correlated, the assumption does not hold and fixed effects model cannot be used. Consistent with panel data estimations, we conducted the Hausman specification test in order to determine whether to use Random effects (RE) or FE. The test rejects the null hypothesis that the difference in random and fixed effects coefficients are not systemic, thereby affirming FE as the model of choice.

Diagnostic Tests

A number of diagnostic tests are also conducted on the data. First, we tested for unit root in each variable using Levin–Lin–Chu (LLC) (Levin et al. 2002) panel unit root test, analogous to the time-series augmented Dickey–Fuller test (ADF). The null hypothesis of unit root is rejected in all variables (tourist arrivals, GDP per capita, transportation cost, relative exchange rate and consumer price index) except the infrastructure development measure (percentage of population with access to improved sanitation). To solve this problem, we take first difference on the infrastructure development series and conduct the test again.

Results reported in Table 6 reject the null hypothesis of unit root in all variables. Second, we ran the FE regression on the revised data and conduct a test of heteroscedasticity using the modified Wald test for groupwise heteroscedasticity in fixed effect regression model, with the null of homoscedasticity (or constant variance). The test results reject the null and conclude heteroskedasticity. Lastly, given the number of years in our sample (15 years) we do not conduct tests for serial correlation and contemporaneous correlation since they are problems that impact macro panels with long time series (over 20–30 years).

Table 6 Levin-Lin-Chu Panel Unit Root Tests (2000–2016)

Variable	Adjusted *t*
No. of tourist arrivals	−7.576
	(0.000)
GDP per capita (foreign country)	−5.494
	(0.000)
Currency exchange rates, annual (TZ versus foreign)	−6.942
	(0.000)
Transportation cost	−3.313
	(0.000)
Population with access to improved sanitation facility (%)	−8.383
	(0.000)
Consumer Price Index (Tanzania)	−3.250
	(0.000)

Notes All statistics are based on data at levels, except, infrastructure measure (population with access to improved sanitation) and consumer price index, which are based on first-differenced data, *p*-values in parenthesis, time trend is included. Ho: Panels contain unit roots; Ha: Panels are stationary
Data source Author's calculation

Regression Results and Interpretations

In this section we present panel regression results, and those from the time series analysis that evaluate the importance of key tourism determinants in each tourist source country. A summary of the results based on whether the coefficients are robust (at the panel and country levels), and the direction of impact on tourism demand are tabulated in Table 7.

Comparative Overview of Results for Selected Variables

Generally, as shown in Table 7, the positive effects of ***GDP per capita*** (which measures the income of tourists) on tourism demand in Tanzania are evident in the panel regression estimates and the time series analysis for Zambia and the United States. This suggests that overall, income is an important determinant, but more specifically, in the two mentioned countries. That is, people with relatively high income in Zambia and the United States are more likely to demand Tanzania's tourism products. However, it is crucial to note that even though in the other countries the results for the income variable are not significant (in fact, the effects are significant but negative in Uganda), it does not imply that income (as a determinant of tourism demand) is not relevant in these countries. Rather, it could be that there are other primary determinants that influence the decision of the tourists from those countries. Also, the estimation technique (OLS) used in the time series regressions could be imposing some biases on the results.

Another important determinant of tourism demand is the level of ***infrastructure development*** in Tanzania. This variable is robust with a positive impact in the panel results, and in 6 of the 15 countries (Burundi, Kenya, Uganda, Canada, Israel, and Sweden). Given the number of countries where this variable is relevant, it alludes to its relative importance, above that of income of tourists.

Transportation cost also has the right sign (negative) and robust, not only in the panel output, but also in Burundi and Netherlands. Because we use proxies for infrastructure development and transportation costs, this leaves room for other proxies depending on data availability. For this reason, the impact and significance of these two variables could vary, especially at the country level.

Finally, we find negative but insignificant effects for ***inflation*** in the panel data regressions, and mixed signs (where significant) for both ***relative exchange rate*** and ***political stability*** variables. The impact of inflation was

Table 7 Summarized results for panel and time series regression analysis—selected variables

Country	Variable					
	GDP per capita	Infrastructure development	Transportation cost	Inflation	Relative exchange rate	Political stability
Panel (Table 8, FE)	Positive***	Positive***	Negative*	Negative	Positive	Positive
Burundi (Table 11, column 5)	Positive	Positive***	Negative***		Positive	Negative
Kenya (Table 11, column 5)	Negative	Positive***	Positive		Negative	
Rwanda (Table 12, column 5)	Positive	Positive	Negative		Negative	Negative
South Africa (Table 12, column 5)	Positive	Positive	Negative		Positive	Negative
Uganda (Table 13, column 5)	Negative**	Positive***	Positive		Negative	Negative
Zambia (Table 13, column 5)	Positive***	Negative	Negative		Negative	Positive
Canada (Table 14,column 5)	Positive	Positive***	Negative		Negative	Negative
France (Table 14, column 5)	Negative	Positive	Negative		Positive	Negative
Israel (Table 15, column 5)	Positive	Positive***	Negative		Negative	Positive***
Italy (Table 16, column 5)	Negative	Negative	Positive		Positive**	Positive
Netherlands (Table 16, column 5)	Positive	Positive	Negative**		Positive	Negative

(continued)

Table 7 (continued)

Country	Variable					
	GDP per capita	Infrastructure development	Transportation cost	Inflation	Relative exchange rate	Political stability
Norway (Table 17, column 5)	Positive	Positive	Negative		Negative	Negative
Sweden (Table 17, column 5)	Positive	Positive***	Negative		Negative***	Negative
United Kingdom (Table 18, column 5)	Negative	Negative	Positive		Positive	Negative***
United States (Table 18, column 5)	Positive***	Negative	Negative		Negative	Negative

Note *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$. All variables are expressed in natural log. Results for political stability for panel regression are based on findings in Table 9. Infrastructure development is proxied by the percentage of the population with access to improved sanitation facility

not tested in the time series regressions because it was found to be consistently insignificant in preliminary estimations, and thus, was dropped out of the final regressions. Also, as mentioned before in the literature review section, the performance of inflation and exchange rate variables in empirical studies has been found to depend on the tourism demand variable used. For example, Chao et al. (2013) show that exchange rate has a dominant impact on the number of tourists arriving in the country, while rising domestic price (inflation in the destination country) can be passed on to tourists through consumption spending while they are already in the country. This implies that inflation effects are dominant in models that use tourist expenditure (rather than number of tourists arrivals) as a measure of tourism demand.

Relative exchange rate and ***political stability*** measures have mixed signs where significant. Both variables are insignificant in the panel results, but with the right sign (positive). ***Relative exchange rate*** is measured as Tanzania shilling versus individual source country currency. It is positive and significant in Italy, but negative and significant in Sweden. These contradicting signs in the two countries could be attributed to the limitations of the estimation technique used (OLS).

The Governance index (Polity2), which measures ***political stability*** in a country is from the Polity IV project of the International Country Risk Guide (Marshall and Jaggers 2011). The index is measured on a 10-point scale with −10 signifying pure autocracy and 10, pure democracy. As mentioned before, the variable has the right sign in the panel regressions, albeit with insignificant effects. But at the country level, it is significant in Israel and United Kingdom with positive and negative effects, respectively. One plausible explanation for this difference in the signs of the coefficients is as previously stated; the limitations associated with OLS estimation technique.

In the sections that follow, we discuss each of these variables in detail (including the magnitude of effect) and contextualize the findings. First, we start with the panel regression results, followed by the robustness checks, which include the time series regressions.

Income of Tourists Effects on Tourism Demand

Regression results presented in Table 8 use a modified equation that is corrected for unit root. As previously mentioned, FE model is our primary estimation technique. Results in column 1 of Table 8, and those based on other estimation techniques (column 2 through 6), consistently show that the main determinants of tourism demand in Tanzania are the income of tourists and the infrastructure development in Tanzania. The higher the income per

Table 8 Determinants of tourism demand in Tanzania, evidence from top tourist origin countries in Africa and OECD member countries (panel data estimation), 2000–2016

Variables	FE 1	FE-instrumental variable 2	GEE-population averaged 3	SGMM 4	Difference GMM 5	Linear dynamic panel estimation 6
GDP per capita	0.460***	0.460***	0.196***	0.061***	0.272**	0.572***
	(0.123)	(0.123)	(0.091)	(0.028)	(0.139)	(0.136)
Infrastructure development	1.180***	1.180***	1.615***	0.592***	1.121***	0.925***
	(0.258)	(0.258)	(0.219)	(0.216)	(0.255)	(0.228)
Transportation cost	−0.271*	−0.271*	−0.238	−0.153	−0.128*	−0.282***
	(0.164)	(0.164)	(0.163)	(0.152)	(0.076)	(0.034)
Relative exchange rate	0.277	0.277	0.382	0.049	−0.144	0.168
	(0.269)	(0.269)	(0.267)	(0.264)	(0.172)	(0.117)
CPI	−0.859	−0.859	−0.322	0.110	−0.247	−1.294***
	(0.834)	(0.834)	(0.816)	(0.705)	(0.261)	(0.318)
Constant	2.952*** (0 0.695)	2.952*** (0 0.695)	4.200*** (0.637)			
No. of instruments				33	31	174
Arellano-Bond test for zero autocorrelation in first-differenced errors [AR(2)], Prob > *z*				+ + 1	0.147	0.321
Sargan test of overidentifying restrictions (Prob > chi2)				0.230	0.970	0.960
Hansen-Sargan (*p*-value)		0.000(+ +2)				
No. of countries	15	15	15	15	15	15
No. of observations	225	225	225	225	195	210

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log. Models 4, 5 and 6 use GMM 2-step estimation. Instruments used in all cases are GMM-style (lagged values of independent variables). Sargan test: H0: overidentifying restrictions are valid. Arellano-Bond test: H0: no autocorrelation. + + 1 = Arellano-Bond test (artests) are not computed for one-step system estimator with VCE (GMM). + + 2 = equation exactly identified. Infrastructure development is proxied by percentage of the population with access to improved sanitation

capita of the tourist's origin country (in relative terms), the greater the probability that he/she will demand tourism services. Also, these tourists are more likely to travel to countries and visit places that have well-developed infrastructures that include transportation, water, sanitation, and hospitality facilities. As we are going to show below in robustness checks, these results also hold regardless of the model specification. In terms of magnitude of effect; a one percentage point increase in GDP per capita of the tourist's origin country leads to roughly 0.5% increase in the number of tourists arriving in Tanzania (column 1) per year. An improvement in the infrastructure development leads to even more traffic of tourists to Tanzania annually of about 1.2% with each percentage increase in infrastructure development. In both cases, the effects are significant at one percent level.

The above results are consistent with findings in related studies that use tourism arrivals as a response variable in the tourism demand equation. For example, Onder et al. (2009) found income of tourist as the main determinant of tourism demand in the Izmir, Antalya, and Istanbul regions of Turkey. Martins et al. (2017) find similar results (of income of tourist being the key determinant) in a study of 218 countries. Other studies that find income of tourists relevant for tourism demand include Lee et al. (1996), Garin-Munoz (2009), and Song et al. (2016).

Moreover, it is important to note that most of Tanzania's top tourist source markets have income per capita larger than Tanzania. Also, majority are OECD member countries as exemplified in our sample and Fig. 10. Given that tourism is a luxury 'good' and it's a household want rather than a need, and is income elastic; it implies that only those households that have excess income (beyond what is required to cover their needs), will engage in

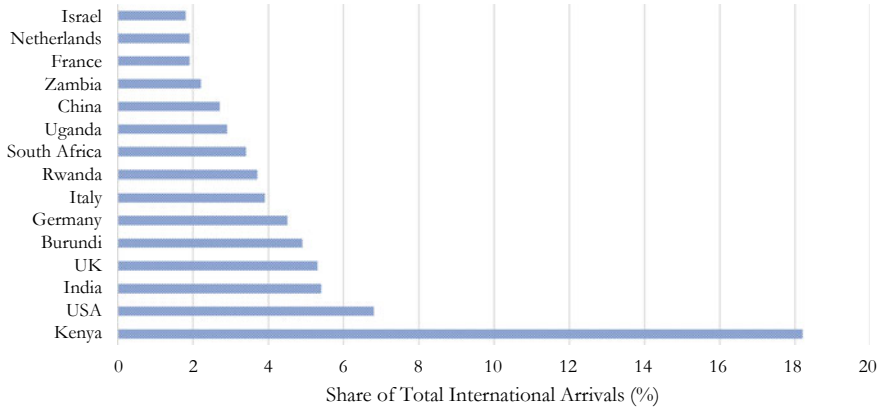


Fig. 10 Tanzania's Top 15 tourist origin countries, 2016

Northern Tourism Circuit			Southern Tourism Circuit		
	Residents	Non-residents		Residents	Non-residents
Lake Manyara national park	62,287	92,341	Mikumi national park	35,311	17,117
Serengeti national park	204,998	167,988	Ruaha national park	7,403	11,558
Tarangire national park	55,585	116,590	Udzungwa national park	6.31	2,608
Ngorongoro Conservation Area	278,922	289,061	Selous game resource	4,750	13,447

Fig. 11 Number of visitors in protected areas in 2015 (*Data source* MNRT 2017)

tourism activities. This applies to business travelers as well (including medical tourism). In as far as their primary reason for travel is business (conference or meeting or seeking medical treatment), they are only likely to engage in tourism activities if they are willing to forego additional income for tourism activities (whether as an individual or part of a group). This provides a self-selection process based on income within tourists' source country.

Infrastructure Development Effects on Tourism Demand

As previously mentioned, Tanzania has 16 national parks and 17 game reserves, which are located in two regions; the Northern circuit and Southern circuit. While the Southern circuit consists of the largest and unique game parks/reserves (including Selous game reserve, which is the largest in Africa and designated a UNESCO world heritage site), it has the lowest tourist traffic relative to the Northern circuit (see Fig. 11).While there are a number of reasons that could be contributing to the popularity and success of the Northern circuit relative to the Southern circuit (including Mount Kilimanjaro and proximity to Kenya), the most obvious one is poor/limited infrastructure, including accommodation capacity (see MNRT 2017). In fact, Tanzania International Visitors' Exit Survey Reports published by the Ministry of National Resources and Tourism consistently point to Roads and other infrastructure as the top area that requires improvement. For example, in the 2014 survey, all the top 4 areas that the tourists pointed out as requiring improvement were infrastructure related; roads (22.7% of the tourists), traffic jam (13.4%), airport facilities and inland transport (12.2%), and utilities (toilets, water) and public places (11.9%) (Tanzania Tourism Sector Survey 2014). In 2016, many more tourists were still dissatisfied with the quality of infrastructure as indicated in the exit survey, where; 40% of the tourist indicated that roads and other infrastructure was the top aspect that required improvement, followed by cleanliness of public washrooms (18.5%) and traffic jams (10.1%) (Tanzania Tourism Sector Survey 2016).

The regression findings in Table 8 (column 1) correctly capture the observations and sentiments of the tourists in the exit surveys; that is, an improvement in the infrastructure development in Tanzania could have larger positive contributions to the inflow of tourists in the country (1.2% increase with each percentage increase in infrastructure development per year). In fact, the effects are significant at one percent level. This finding is consistent with what has been established in literature. Particularly, studies such as Naudé and Saayman (2005) showed that infrastructure development was one of the major determinants for 43 African countries. Eugenio-Martin et al. (2008) and Seetanah et al. (2010) also established that infrastructure development was important in influencing tourism demand

It is important to remind readers that in the baseline results, percentage of the population with access to improved sanitation facility in the country is used as a proxy to infrastructure development in Tanzania. This variable is chosen due to data limitation on more direct measures such as roads. However, it is highly correlated with other related measures of infrastructure development such as total kilometer of rail line route (0.82), electricity consumption (Kwh) (0.92), air transport (freight in million ton-km) (0.86), percentage of the population with access to fixed line telephone (0.89), percentage of population with access to improved water sources (0.97),[4] and percentage of population with access to electricity (see Table 2). On average, only about 15% of Tanzanians had access to improved sanitation, compared to 30% (Kenya) and 66% (South Africa) of competitor countries in the region (see Table 4). This also applies to access to electricity; Tanzania had the lowest percentage of the population having access to electricity (13%), relative to Kenya (24%) and South Africa (81%). By all accounts, these percentages are very low, suggesting that infrastructure development in the country is at very low levels and the government should continue to take proactive measures to improve it.

Transportation Costs Effects on Tourism Demand

Notwithstanding, there are other aspects that matter in the tourism demand equation for Tanzania. For example, proximity, which cuts down transportation costs; and common culture and language. This explains why majority of Tanzania's international tourist are from Kenya (where they share a common border, Swahili language, and culture), and other English-speaking countries (the United Kingdom and the United States) (see Fig. 10). Also, we cannot underestimate the importance of targeted and aggressive marketing, which

has helped to boost Kenya and South Africa's tourism industry relative to that of Tanzania.

The effects of transportation cost have been captured in the regression analysis as well (see Table 8). Specifically, an increase in the transportation cost deters tourism services demand, and thus, decreases the number of tourists coming to Tanzania. In terms of magnitude of effect, an increase in the transportation cost by one percentage point, decreases the number of tourists arriving in Tanzania by 0.3 percentage points (Table 8, column 1) every year. These effects are robust at 10% level of significance. Studies such as Seetanah et al. (2010) and Culiuc (2014) have also found negative effects of transportation cost on tourism demand.

The negative effects of transportation costs could be alleviated by improving the infrastructure in the country, similar to what the government is currently doing by investing in airports, roads, and rail. As observed above (Fig. 7), most tourists travel to the country via air followed by roads. Therefore, improving the air transport infrastructure, and increasing competition in the airline market (in terms of the number of local and international carriers) could offer more travel options to tourists and lower transportation cost as well. While the government has revived Air Tanzania, and currently renovating/expanding Julius Nyerere International Airport, better quality regional airports (especially in regions that are key to the tourism industry), and more domestic and international carriers are still needed.

Inflationand Exchange Rate Effects on Tourism Demand

Other determinants such as a high cost of living (as measured by the inflation rate) in the host country (Tanzania) has a negative impact on demand for tourism services (Table 8, column 6), while, favorable exchange rate (Tanzania shilling versus foreign) encourages demand of tourism services. The effects of inflation rate are significant (at one percent level) where Linear Dynamic Panel regression estimation technique is used (Table 8, column 6), with a 1% increase in the inflation rate in Tanzania, reducing demand for tourism product by 1.3 percentage points per year. Exchange rate effects are not robust across all model specifications.

Robustness Checks

Impact of Different Estimation Techniques on Tourism Demand

To ensure the robustness of our results; first, we employ various estimation techniques on the baseline model. Results reported in Table 8—based on estimation techniques that account for potential endogeneity problems (FE instrumental variable [column 2], SGMM [column 4], difference GMM [column 5], and Linear dynamic panel estimation [column 6]), and those that account for possible unknown correlation between variables (GEE population averaged [column 3])—all yield results similar to those in the baseline specification that use FE model. Specifically, the signs on the coefficients are consistent across all model specifications but there are minor variations in terms of level of significance and magnitude of effect.

Political Stability Effects on Tourism Demand

Second, we use different model specifications and apply the same estimation techniques mentioned above. Specifically, we introduce a proxy for government stability. African countries are generally assumed to be politically unstable, and most Western countries (where majority of tourists originate), tend to lump them as 'Africa' despite the heterogeneity across these countries. Thus, when one country is experiencing political instability, or social unrest, it tends to cause unintended negative externalities that usually impact other countries. For example, political unrest in Kenya, could deter tourists intending to visit the Serengeti national park or Ngorongoro conservation area given the proximity of these attractions to Kenya. Thus, it makes sense to include a variable in the model that would capture the effects of political stability/instability. Inclusion of this variable is consistent with related studies that have evaluated the determinants of tourism demand (using number of tourist arrivals as the dependent variable) for African countries (Naudé and Saayman 2005). The proxy used in this chapter is polity2 index from Polity IV project (Marshall and Jaggers 2011). It is measured on a scale of −10 to 10, with −10 indicating a strongly autocratic (political suppression) and 10 a strongly democratic (political freedom) political system. Results tabulated in Table 9 show that inclusion of the new variable does not change the findings observed in the baseline specifications in Table 8. Specifically, income of tourists and infrastructure development consistently enhance the number of tourists arriving in Tanzania with robust effects at 1% level of significance. The other determinants also carry the expected signs as previously discussed.

Table 9 Determinants of tourism demand in Tanzania, evidence from top tourist origin countries in Africa and OECD member countries (panel data estimation), 2000–2016

Variables	FE 1	FE-instrumental variable 2	GEE-population averaged 3	SGMM 4	Difference GMM 5	Linear dynamic panel estimation 6
GDP per capita	0.470***	0.470***	0.181**	0.044	0.324**	0.591***
	(0.128)	(0.128)	(0.092)	(0.028)	(0.184)	(0.139)
Infrastructure development	1.135***	1.135***	1.691***	0.923***	1.173***	0.819***
	(0.313)	(0.313)	(0.264)	(0.216)	(0.247)	(0.235)
Transportation cost	−0.273*	−0.273*	−0.235	−0.200	−0.072	−0.271***
	(0.162)	(0.162)	(0.163)	(0.146)	(0.097)	(0.053)
Relative exchange rate	0.270	0.270	0.393	0.160	−0.179	0.123
	(0.267)	(0.267)	(0.268)	(0.245)	(0.172)	(0.128)
CPI	−0.778	−0.778	−0.473	−0.623	−0.264	−1.000***
	(0.885)	(0.885)	(0.891)	(0.721)	(0.302)	(0.386)
Political stability	0.007	0.007	−0.012	−0.058***	−0.002	0.014
	(0.027)	(0.027)	(0.027)	(0.021)	(0.011)	(0.009)
Constant	2.976***		4.143***			
	(0.703)		(0.658)			
No. of instruments				125	32	174
Arellano−Bond test for zero autocorrelation in first-differenced errors [AR(2)], Prob > *z*				+ + 1	0.147	0.261
Sargan test of overidentifying restrictions (Prob > chi2)				0.230	0.970	0.960
Hansen-Sargan (*p*-value)		0.000 (+ + 2)				
No. of countries	15	15	15	15	15	15
No. of observations	225	225	225	225	195	210

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log. Models 4, 5 and 6 use GMM 2-step estimation. Instruments used in all cases are GMM-style (lagged values of independent variables). Sargan test: H0: overidentifying restrictions are valid. Arellano-Bond test: H0: no autocorrelation. + + 1 = Arellano-Bond test (artests) are not computed for one-step system estimator with VCE (GMM). + + 2 = equation exactly identified. Infrastructure development is proxied by percentage of the population with access to improved sanitation

Impact of Different Measures of Infrastructure Development on Tourism Demand

Next, we use a different measure of infrastructure development, specified as the percentage of population with access to electricity. As previously shown in the descriptive analysis, the infrastructure development measures have a high pairwise correlation, and thus we do not expect the results to change. Accordingly, results reported in Table 10 show consistency with those in the baseline estimations in Table 8.

Country-Level Analysis

Finally, we evaluate these issues using time series data for the 16 top tourist origin countries for Tanzania. Because of the sample size, we limit the number of independent variables to 5 and use stepwise regressions with OLS estimation technique. The objective of using stepwise regressions is to isolate those variables that are key in the tourist demand equation and unique to each source country. The findings are reported in Tables 11, 12, and 13 for African countries and 14, 15, 16, 17, and 18 for OECD member countries in the sample. These tables can be found in the appendix. In most cases and where significant, the results mimic those in the panel estimations. Specifically, increasing income per capita of tourist origin countries and infrastructure development in Tanzania, both enhance demand for tourism services. In other words, they lead to an increase in the number of tourists coming to Tanzania

However, this generalization overshadows the heterogeneity across the countries. Again, focusing only on those instances where these determinants are significant, we find that, in countries such as Uganda, Germany, and Sweden, income per capita has a negative sign. Also, infrastructure development in Tanzania, seems to deter tourists from the United States. However, these results should be taken with a grain of salt since they are not robust across all model specifications, and OLS estimation technique has been found to imposes certain biases on the regression results.

Summary of Results

Generally, the results above indicate that income of tourists and infrastructure development are the two main determinants of international tourism demand for Tanzania. These findings hold across model and sample specifications.

Table 10 Determinants of tourism demand in Tanzania, evidence from top tourist origin countries in Africa and OECD member countries (panel data estimation), 2000–2016

Variables	FE 1	SGMM 2	Difference GMM 3	Linear dynamic panel estimation 4
GDP Per Capita	0.655***	0.075***	0.447***	0.736***
	(0.102)	(0.026)	(0.098)	(0.091)
Infrastructure development	0.509***	0.228***	0.355***	0.382***
	(0.117)	(0.099)	(0.049)	(0.048)
Transportation cost	−0.172	−0.047	−0.194***	−0.179***
	(0.169)	(0.151)	(0.059)	(0.066)
Relative exchange rate	0.139	−0.045	−0.447***	0.015
	(0.274)	(0.259)	(0.124)	(0.137)
CPI	0.298	0.994	0.071	−0.579
	(0.926)	(0.684)	(0.389)	(0.372)
Constant	2.743***			
	(0.719)			
No. of Instruments		35	33	189
Arellano−Bond test for zero autocorrelation in first-differenced errors [AR(2)], Prob > *z*		+ + 1	0.120	0.311
Sargan test of overidentifying restrictions (Prob > chi2)		0.733	0.995	0.960
Hansen-Sargan (*p*-value)				
No. of countries	15	15	15	15
No. of observations	240	240	210	225

Note ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log. Models 4, 5 and 6 use GMM 2-step estimation. Instruments used in all cases are GMM-style (lagged values of independent variables). Sargan test: H0: overidentifying restrictions are valid. Arellano-Bond test: H0: no autocorrelation. + + 1 = Arellano-Bond test (artests) are not computed for one-step system estimator with VCE (GMM). Infrastructure development is proxied by percentage of the population with access to electricity

Other factors such as transportation cost, cost of living in the host country (as measured by consumer price index), and relative exchange rate bear the right sign where significant.

Focusing on panel estimations in Table 8 and in instances where the coefficients are significant; we find that a one percentage point increase in GDP per capita of the tourist's origin country leads to roughly between 0.1 and 0.6% increase in the number of tourists arriving in Tanzania per year. On other hand, an improvement in the infrastructure development by 1%, leads to even more traffic of tourists to Tanzania annually of about 0.6–1.2%.

Contrary to the effects of income of tourists and infrastructure development in Tanzania, an increase in transportation cost is detrimental to the demand of Tanzania's tourism products. Specifically, when transportation cost increases by one percentage point, the number of tourists coming to Tanzania decreases by 0.1–0.3 percentage points every year. Inflation also has negative effects on tourism demand; equivalent to 1.3% decrease in the number of tourists visiting Tanzania annually, with every 1% increase inflation rate.

6 Conclusion, Policy Implications, and Recommendations

Conclusion

The general objective of this chapter is to establish how Tanzania could increase the number of international tourists' arrivals, and in turn, enhance the sector's effectiveness in contributing to the country's second 5-year development plan. This general objective was achieved by addressing two specific objectives; first, by empirically investigating the relevant determinants of international tourism demand for Tanzania. Broadly, these factors are categorized as economic (income of tourists, infrastructure development, transportation cost, cost of living in the host country and relative exchange rate) and political (polity2 index, which measures the extent to which a country is a democracy vis-à-vis autocracy. This index is a broad measure of the health of political institutions in the country) factors. Second, the chapter uses the findings to inform evidence-driven policies. The empirical analysis uses panel data for Tanzania's top fifteen tourist source countries, during the 2000–2016 period. The sample selection is based on the countries that had the number of tourists visiting Tanzania during most of the study period consistently above 1000.

Generally, results from the econometric analysis indicate that income of tourists and infrastructure development are the two main determinants of international tourism demand for Tanzania. These findings hold across model and sample specifications. Other factors such as transportation cost, cost of living in the host country (as measured by consumer price index), and relative exchange rate bear the right sign where significant. These findings are consistent with predictions of hypotheses 1–2.

Focusing on panel estimations in Table 8 and in instances where the coefficients are significant; we find that a one percentage point increase in GDP per capita of the tourist's origin country leads to roughly between 0.1 and 0.6% increase in the number of tourists arriving in Tanzania per year. On other hand, an improvement in the infrastructure development by 1%, leads to even more traffic of tourists to Tanzania annually of about 0.6–1.2%.

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Policy Implication

General Policy Recommendations

Taking into consideration the findings in this chapter, we recommend the Government of Tanzania and its stakeholders to work toward making Tanzania tourism products more competitive by developing/improving infrastructure in the country. Tanzania's international visitors' exit survey reports point to the need for improvement/development of roads and other (transport) infrastructure, cleanliness of public washrooms, and easing congestion on the roads. Moreover, there should be a policy that encourages developing tourism packages that fit the demands of tourists from relatively high-income countries, and also make conscious efforts to market these products in the target countries.

The number of tourists originating from neighboring and other African countries should not be ignored, since transportation cost is one of the factors that influence tourism demand. At a regional level, improving transportation network across these countries could also boost the inflow of tourist to Tanzania, but at the home front, Tanzania could ease visa requirements from

the target countries. Lowering the cost of living and improving the exchange rate are also some of the areas that the government could work on to help grow the tourism industry.

Tanzania National Tourism Policy

The Tanzania national tourism policy paper was published in 1999 (MNRT 1999). This policy is currently under review for revision, and therefore, an updated one has not been published. Nonetheless, below are excerpts from existing specific policy strategies of the tourism policy as they pertain to the findings in this chapter:

1. Policy strategies for product development (MNRT 1999, p. 8)
    a. Enhancing the existing tourist products and developing others
    b. Developing infrastructure, increasing and improving accessibility to tourist products
2. Policy strategies for marketing (MNRT 1999, p. 9)
    a. Identifying and locating the target market with a view towards putting into place cost-effective means of communication and influencing the market segments identified
    b. Promoting the image of Tanzania's quality resorts and diverse cultural and tourist attractions and its position as a leading destination for wildlife viewing and hunting expeditions
3. Policy strategies for international and regional cooperation (MNRT 1999, p. 13)
    a. Acquiring and maintaining membership, and making use of Tanzania's membership in various international and regional cooperation organizations and ventures that are beneficial to Tanzania's tourism industry
    b. Optimizing and utilization of international markets and the marketing systems of the tourism industry
    c. Co-operating in the regional and international exchange of information likely to influence the tourist industry (e.g. information on health, internal security, technology, standards, and legal provisions)
    d. Putting into place a mechanism to ensure that private foreign investments enter, and are coordinated and protected in accordance with the provisions of the Investment Policy and the Investment Code
4. Policy strategies for infrastructure development (MNRT 1999, p. 15)

a. Upgrading, developing, and maintaining a multi-modal transport system of surface (road and rail), marine, and air transport in national network of complementary grids and feeders that is friendly to the environment through EIA
b. Enhancing the provision of national infrastructure networks through the maintenance of links between national entry and exit points as well as important international networks
c. Encouraging adequate, high quality, efficient and environmentally friendly communication services responsive to the increasing needs of the tourism sector
d. Providing support and assistance for the renewal, upgrading and replacement of existing accommodation facilities and the establishment of additional facilities of the kind
e. Ensure that EIA is undertaken for each infrastructure development in tourist areas

5. Policy strategies related to the government's role as a regulator (MNRT 1999, p. 23)

a. Putting into place conducive macro-economic, social, and political policies
b. Providing and maintaining law and order and ensuring the safety and security of residents and visitors alike

6. Policy strategies related to safety and security for tourists

a. Undertake both short- and long-term actions and strategies to reduce crime on tourists in collaboration with relevant organizations such as the Tanzania police
b. Ensure that adequate resources are devoted to providing for the safety of tourists.
c. Coordinate cooperation among appropriate stakeholders to work together to ensure the safety and security of all tourists

The Tanzania Tourist Board was legally established under the Tanzania Tourist Board act, CAP 364 of 1962 and amended by act No. 18 of 1992 with a sole mandate of promoting and developing all aspects of tourism industry in Tanzania, which includes marketing Tanzania's tourism industry nationally and internationally. Specifically, the board is commissioned to (MNRT 1999, p. 26):

I. Promote Tanzania's tourism potential abroad and within the country

II. Conduct publicity campaigns (advertising, public relations, road shows, etc.) within the objectives of attracting more tourists
III. Preparation and publication of destination brochures and other promotional literature
IV. Provide tourist information through the establishment of tourist information centers within Tanzania

The Link Between the National Tourism Policy and the Chapter's Policy Recommendation

Income of Tourists: The National policy strategies for product development, marketing, and international and regional cooperation are in line with our recommendations for the government to proactively market Tanzania's tourism products. As mentioned above, the Tanzania Tourism Board (TTB) is the body concerned with marketing the sector. The question now is whether the marketing is done in a way that targets specific relatively high-income countries that form the market for Tanzania's tourism products. Note that the target countries should include African countries as well. On this basis, we recommend that as the MNRT work on revising the national tourism policy, it should also evaluate the current marketing strategies and find ways to formulate strategies that optimize market segmentation.

Infrastructure Development: Infrastructure encompasses several aspects that include both physical (roads, rail, airports, ports, electricity, water, and sanitation) and soft infrastructure (information and communication technology, safety and security) (AEO 2018). These infrastructure facilities tend to go hand in hand, whereby, where you find one that is well-developed; you will inevitably find the other. For example, you will tend to find a high percentage of the population with access to electricity, sewage, and clean water in urban areas, as well as high road density, airports, and rail. This applies to the penetration of internet and mobile telephony services as well as and facilities that enhance public safety and security. This suggests two things; first, that the level infrastructure development could signify a country's level of economic development; and second, any of these infrastructure could be used to measure the degree of general infrastructure development in a country. As previously shown, there is a very high correlation among the various measures of infrastructure development.

The findings of this chapter show that infrastructure development in Tanzania is an important determinant of tourism demand. The is true regardless of the measure of infrastructure used (see baseline results in Table 8 and robustness checks results in Table 9). Consistent with these findings and

our recommendations above, MNRT has a national policy on infrastructure development as shown in policy strategies for infrastructure development documented above. But from a practical perspective; the government of Tanzania has been making concerted efforts in recent years (in partnership with development partners such as African Development Bank, World Bank, and China) to improve infrastructure in the country as evidenced by the current massive investments in renovating and expanding Julius Nyerere International airport, road and standard gauge rail constructions from Dar es Salaam to Morogoro, Dodoma and Mwanza, and increasing the percentage of population with access to electricity through rural electrification program and improving access to piped water. Also, the MNRT has been proactively attracting 'high-end' tourists who are willing to pay more for specialized tourism products.

While these government measures are in line with our policy recommendations mentioned above, more has to be done; including improving the quality of hospitality facilities, expanding internet access and mobile cellular coverage (especially in the national parks and other attraction areas), ensuring public safety and security, cleanliness of public washrooms, and easing congestion on the roads.

Transportation Cost: Transportation cost is highly tied to the infrastructure development, especially, transport infrastructure. Thus, the policy strategies for infrastructure development if well implemented, should have huge spillover effects on the cost of transportation. As previously mentioned the government of Tanzania recently revived Air Tanzania, and is currently expanding Julius Nyerere International Airport. Also, there is massive road construction and rail, with an intention of making the different regions within the country, and neighboring countries more accessible. However, more is needed in terms of increasing the number of domestic and international air carriers, and improving the quality of regional airports (especially in regions that are key to the tourism industry). These changes will improve access to tourist attractions by lowering travel cost, and therefore, would have a positive effect on the cost of transportation.

Inflation and Exchange Rate: The MNRT policy strategies related to the government's role as a regulator should address macroeconomic aspects as they pertain to inflation and foreign exchange. So far, in Tanzania, (as it has been in many African countries), the inflation rate has been relatively low, and there has been an improvement in the forex policy in the last 5 years (Economic Survey Report 2017). This suggests that the country is already taking proactive measures to address some of the constraints that are hindering the expansion of the tourism sector.

Political Stability: Policy strategies related to safety and security for tourists, directly address the issue of political stability. Compared to its neighboring countries, Tanzania has not had civil war/strive or social unrest in recent years. However, the most recent developments that have popped up in the news relating to the government policies on human rights (Burke 2018; Sopelsa 2018), freedom of press and speech (Wanjiru 2018; Nyabola 2018), crack down on opposition (Schwikowski 2017; Ng'wanakilala 2016) could have unintended negative effect on the tourism sector, especially in Western countries.

Limitations of the Chapter and Recommendations for Further Research

It is important that readers of this chapter interpret the results, and conclusions within the backdrop of limitations that were beyond our control. First, the tourist arrivals variable used is an aggregate measure that ignores pertinent issues such as purpose of travel, length of stay, amount spent within the country, and the sectors in which this money was spent. Understanding these issues and incorporating them in research could help provide targeted policy recommendations. For example, these issues could inform decisions on what amenities to provide (conference centers if purpose is business), market segmentation (based on tourists' income), and finally understanding how to provide meaningful linkages between the tourism sector and allied industries.

In terms of econometric analysis, an aggregate variable (such as tourist arrivals) may affect the sizes of elasticities obtained. For instance, UNWTO (2016) identifies leisure tourism, visiting friends and relatives, business and professional travel, and travel for religious purposes as the four major reasons for travel. By simple looking at the number of arrivals and ignoring these 'reasons for travel', obscure the economic principles, which suggest that business travelers are less sensitive to price changes than leisure travelers. Unfortunately, sufficient detailed data on purposes of travel to African countries are not available.

Second, this chapter uses annual data, which masks interesting seasonal effects (Brännäs et al. 2002). For example, evidence in Fig. 6 showed that more tourists arrived in the second half of the year; from July onward compared to the first 6 months of the year. Again, while monthly data would have been useful to capture the impact of these seasonal variations, such data (with exception of tourist arrivals) is not available for most of the variables used in this chapter.

As it is with most studies, there is always room for improvement, and opportunities for more research. The same applies to this chapter. Follow-up studies could take the aforementioned shortcomings into consideration, and use them to develop new studies. This will not only help to inform targeted policies, but also, provide more understanding into Tanzania's tourism sector. Specifically, future studies should consider using disaggregated and monthly data as such data become available.

Appendix

See Tables 11, 12, 13, 14, 15, 16, 17, and 18.

Notes

1. Some studies have used pop instead of GDP as a measure of a country/region's economic mass (Taplin and Qiu 1997).
2. Also, notice that the standard deviation (38,367) of the number of tourists visiting Tanzania during the study period is higher than the mean, which is due to the nature of the distribution of the number of tourist arrivals (skewed to the right). Moreover, the country (Kenya) with the maximum number of tourist coming to Tanzania supplied almost 4 times as much tourists as the countries with the minimum number (Israel), and three times as much tourists as the country supplying the second largest number of tourists (see Table 5, column 1). Thus, the higher range (difference between the maximum and minimum values) of 23,931 is reflected in the standard deviation.
3. Data used is from World Bank's African Development Indicators' database. The most recent year available is 2012. Data on roads is not available.
4. Data used is from World Bank's African Development Indicators' database. The most recent year available is 2012. Data on roads is not available.

Table 11 Determinants of tourism demand in Tanzania, evidence from Burundi and Kenya (Stepwise Regressions, OLS), 2000–2016

	Burundi					Kenya				
Variables	1	2	3	4	5	1	2	3	4	5
GDP Per Capita	2.691***	0.915	2.956**	2.617**	2.125	−0.357	−0.317	−0.504	−0.157	−0.350
	(0.491)	(1.308)	(1.145)	(1.172)	(1.354)	(0.852)	(0.306)	(0.304)	(0.330)	(0.451)
Infrastructure development		2.814	3.517**	3.812**	4.909**		1.437***	1.518***	1.363***	1.485***
		(2.134)	(1.601)	(1.606)	(2.167)		(0.164)	(0.159)	(0.165)	(0.253)
Transportation cost			−2.077***	−2.129***	−2.255***			0.380	0.235	0.310
			(0.613)	(0.608)	(0.641)			(0.220)	(0.213)	(0.248)
Relative exchange rate				1.555	2.428				−0.938*	−0.620
				(1.388)	(1.810)				(0.498)	(0.708)
Governance					−0.115					−0.022
					(0.149)					(0.034)
Constant	−4.261	−2.116	0.894	2.165	2.751	11.976***	8.351***	8.148***	8.554***	8.231***
	(2.549)	(2.669)	(2.176)	(2.433)	(2.592)	(0.095)	(0.412)	(0.399)	(0.419)	(0.658)
R-square	66.7	69.41	84.4	85.97	86.76	1.24	86.62	89.5	92.24	92.59
Adjusted *R*-square	64.49	64.70	80.5	80.86	80.13	5.81	84.4	86.6	89.13	88.47
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 12 Determinants of tourism demand in Tanzania, evidence from Rwanda and South Africa (stepwise regressions, OLS), 2000–2016

	Rwanda					South Africa				
Variables	1	2	3	4	5	1	2	3	4	5
GDP Per Capita	1.271***	−0.160	1.245	1.493	1.364	0.449***	0.421**	0.950***	0.485	0.291
	(0.195)	(0.793)	(1.093)	(1.210)	(1.324)	(0.136)	(0.217)	(0.239)	(0.564)	(0.816)
Infrastructure development		4.338*	3.210	3.358	3.865		0.058	0.963**	1.307**	1.578
		(2.431)	(2.352)	(2.436)	(2.986)		(0.487)	(0.477)	(0.610)	(1.015)
Transportation cost			−2.008*	−2.113*	−2.283			−0.831***	−0.791***	−0.787
			(1.153)	(1.203)	(1.361)			(0.268)	(0.273)	(0.285)
Relative exchange rate				−1.146	−0.728				0.506	0.667
				(2.051)	(2.499)				(0.554)	(0.745)
Governance					−0.049					−0.021
					(0.154)					(0.061)
Constant	2.048*	−0.191	9.15	9.007	9.412	6.394***	6.467	6.369	6.617***	6.745***
	(1.177)	(1.822)	(5.627)	(5.801)	(6.181)	(1.163)	(1.063)	(0.825)	(0.873)	(0.985)
R-square	73.93	77.54	82.1	82.57	82.75	42.08	52.10	73.4	75.29	75.58
Adjusted *R*-square	72.19	74.09	77.6	76.23	74.12	38.22	44.73	66.8	66.30	63.36
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, ** $p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 13 Determinants of tourism demand in Tanzania, evidence from Uganda and Zambia (stepwise regressions, OLS), 2000–2016

	Uganda					Zambia				
Variables	1	2	3	4	5	1	2	3	4	5
GDP Per Capita	0.313***	−0.454	−0.665*	−0.694	−0.823**	0.970***	1.145***	1.269***	2.146***	2.907**
	(0.078)	90.282)	(0.361)	(0.402)	(0.412)	(0.104)	(0.297)	(0.452)	(0.845)	(1.324)
Infrastructure development		1.978***	2.150***	2.196***	2.755***		−0.659	−0.652	−3.074	−5.296
		(0.718)	(0.743)	(0.807)	(0.932)		(1.114)	(1.153)	(2.285)	(3.749)
Transportation cost			0.298	0.349	0.267			−0.219	−0.269	−0.525
			(0.315)	(0.412)	(0.412)			(0.588)	(0.578)	(0.680)
Relative exchange rate				−0.808	−0.152				−1.546	−2.109
				(0.399)	(0.398)				(1.268)	(1.492)
Governance					−0.044					0.107
					(0.039)					(0.141)
Constant	8.462***	8.159***	6.792***	6.439***	6.364***	3.541***	3.998***	4.827*	13.899*	19.440*
	(0.471)	(0.423)	(1.507)	(2.344)	(2.311)	(0.715)	(1.157)	(2.530)	(7.843)	(10.844)
R-square	51.99	68.45	70.6	70.75	74.17	85.25	86.31	86.5	88.07	88.72
Adjusted *R*-square	48.79	63.60	63.30	60.11	61.26	84.27	84.20	83.1	83.74	83.08
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 14 Determinants of tourism demand in Tanzania, evidence from Canada and France (stepwise regressions, OLS), 2000–2016

	Canada					France				
Variables	1	2	3	4	5	1	2	3	4	5
GDP per capita	0.963***	0.468*	0.847**	1.587**	1.246	0.385*	−0.337	0.087	0.369	−1.052
	(0.130)	(0.260)	(0.367)	(0.644)	(0.807)	(0.223)	(0.323)	(0.445)	(0.959)	(1.116)
Infrastructure development		0.946**	1.586***	2.597***	2.771***		1.287***	1.913***	1.309	1.342
		(0.461)	(0.635)	(0.957)	(1.006)		(0.469)	(0.651)	(1.301)	(1.283)
Transportation cost			−0.558	−0.637	−0.614			−0.671	−0.650	−0.722
			(0.395)	(0.386)	(0.395)			(0.499)	(0.516)	(0.513)
Relative exchange rate				−0.916	−0.726				0.530	1.053
				(0.666)	(0.728)				(0.979)	(1.067)
Governance					−0.038					−0.078
					(0.052)					(0.068)
Constant	−0.630	2.225	1.765	1.464	0.154**	5.987***	10.345	10.755***	12.948***	16.813***
	(1.378)	(1.787)	(1.753)	(2.893)	(3.692)	(2.337)	(2.538)	(2.482)	(4.789)	(5.794)
R-square	78.40	85.00	87.14	89.03	89.58	16.56	47.07	53.98	55.18	60.41
Adjusted *R*-square	76.96	82.70	83.92	85.04	84.38	10.99	38.92	42.47	38.88	40.62
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 15 Determinants of tourism demand in Tanzania, evidence from Germany and Israel (stepwise regressions, OLS), 2000–2016

	Germany					Israel				
Variables	1	2	3	4	5	1	2	3	4	5
GDP per capita	1.126***	−0.821**	−0.409			2.587***	−0.874	−0.089	0.673	1.159
	(0.331)	(0.375)	(0.586)			(0.515)	(1.246)	(1.401)	(1.621)	(1.461)
Infrastructure development		3.110***	3.263***				5.045***	6.382***	11.268**	11.063**
		(0.557)	(0.585)				(1.945)	(2.234)	(5.624)	(4.999)
Transportation cost			−0.412					−0.853	−0.725	−0.048
			(0.447)					(0.731)	(0.747)	(0.746)
Relative exchange rate									−3.329	−4.938
									(3.513)	(3.226)
Governance										0.229**
										(0.116)
Constant	−1.593	11.123***	10.368***			−18.279***	4.308	0.669	−1.259	−2.357
	(3.483)	(2.784)	(2.918)			(5.258)	(8.225)	(8.692)	(8.964)	(7.986)
R-square	43.56	84.02	85.08			62.63	74.51	77.11	78.83	84.80
Adjusted *R*-square	39.80	81.56	81.34			60.14	70.59	71.38	71.14	77.20
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, ** $p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 16 Determinants of tourism demand in Tanzania, Evidence from Italy and Netherlands (stepwise regressions, OLS), 2000–2016

	Italy					Netherlands				
Variables	1	2	3	4	5	1	2	3	4	5
GDP Per Capita	2.775***	2.336***	4.448***	−1.724	−1.452	0.686***	0.369	0.928***	0.203	0.153
	(0.386)	(0.537)	(0.743)	(1.526)	(1.835)	(0.214)	(0.327)	(0.3779)	(0.754)	(0.887)
Infrastructure development		0.857	0.419	6.699**	−6.591		0.566	2.155***	1.118	1.154
		(0.729)	(1.725)	(2.90)	(3.051)		(0.514)	(0.833)	(1.249)	(1.338)
Transportation cost			0.288	0.600	0.626			−1.194**	−1.226***	−1.247**
			(1.021)	(0.824)	0.865)			(0.5287)	(0.525)	(0.572)
Relative exchange rate				4.946***	4.704**				0.968	1.011
				(1.773)	(2.022)				(0.875)	(0.978)
Governance					0.031					−0.008
					(0.106)					(0.066)
Constant	−18.215***	−15.821***	−16.061***	2.973	1.445	2.351	4.302	5.865***	9.385	9.712**
8	(3.998)	(4.448)	(4.692)	(7.787)	(9.616)	(2.284)	(2.574)	(2.348)	(3.940)	(4.875)
R-square	77.49	81.22	81.35	89.07	89.17	40.67	49.97	64.90	68.42	68.47
Adjusted *R*-square	75.99	78.33	76.68	85.10	83.75	36.72	42.28	56.12	56.93	52.70
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 17 Determinants of tourism demand in Tanzania, evidence from Norway and Sweden (stepwise regressions, OLS), 2000–2016

	Norway					Sweden				
Variables	1	2	3	4	5	1	2	3	4	5
GDP per capita	1.271***	−0.160	1.245	1.493	1.363	−0.0153	−1.284***	−0.591	1.997*	1.944
	(0.195)	(0.793)	(1.093)	(1.210)	(1.324)	(0.291)	(0.525)	(0.766)	(1.099)	(1.338)
Infrastructure development		4.338*	3.210	3.358	3.865		2.0153***	2.799***	5.363***	5.397***
		(2.431)	(2.352)	(2.436)	(2.986)		(0.853)	(1.055)	(1.234)	(1.362)
Transportation cost			−2.01	−2.113	−2.283			−0.974	−0.359	−0.378
			(1.153)	(1.203)	(1.361)			(0.797)	(0.670)	(0.743)
Relative exchange rate				−1.146	−0.727				3.592***	−3.546***
				(2.051)	(2.499)				(1.269)	(1.455)
Governance					−0.049					−0.007
					(0.154)					(0.085)
Constant	2.048*	−0.190	9.151	9.006	9.412	10.894***	17.993***	18.158***	3.649	−3.213
	(1.176)	(1.823)	(5.627)	(5.801)	(6.181)	(3.123)	(3.914)	(3.844)	(8.292)	(10.315)
R-square	73.93	77.54	82.07	82.57	82.75	0.02	32.18	39.68	65.09	65.11
Adjusted *R*-square	72.19	74.09	77.59	76.23	74.12	0.01	21.75	24.60	52.39	47.66
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

Table 18 Determinants of tourism demand in Tanzania, evidence from United Kingdom and United States (stepwise regressions, OLS), 2000–2016

	United Kingdom (14)					United States (15)				
Variables	1	2	3	4	5	1	2	3	4	5
GDP per capita	0.974***	0.680***	0.652***	0.180	−0.379	2.019***	3.598***	3.765***	4.289***	4.301***
	(0.180)	(0.224)	(0.233)	(0.683)	(0.656)	(0.189)	(0.879)	()0.984)	(0.868)	(0.894)
Infrastructure development		0.435*	0.145	−0.478	−0.507		−1.401**	−1.361**	−0.002	−0.092
		(0.249)	(0.516)	(0.995)	(0.872)		(0.730)	(0.759)	(0.868)	(0.906)
Transportation cost			0.164	0.272	0.185			−0.143	−0.202	−0.309
			(0.254)	(0.297)	(0.263)			(0.327)	(0.280)	(0.337)
Relative exchange rate				0.545	1.109				−1.157***	−0.977
				(0.738)	(0.701)				(0.493)	(0.586)
Governance					−0.071***					−0.021
					(0.034)					(0.034)
Constant	0.569	2.586	2.105	3.514	**5.932	−10.845***	−24.317***	−24.867	−25.057***	−25.259***
	(1.906)	(1.969)	(2.148)	(2.905)	(2.799)	(2.029)	(7.672)	(8.021)	(6.841)	(7.051)
R-square	66.11	76.09	76.90	77.99	84.63	88.41	89.47	89.63	93.09	90.01
Adjusted *R*-square	63.85	72.41	71.12	69.98	76.94	87.64	87.85	87.04	90.58	90.88
No. of observations	17	16	16	16	16	17	16	16	16	16

Notes ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. All variables are expressed in natural log

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