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## TOURISM DEVELOPMENT AND POVERTY ALLEVIATION IN SUB-SAHARAN AFRICAN COUNTRIES: AN EMPIRICAL INVESTIGATION

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# TOURISM DEVELOPMENT AND POVERTY ALLEVIATION IN SUB-SAHARAN AFRICAN COUNTRIES: AN EMPIRICAL INVESTIGATION

## Abstract

*In this study, the impact of tourism development on poverty alleviation is examined using panel data from 32 sub-Saharan African (SSA) countries during the period 2005-2014. Two indicators of tourism development are used, namely tourist arrivals and tourism revenue. In addition, four control variables have been used, namely economic growth, trade, the rule of law, and income inequality (measured by the Gini coefficient, the Atkinson index and the Palma ratio), thereby leading to three separate specifications for each tourism development proxy. Using the generalized method of moments (GMM) regression analysis, the study found that the impact of tourism development on poverty alleviation is not unanimous. When the number of tourist arrivals is used as a proxy, the results show that an increase in tourism development consistently leads to an increase in household welfare; hence, a decrease in poverty, irrespective of the specification used. However, when tourism revenue is used as a proxy, no significant impact of tourism development on household welfare is found to exist, irrespective of the model specification used. The results also show that income inequality has a clear negative impact on household welfare in SSA countries, while economic growth and the rule of law have a distinct positive effect.*

## 1. Introduction

The relationship between tourism development and poverty reduction has attracted a considerable amount of attention in recent years. Tourism development has not only been viewed as an engine for economic growth, but it has also been viewed as a tool for alleviating poverty and advancing food security, especially in developing countries (Vanegas Sr et al., 2014). According to Asongu and Odhiambo (2019a), sustainable tourism ensures a constant stream of income for economic development, especially for economies that depend substantially on the tourism industry for their economic prosperity. Tourism development has been regarded not only as a catalyst for economic

growth, but also as an effective means of alleviating poverty (Medina-Munoz et al., 2016). Theoretically, the role of tourism in poverty reduction has been indirectly supported by the link between tourism and economic growth. Since economic growth reduces poverty and tourism spurs economic growth, tourism can also alleviate poverty (Croes & Vanegas, 2008).<sup>1</sup> The role of sustainable tourism in reducing poverty has also been widely supported by institutions such as the United Nations World Tourism Organization, the United Nations Conference on Trade and Development, and International Labour Organization (ILO). According to the World Tourism Organization, tourism is a principal export for developing countries and it is the most significant source of foreign exchange after petroleum (World Trade Organization, 2002). After years of decline, Africa recorded an increase in tourist arrivals again in 2016. According to African Tourism Monitor (2018), international tourism arrivals in Africa as a whole increased slightly to 62.9 million from 62.5 million in 2015 – representing a 0.64% increase. Although the increase in international tourism arrivals in Africa was modest, the sub-Saharan African region saw an 8.9% increase in international tourism arrivals. Some of the countries with the largest tourist arrivals in 2016 include Morocco, South Africa, Tunisia, Egypt, and Zimbabwe. During the same period, South Africa surpassed ten million arrivals for the first time (with a 12.8% increase from 2015), joining Morocco. Morocco, on the other hand, sustained more than ten million arrivals for the fourth consecutive year (African Tourism Monitor, 2018). On the tourism receipts, Africa received US\$ 36.2 billion in 2016, which was a decrease of 7.7% from 2015. Overall, Africa recorded a 5.1% share in worldwide tourism arrivals and a 3.0% share of worldwide tourism receipts in 2016.

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<sup>1</sup> See Medina-Munoz et al. (2016).

Tourism has also made a significant contribution to job creation in Africa. In 2017, for example, direct travel and tourism employment in Africa rose to 9.3 million. This was an increase of 11.2% from 2016. Of these employment opportunities, about 2.5 million were in North Africa while 6.8 million were in sub-Saharan Africa (African Tourism Monitor, 2018). Overall, in 2017, the tourism sector accounted for 2.6% of direct employment as a percentage of total employment in Africa, and 4.4% and 2.3% in North Africa and sub-Saharan Africa, respectively. The top ten countries in Africa in terms of direct employment in the tourism industry in 2017 include Nigeria, Egypt, Morocco, South Africa, Ethiopia, Tanzania, Kenya, Algeria, Ghana, and Madagascar. The top ten countries based on the total employment (direct, indirect, and induced) in the tourism industry in 2017, however, include Nigeria, Egypt, Morocco, Ethiopia, South Africa, Kenya, Tanzania, Madagascar, Mozambique, and Ghana (African Tourism Monitor, 2018: 9).

Despite the beneficial role of tourism in poverty reduction, tourism development has its own disadvantages for the recipient countries. Studies have shown that tourism may lead to cultural degradation and disruption of communities in the destination country, which could ultimately lead to a rejection of foreign tourists by local residents (UNEP, 2011; UNCTAD, 2013).<sup>2</sup> In addition, some tourism statistics for some of the poorest countries show that economic growth in terms of tourism development does not necessarily reduce poverty (Blake et al., 2008; Scheyvens, 2007)<sup>3</sup>. According to UNCTAD, tourism has the potential of contributing either directly or indirectly to all the sustainable development goals, and it has been included in Goal 8 (inclusive and sustainable

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<sup>2</sup> See Nyasha et al. (2020).

<sup>3</sup> See Medina-Munoz et al. (2016: 271).

economic growth), Goal 12 (sustainable consumption and production – SCP), and Goal 14 (sustainable use of oceans and marine resources).

Although a number of studies have been conducted on the dynamics of tourism in SSA countries, the majority of these studies have mainly focused on the relationship between tourism and economic growth (Odhiambo, 2011; Odhiambo, 2012; Odhiambo and Nyasha, 2020; Nyasha et al., 2020), and tourism and financial development (Musakwa and Odhiambo, 2021), amongst others. Most of the previous studies on the impact of tourism development on poverty reduction have mainly focused on Asian and Latin American countries, leaving SSA countries with very little coverage. Moreover, majority of the studies conducted on SSA relied mainly on time-series data based on individual countries or districts (see, for example, Odhiambo and Nyasha, 2020; Kebede and Bayeh, 2017). Very few studies have empirically examined the impact of tourism development on poverty alleviation in SSA using modern panel data techniques.

The closest study to the current study is based on the work done by Folarin and Adeniyi (2020). However, the current study differs fundamentally from their work in various ways. Contrary to Folarin and Adeniyi (2020), the current study uses two proxies of tourism development, namely tourism revenue and tourist arrivals. Also, given the important role that income inequality plays in poverty reduction, the current study also includes three proxies of income inequality, namely the Gini coefficient, the Atkinson index, and the Palma ratio, alongside other control variables, thereby estimating three separate specifications for each tourism development proxy. In addition, the current study uses household welfare (measured by real household consumption expenditure per capita) as a proxy for poverty alleviation, as supported by extant literature. To our knowledge, this

may be the first study of its kind to examine in detail the impact of tourism development on poverty alleviation in SSA countries using both tourism revenue and tourist arrivals. The study incorporates 32 SSA countries where actual data exist and the study period spans from 2005 to 2014. This study period was constrained by the availability of adequate and reliable data on the key variables for the 32 SSA countries included in this study. The estimation technique employed is based on the Generalized Method of Moments (GMM) regression analysis, which has been found to be superior when it comes to dealing with the endogeneity inherent in many panel data models.

The rest of the study is organised as follows: Section 2 provides a summary of previous empirical literature on the relationship between tourism development and poverty reduction in both developed and developing countries. Section 3 presents the methodology used in the study, while Section 4 covers the analysis of the results. Section 5 concludes the study.

## **2. Literature review**

Tourism is regarded as a source of development and poverty eradication through employment generation, technology transfer and GDP growth (Simms, 2005). Previous studies have shown that tourism development translates to poverty reduction through a number of channels, such as income, tax, price and risk (McCulloch *et al.*, 2001; Blake *et al.*, 2008; Njoya and Seetaram, 2018). The income channel enables poor households to earn an income from participation in tourism activities, either directly, indirectly, or both, which enables the poor to become employable in the tourism-related sector. The tax channel also enables poor households to benefit from the reallocation of resources by government as it provides social welfare grants to the poor using tax

revenue obtained from the tourism sector. While the income and tax channels have a positive impact on the poor, the price channel has a negative effect as tourism development leads to an increase in the prices of local goods and services, which impacts negatively on the poor. Unlike the first three channels, which are either positive or negative, the impact of the fourth channel, namely the risk channel, could either be positive or negative. While the positive side of risk channels filters into the economy through biodiversity conservation methods and the allocation of financial resources for the upkeep and maintenance of natural, cultural and historical sites, which ends up benefiting the poor, the negative side leads to the depletion of environmental resources, as well as air and water pollution, which has an overall negative impact on the poor (International Trade Centre, 2009). Overall, the net effect of risk channels depends on the relative effects of these two opposing effects.

Although extensive research has been conducted on the relationship between tourism and poverty alleviation, the empirical evidence supporting or disputing this nexus is scant. As Chok et al (2007) states: "... there is a lack of convincing empirical evidence to justify the claim that increased tourism development will lead to significant benefits for the poor." (Chok et al., 2007, pp 146). This has mainly been due to the fact that the bulk of discussions on the relationship between tourism and poverty has largely been theoretical or exploratory due to a lack of sufficient data (see also Roe & Urquhart, 2004).

Previous studies that have been conducted on the role of tourism development in poverty reduction can conveniently be divided into two main strands. The first strand argues that there is a positive relationship between tourism and poverty reduction and that international tourism helps to alleviate poverty in the tourists' recipient countries. The second strand in the extant literature, however,

maintains that tourism either has a negative effect or no effect on poverty reduction in recipient countries.

Studies that support a positive effect of tourism development on poverty alleviation include studies conducted by Harrison and Schipani (2007), Blake et al. (2008), Klytchnikova and Dorosh (2013), Croes (2014) for the case of Nicaragua, Truong et al. (2014), Vanegas (2014), Yang and Hung (2014), Anderson (2015), Llorca-Rodríguez (2017), Njoya and Seetaram (2018), Garza-Rodriguez (2019), Folarin and Adeniyi (2020), Llorca-Rodríguez et al. (2020), Toerien (2020), Torabi et al. (2020), Zhao and Xia (2020), and Zhao (2020), among others. While examining the relationship between tourism and poverty alleviation in the Lao People's Democratic Republic, Harrison and Schipani (2007) found that community-based tourism and tourism enterprises in the private sector play an important role in poverty alleviation in Lao. In their analysis of the channels through which tourism influences different households in the Brazilian economy, Blake et al. (2008) used a computable general equilibrium model and found that the effects of tourism on all income groups are positive, even though the lowest income households tend to benefit less when compared to some of the higher income groups. Klytchnikova and Dorosh (2013) examined the impact of tourism spending on growth and poverty in Panama at the regional level using a Social Accounting Matrix multiplier model and found that the tourism sector has a large potential to benefit the poor. Croes (2014) examined the impact of tourism on absolute poverty in two developing countries, namely Nicaragua and Costa Rica, using an error correction model and found that tourism does matter for the poor in Nicaragua, especially for the poor at the lower levels of economic development. According to the author, a 1% increase in tourism receipts reduces the poverty index by 1.23 points in Nicaragua. Truong et al. (2014) examined the perception of tourism as a means of poverty alleviation in Sapa, Vietnam, and found that tourism has some pro-poor potential.



However, this potential is somewhat reduced by barriers to business development, employment and benefit sharing in the tourism sector. Yang and Hung (2014) examined the relationship between tourism cooperatives and poverty alleviation in the Yuhu Village in China, and found that tourism cooperatives have several positive effects and are effective in alleviating poverty suffering among Yuhu villagers. Vanegas (2014) examined the role of tourism in poverty reduction, economic growth and inequality in five Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) and found tourism development to be a source of economic growth and poverty reduction in Costa Rica, Guatemala, Nicaragua, and to a lesser extent in El Salvador and Honduras. Anderson (2015) examined the impact of cultural tourism on the welfare of the communities in rural Kilimanjaro in Tanzania and found that cultural tourism has contributed significantly to improving the livelihoods of the poor in rural Kilimanjaro. Llorca-Rodríguez (2017) examined the impact of tourism on total and extreme monetary poverty in Peru and found that tourism reduces poverty in Peru, even though the poorest are not receiving all the potential benefits compared to those receiving a higher income. Njoya and Seetaram (2018) used a dynamic GCE model to investigate whether tourism development can be regarded as an engine for poverty reduction in Kenya and found that tourism expansion and the resulting economic growth principally trickle down to the urban and rural poor through increases in income and in labour demand, thereby leading to a fall in the poverty headcount, the poverty gap and its severity. While examining the relationship between tourism and poverty reduction in Mexico using the ARDL approach, Garza-Rodríguez (2019) found that there is a long-run relationship between international tourism and poverty reduction in Mexico. Specifically, it was found that for every 1% increase in international tourism, household consumption per capita increases by 0.46%. However, in the short run, a 1% increase in international tourism leads to a 0.11% increase in household consumption per

capita. Folarin and Adeniyi (2020), while examining the impact of tourism development on poverty in 38 sub-Saharan African countries, found that tourism development significantly reduces poverty in African countries. Llorca-Rodríguez et al. (2020) used a system generalised method of moments estimation to examine the effectiveness of domestic and inbound tourism on poverty alleviation in 60 countries. Their study found support for the proposition that domestic and inbound tourism have a significant impact on poverty reduction. While examining the role of tourism in poverty alleviation in rural South Africa, Toerien (2020) found that tourism is a driver of prosperity and a reducer of poverty in South African towns. Torabi et al. (2020), while examining the role of tourism in poverty reduction in the rural areas of the Turan National Park in Iran, found that tourism, with the support of government agencies, has been able to reduce poverty in the rural areas of the Turan National Park, even though the poor have gained a small proportion of benefits compared to other groups. Zhao (2020), while examining the relationship between tourism and poverty reduction in 29 Chinese provinces, excluding Taiwan, Hong Kong, and Macao, found that tourism has a statistically significant and positive effect on poverty alleviation. The author found that the pro-poor effect of tourism holds across all proxies of tourism development and poverty used. While examining whether tourism affects poverty reduction in Chinese provinces using panel data, Zhao and Xia (2020) found that tourism has a positive effect on poverty reduction. The author found that tourism significantly and positively reduces the headcount ratio, the poverty gap and poverty severity in the full sample. Ponce et al. (2020), while examining the effect of the gross value added (GVA) of tourism on poverty in the 198 contiguous Ecuadorian cantons using a set of spatial econometric models, found that tourism activities and regional poverty are negatively related. Specifically, the authors found that a 1% increase in tourism-related economic activity

decreases the regional poverty of the canton by 4.31%, and that of neighbouring cantons by between 0.7% and 2.4%.

Apart from the studies mentioned above, in a few studies, it has been found that tourism development either has a negative or no impact on poverty reduction. These include studies conducted by Saayman et al. (2012), Croes (2014) for the case of Costa Rica, Kim et al. (2016), Mahadevan and Suardi (2019), Mahadevan and Suardi (2019), and Dossou et al. (2021), among others. Saayman et al. (2012), for example, evaluated the potential impact of tourism on poverty in South Africa using an applied general equilibrium (AGE) model and found that in the short term, the poor benefit very little, if at all, from additional tourism inflows to South Africa. According to the authors, a 10% increase in tourism would bring no significant benefit to the very poor, in other words, the lowest income households. Croes (2014) examined whether tourism spending leads to a decline in the proportion of people below the poverty line in Nicaragua and Costa Rica, and found that tourism does not seem to matter for the poor in Costa Rica, which enjoys a higher level of economic development than Nicaragua. Scheyvens and Russell (2012) compared the impacts of small- and large-scale tourism enterprises on poverty alleviation and found that poverty has increased in Fiji, despite rising tourism arrivals. The authors attribute this finding to underdeveloped linkages between tourism and the wider economy, and a heavy reliance on imported products, particularly among large-scale operators. According to Scheyvens and Russell (2012), indigenous Fijian participate in the tourism sector mainly as employees or as recipients of lease monies, and not as those directly involved in tourism planning and development, which limits the pro-poor potential of the tourism sector in Fiji. Kim et al. (2016) investigated the relationship between tourism, poverty and economic development in 69 developing countries,

excluding sub-Saharan African countries, and found that tourism expenditures do not have a significant effect on poverty reduction for all developing countries. Kebede and Bayeh (2017), while assessing the alignment of tourism in combating poverty in the Bale eco-region in the Dinsho district, Ethiopia, found that tourism is weakly aligned with poverty reduction and the living standards of the villagers in the Dinsho district. According to the authors, tourism is neither strongly aligned against poverty, nor the low living standards of locals in the study area under study. Mahadevan and Suardi (2019), while examining the impact of tourism growth on poverty, the poverty gap and income inequality in 13 tourism-intensive economies during the period 1995-2012, using a panel Vector Autoregression method, found that there is little evidence that suggests that tourism reduces the poverty headcount. However, the authors found evidence, which suggests that tourism reduces the poverty gap, and that the poor earn more and enough to bring them over the poverty line. More recently, Dossou et al. (2021) examined the linkage between tourism, governance quality and poverty reduction in Latin America during the period 2003-2015. Using the two-step generalized method of moment (GMM) model estimation and the panel corrected standard errors (PCSE), among other techniques, the study found that tourism development exacerbates poverty, although tourism and governance quality were found to have complementary impacts on alleviating poverty.

### **3. Methodology**

#### *GMM specification*

This study uses an extension of the difference GMM technique to examine the relationship between tourism and poverty reduction in 32 SSA countries during the period 2005-2014. The advantages of using the GMM approach have been documented extensively in the literature (see

Asongu and Nwachukwu, 2016; Tchamyou 2019a, 2019b; Odhiambo, 2020). In particular, the GMM approach has been found to limit the proliferation of instruments and to produce more robust estimates (see Asongu and Odhiambo, 2020b, 2020c). The GMM approach also allows for the control of persistence in the variables used in the study. The GMM approach has also been found to be suitable when the number of countries (cross-sections) is higher than the time periods (number of years) for each cross-section (see also Odhiambo, 2020; Asongu and Odhiambo, 2020b). Since the number of cross-sections in the current study is 32, while the number of time-periods for each cross-section is 10, the prerequisites for using the GMM approach has been fulfilled in the current study.

The GMM model used in this study can be presented as follows (see Odhiambo, 2020; Tchamyou et al., 2019a; 2019b; Asongu and Odhiambo, 2020a):

*Variables in levels*

$$HHW_{i,t} = \sigma_0 + \sigma_1 HHW_{i,t-\tau} + \sigma_2 TOUR_{i,t} + \sum_{h=1}^4 \delta_j CV_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

*Variables in First Difference*

$$\begin{aligned} & HHW_{i,t} - HHW_{i,t-\tau} \\ &= \sigma_1 (HHW_{i,t-\tau} - HHW_{i,t-2\tau}) + \sigma_2 (TOUR_{i,t-\tau} - TOUR_{i,t-2\tau}) + \sum_{h=1}^4 \delta_h (CV_{h,i,t-\tau} - CV_{h,i,t-2\tau}) \\ & \quad + (\xi_t - \xi_{t-\tau}) + (\varepsilon_{i,t} + \varepsilon_{i,t-\tau}) \end{aligned} \quad (2)$$

Where:

$HHW_{i,t}$  denotes household welfare (a proxy for poverty reduction) measured by real household consumption expenditure per capita of country  $i$  in period  $t$ . TOUR refers to tourism development of country  $i$  in period  $t$ , which is measured by tourist arrivals (TA) and tourism revenue (TR).  $CV$  is a vector of control variables, namely inequality, trade, economic growth and the rule of law. Given the important role that income inequality plays in poverty reduction, inequality has been measured by three proxies, namely the Gini coefficient, the Atkinson index, and the Palma ratio (see Asongu and Odhiambo, 2019a; 2019b).  $\tau$  represents the coefficient of auto-regression,  $\xi_t$  is the time-specific constant,  $\eta_i$  is the country-specific effect,  $\sigma_0$  is a constant, and  $\varepsilon_{i,t}$  is the error term

#### *Identification and exclusion restrictions*

Following previous empirical studies, the ‘ivstyle’ – ‘iv (years, eq (diff))’ procedure is used to deal with the time-invariant omitted variables (see Asongu and Nwachukwu, 2016; Dewan and Ramaprasad, 2014; Asongu and Odhiambo, 2019a). To address endogeneity issues, lagged regressors are used in the model as instruments for forward-differenced variables. In this way, the fixed effects are removed and can no longer have any influence on the investigated nexuses. Following Arellano and Bover (1995) and Love and Zicchino (2006), Helmert transformation was performed in order to remove any fixed effects that could be associated with error terms and which may potentially lead to biasness in the estimation (see also Asongu and Nwachukwu, 2016; Asongu and De Moor, 2017). Helmert (forward-orthogonal) transformation necessitates that the mean of future observations be subtracted from the variables instead of the previous observations being subtracted from the current observations (Roodman, 2009). This leads to parallel or orthogonal conditions between forward-differenced variables and the lagged values (Roodman,

2009; Asongu and De Moor, 2017). Such a transformation ensures that there is no data loss for all observations, with the exception of the last value for each cross-section.

Regarding the exclusion restrictions, the current study treats years as exogenous; hence, they are expected to influence the outcome variable exclusively (Asongu and Odhiambo, 2019a). As a result, the study uses the Difference in Hansen Test (DHT) to test the validity of the exclusion restriction in accordance with the previous studies (see Asongu and Nwachukwu, 2016).

Based on equations (1) and (2), the coefficients of tourism revenue and tourist arrivals are expected to be positive and statistically significant as an increase in tourism revenue and tourist arrivals is expected to lead to an increase in household welfare (real household consumption per capita); hence, a decrease in poverty. Similarly, the coefficients of trade, economic growth and law are expected to be positive and statistically significant. Unlike other variables, the coefficients of all income inequality proxies are expected to be negative and statistically significant. An increase in income inequality is expected to lead to a decrease in real household consumption per capita and a decrease in household welfare, thereby leading to an increase in poverty.

### *Data*

The data used in this study were obtained from a variety of data sources. In line with previous studies, the dependent variable, namely household welfare (poverty reduction) was measured by real household consumption expenditure per capita. The choice of this variable was motivated by a lack of adequate reliable data on the poverty rate in some of the SSA countries included in the

sample and the years under study<sup>4</sup>. It is also consistent with the World Bank's definition of poverty as "the inability to attain a minimal standard of living" measured in terms of basic consumption needs (World Bank, 1990)<sup>5</sup>. Moreover, previous studies have also shown that consumption expenditure among the poor is usually more reliably reported and more stable than income (see Woolard and Leibbrandt, 1999; Ravallion, 1992). In accordance with previous studies, three measures of income inequality were used, namely the Gini coefficient, the Atkinson index and the Palma ratio (see Asongu and Odhiambo, 2019c; Asongu et. al., 2019). A summary of the definitions and sources of the variables used in this study are provided in Appendix 1, while the summary statistics and the correlation matrix are presented in Appendices 2 and 3, respectively.

#### **4. Empirical analysis**

The results reported in Table 1 show that the impact of tourism development on poverty reduction depends on the proxy used to measure the level of tourism development. When tourism arrival is used as a proxy for tourism, the results show that an increase in tourism development leads to an increase in household welfare (poverty reduction), irrespective of the model specification used. However, when tourism revenue is used as a proxy, no significant impact of tourism development on poverty reduction was found to exist, irrespective of the model specification used. The positive impact of tourism arrivals on poverty reduction is supported by the coefficients of tourism arrival in the poverty reduction equation for the Gini coefficient, the Atkinson index and the Palma ratio

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<sup>4</sup> Burkina Faso; Central African Republic; Congo, Dem. Rep.; Gambia, The; Guinea; Guinea-Bissau; Madagascar; Malawi; Mali; Mozambique; Niger; Rwanda; Sierra Leone; Togo; Uganda; Angola; Benin; Botswana; Cabo Verde; Cameroon; Comoros; Congo, Rep.; Cote d'Ivoire; Eswatini; Ghana; Kenya; Lesotho; Namibia; Nigeria; Senegal; South Africa; Tanzania.

<sup>5</sup> See also Odhiambo (2009, 2010).



specifications, which have been found to be all positive and statistically significant. These results show that an increase in tourism arrivals has the potential of alleviating poverty in SSA countries through an increase in employment in the countries under study. Contrary to the tourism arrivals proxy, the results show that tourism revenue has no significant impact on poverty reduction, irrespective of the specification used. This finding, although contrary to some of the previous studies, is consistent with previous studies such as that of Kim et al. (2016).

The empirical results also show that, on the whole, income inequality has a negative effect on poverty reduction in SSA countries in the tourist arrivals specification. This has been confirmed by two out of three income inequality proxies used in the study. The results show that when the Gini coefficient is used as a proxy, income inequality was found to have a negative impact on poverty alleviation, irrespective of the specification used. This shows that high income inequality (measured by the Gini coefficient) generally leads to a decrease in household welfare; hence, an increase in poverty in all of our specifications. This finding is not surprising given the high level of income inequality in the SSA region, which is only second to Latin America. These results are also consistent with previous studies, such as Go et al. (2007), which found that a high incidence of consumption poverty is usually compounded by high levels of income inequality in SSA (Go et al., 2007:259).

The study also found that economic growth has a positive and significant impact on household welfare, thereby leading to a decrease in poverty in SSA countries. This applies irrespective of the tourism or income inequality specification estimated. This implies that an increase in economic growth has the propensity to reduce poverty in SSA countries. The results also show that the rule

of law has a positive impact on household welfare and a decrease in poverty in all the specifications. Contrary to some of the previous studies, it was found that trade has no significant impact on poverty in SSA countries, irrespective of the specification estimated. This is confirmed by the coefficient of trade in the poverty reduction equation, which has been found to be insignificant in all the equations. This finding is not surprising given the fact that many SSA countries trade flows have been dominated by trade deficits rather than surpluses.

**Table 1: Tourism development and household welfare (poverty alleviation)**

	Dependent variable: Household welfare					
	Tourism Revenue			Tourist Arrivals		
	Gini Coefficient Equation	Atkinson Index Equation	Palma Ratio Equation	Gini Coefficient Equation	Atkinson Index Equation	Palma Ratio Equation
Constant	476.1891***	237.8798*	189.921***	404.889***	154.662	147.769***
	0.000	0.081	0.000	0.000	0.153	0.000
Household welfare (-1)	0.6196***	0.6363***	0.6297***	0.6208***	0.6581***	0.6588***
	0.000	0.000	0.000	0.000	0.000	0.000
Tourism Revenue (TR)	0.0019	-0.0037	-0.0002	-	-	-
	0.617	0.494	0.968			
Tourists Arrivals (TA)	-	-		16.4871***	14.889***	14.0246***
				0.000	0.000	0.000
Gini Coefficient (Gini)	-581.7991***	-		-435.19***	-	-
	0.000			0.000		
Atkinson Index (Atkin)	-	-166.1126		-	23.23296	-
		0.227			0.805	
Palma Ratio (Palma)	-	-	-10.257***	-	-	-3.1958
			0.000			0.281
Trade	-0.0968	-0.0594806	-0.1354	-0.4105	-1.1942	-0.3550
	0.846	0.937	0.801	0.435	0.367	0.606
y	0.196873***	0.1913***	0.1962***	0.1913***	0.1789***	0.1768***
	0.000	0.000	0.000	0.000	0.000	0.000
Law	74.66306***	69.7209***	66.788***	78.960***	65.255***	75.196***
	0.000	0.000	0.001	0.000	0.002	0.000
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0.0968	0.102	0.101	0.101	0.094	0.101
AR(2)	0.478	0.523	0.514	0.540	0.553	0.554
Sargan OIR	0.000	0.000	0.000	0.000	0.000	0.000

Hansen OIR	0.787	0.683	0.645	0.838	0.567	0.634
DHT for instruments						
(a) Instruments in levels						
Hansen test excluding group	0.314	0.132	0.253	0.421	0.156	0.170
Dif (null, H=exogenous)	0.849	0.892	0.740	0.854	0.752	0.804
(b) IV (years, eq(diff))						
H excluding group	0.144	0.235	0.198	0.487	0.627	0.337
Dif(null, H=exogenous)	0.952	0.795	0.788	0.829	0.469	0.669
Fisher	25668.44***	93725.04***	86104.95***	4730.69***	7074.69***	5625.72***
Instruments	28	28	28	28	28	28
Countries	32	32	32	32	32	32
Observations	272	272	272	269	269	269

\*\*\*, \*\*, \*: significance levels at 1%, 5% and 10% respectively. DHT: Difference in Hansen Test for Exogeneity of Instruments Subsets. Dif:

## 5. Conclusion

In this study, the relationship between tourism development and poverty reduction (measured by household welfare) is examined using panel data from 32 SSA countries during the period 2005-2014. The study was motivated by scant empirical literature on this subject in SSA countries, on the one hand, and the growing important role of tourism development in poverty alleviation, on the other hand. Unlike some previous studies, two proxies of tourism development are used to examine this linkage, namely tourist arrivals and tourism revenue. In addition, an array of control variables, namely income inequality, economic growth, trade and the rule of law, has been used. For robustness, three proxies of income inequality have been used, namely the Gini coefficient, the Atkinson index and the Palma ratio, thereby leading to three separate specifications for each tourism development proxy. Using the GMM regression analysis, the empirical results show that the impact of tourism development on poverty alleviation is not unanimous as it depends on the proxy used to measure tourism development. When tourism arrival is used as a proxy for tourism, the results show that an increase in tourism development leads to an increase in household welfare

(a decrease in poverty). These results were found to be robust across all the income inequality specifications used. However, when tourism revenue is used as a proxy, no significant impact of tourism development on household welfare was found to exist in the countries under study, irrespective of the income inequality specification used. The insignificant impact of tourism revenue on household welfare, though contrary to our expectation, is not surprising given the tourism revenue leakages that have been found in some developing countries. Such leakages occur when revenues derived from the tourism sector is repatriated from the host country to another country, or to a multinational company operating outside the country. When such leakages occur, host countries usually forfeit any meaningful profits derived from the tourism activities. Another contributing factor could be the high level of income inequality, which has been found to be prevalent in some SSA countries. In the current study, income inequality has been found to have a significant negative impact on household welfare when it measured by the Gini coefficient, which suggests that tourism revenue may not have a significantly positive impact on poverty reduction when income inequality is too high. This finding is also consistent with previous studies, such as Kim et al. (2016), who found that tourism expenditures do not have a significant effect on poverty reduction for all developing countries. Moreover, Blake et al. (2008) found that the overall impact of income generated from the tourism sector on the poor largely depends on how that income is allocated. In summary, our study found that only tourism arrivals alleviate poverty in SSA countries through the improvement in individual countries' household welfare. It is, therefore, recommended that SSA countries should implement pro-poor tourism policies that are not only aimed at attracting international tourists, but also at ensuring that the proceeds from the tourism sector trickle down to the poor in order to alleviate poverty in the region.

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## Appendix 1: Definitions of Variables

Variables	Definitions of variables (Measurements)	Sources
Household welfare (HHW) - poverty alleviation	Real household consumption expenditure per capita	World Bank
Tourism Revenue (TR)	International tourism, receipts (US\$ - millions)	World Bank
Tourist Arrivals (TA)	Number of international tourists' arrival (millions)	World Bank
Gini Coefficient (Gini)	<i>"The Gini index is a measurement of the income distribution of a country's residents"</i> .	GCIP
Atkinson Index (Artkin)	<i>"The Atkinson index measures inequality by determining which end of the distribution contributed most to the observed inequality"</i> .	GCIP
Palma Ratio (Palma)	<i>"The Palma ratio is defined as the ratio of the richest 10% of the population's share of gross national income divided by the poorest 40%'s share"</i> .	GCIP
Economic growth (y)	GDP per capita	World Bank
Rule of Law (Law)	Rule of Law	
Trade	Exports +Imports (% of GDP)	World Bank

## Appendix 2: Summary statistics (2005-2014)

Variables	Mean	Std. Dev.	Min	Max	Obs
HHW	1085.072	1022.406	219.6309	4588.564	309
TR	633.3347	1737.952	0.700	11202	315
TA	0.8970226	1.678049	0.005	9.592	310
Gini	0.5918543	0.0368007	0.4882732	0.8516453	319
Atkin	0.712901	0.060006	0.5098044	0.8326834	319
Palm	6.693619	1.55733	3.015978	14.43498	319
Y	1664.833	1838.601	300.5624	7864.253	320
Law	-0.6333558	0.5788884	-1.793081	0.6959755	320
Trade	69.79549	28.45263	30.88519	161.8937	318

Where:

HHW = poverty reduction - Real household consumption expenditure per capita  
tr = Tourism revenue - International tourism, receipts (US\$ - millions)  
ta = Tourist arrivals - International arrivals (millions)  
gini = Gini coefficient  
artkin = Atkinson index  
palm = Palma ratio  
fd = Financial development (Domestic credit to private sector by banks as a % of GDP)  
law = Rule of law

## Appendix 3: Correlation matrix

	HHW	TR	TA	Gini	Atkinson	Palma	y	Law	Trade
HHW	1.0000								
TR	0.5985	1.0000							

TA	0.6374	0.8700	1.0000						
Gini	0.4743	0.5689	0.4368	1.0000					
Atkinson	0.3229	0.2368	0.1544	0.7861	1.0000				
Palma	0.5180	0.4797	0.3932	0.9288	0.9160	1.0000			
y	0.9501	0.5711	0.6060	0.4747	0.3543	0.5358	1.0000		
Law	0.5175	0.2974	0.2786	0.2787	0.1560	0.3111	0.4804	1.0000	
Trade	0.3083	-0.0870	-0.0951	0.0256	0.2657	0.1732	0.3994	0.1260	1.0000

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HHW: House hold welfare (proxy for poverty reduction). TR: Tourism revenue. TA: Tourism arrivals. Gini: the Gini coefficient. Atkinson: the Atkinson index. Palma: the Palma ratio. GD: Financial development. Law: Rule of law.