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Effects of Tourism on GDP in COMESA Countries: Panel Data Approach

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Abstract

This study estimates the effect of Tourism on economic growth of nine (9) COMESA countries members during the period of 2003 to 2017, using panel data approach. As result, the Tourism is statistically significant and has a positive effect on economic growth in COMESA countries members. As well, the Tourism sector needs support and directive from the government to have better productive activities in order to avoid its adverse impact on GDP of COMESA countries members.

Keywords: Tourism, GDP, COMESA countries, Panel data approach

1. Introduction

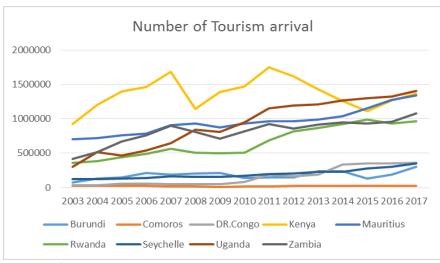
The Common Market for Eastern and Southern Africa (COMESA) was established in December 1994 to serve as an organization as free and independent sovereign states that have agreed to cooperate in the development of their natural and human resources for the benefit of all their people. COMESA is now the largest in the continent with a combined gross domestic product of \$769 billion and a population of 560 million people in July 2018.(The bloc includes: Burundi – Comoros - D.R. Congo - Djibouti - Egypt – Eritrea – Ethiopia – Kenya – Libya – Madagascar – Malawi – Mauritius – Rwanda – Seychelles – Somalia – Sudan – Swaziland – Tunisia – Uganda – Zambia – Zimbabwe-.)

Tourism is an ancient activity, which in the twentieth century took on a global dimension. It is now a fundamental economic sector in many developed and developing countries, making it a key factor in their development. Nowadays tourism is the first service industry in the world. Because of its diversified nature, tourism affects practically all areas of economic activity, it exerts a strong influence on other sectors such as infrastructure, crafts, trade, FDI, Education, Environment and especially services transport...

In 2013, CBC in partnership with COMESA held the first COMESA Sustainable Tourism Forum, which established the CBC Tourism workgroup. The role of the workgroup is to lobby and advocate in the interest of the private sector in the policy–making process at COMESA, at the national level and regional level, and ensure increased policy dialogue between public and private sector. The COMESA Sustainable Tourism Forum also developed a key regional framework and information manual on the status of tourism in COMESA countries, as well as key areas of intervention to improve the competitiveness of the industry at a national and transborder level.

According to our research, the data that we could collect, the evolution of the quantity of tourists in COMESA countries from 2003 to 2017 is as follow.

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Source: Author

1.1 Graph interpretation:

This graph shows the evolution of the number of arrivals of Tourists in the nine (9) member countries of COMESA during the period from 2003 to 2017. Observing the graph, Kenya hosts the highest number of tourists in COMESA countries surely because of its famous airlines company Kenya Airways, the pride of Africa, Kenya became an ideal destination for exploring natural resource and for business. In 2014 Uganda overtook Kenya who fell in second place and then in 2015 Mauritius rose in second place while overtaking Kenya too. Kenya, Mauritius, Uganda, Rwanda, Zambia host the highest numbers of tourists meaning more than 500000 tourists a year among the 9 selected countries from 2003 to 2017. Comoros received the lowest number of tourists cause the country is quite small and do not have manytourists' activities nortouristic site, then coming DR Congo, Seychelles and Burundi hosting each less than 500000 tourists a year from 2003 to 2017.

In our methodologies, for identifying variables (COMESA's Countries economic growth (GDP) and other five explanatory variables such as Number of tourism arrival (NTA), Expenditure of tourism (ETS), Openness trade (OPT), Exchange rate (EXR, and Foreign direct investment (FDI)) during the period from 2003 to 2017 by combing nine COMESA's countries, which we deny the heterogeneity or individuality that may exist among the nine countries. We assume that all the countries are same but normally it does not happen or they are not same. We use the fixed effect model to allow for heterogeneity among nine COMESA's countries by allowing to have its own intercept value. By combining nine COMESA's countries by pooling, we deny the heterogeneity or individuality that may exist among the nine countries. In Random effect model, our studied countries have a common value for intercept. Finally, we check which model is suitable between fixed effect model and Random effect model for our study by using Hausman test. This paper is addressed to decision makers, investors, government and economists in terms of highlighting concept of Tourism in COMESA's countries and their contributions on economic growth.

2. Objectives of The Study

The main objective of the study is to measure the effect of Tourism on economic growth in COMESA countries members.

The study aims to: (i) analyze the share of Tourism on economic growth in COMESA countries members; (ii) determine whether Tourism has a positive or negative effect on economic growth in COMESA countries members.

3. Literature Review

3.1 Tourism and Economic Growth

Du, Ding, Lew, Alan A., Ng and Pin T. (2014) examine the influence of tourism on the economic growth of Malaysia and Singapore. Two control variables such as international trade and the exchange rate are included in the model to properly determine the specification. The results show that the economydriven by tourism growth assumption is strong in Malaysia, while the economic growth hypothesis driven by tourism has been accepted for Singapore. In addition, maintaining the competitive exchange rate is essential to promote the relationship between tourism and economic growth.

Del P. Pablo-Romero, Maria, Molina, José A. (2013) presents a review of the published literature on the relationship between tourism and economic growth as well as a thematic and chronological analysis of empirical research on this point. This approach leads to a grouping of the several works into three main groups according to the methodology applied: time series, panel data and cross-sectional data. Within each set, we organize the literature chronologically and conclude on their conclusions. It can be shown that the link between tourism and growth depends on various causes, the main one being the type of specialization of the country in tourism. It is also noted that the empirical results are very sensitive to the choice of the specifications of the econometric model used.

Nissan, Edward, Galindo, Miguel Angel, Méndez, Maàa Teresa (2011) examine whether tourism activity affects economic growth. The study uses key variables such as entrepreneurship and prices, stimulating tourism activity and shows a feedback effect between income and tourism. The results indicate that tourism provides the funds needed to finance business activities, also promotes the productivity of local businesses and creates new job opportunities that improve the quality of life of the country.

Holzner, Mario (2011) has made an empirical analysis of the danger of a Dutch disease effect in long-term tourism-dependent countries. They used data on 134 countries of the world for the period 1970-2007. As a first step, the long-term link between tourism and economic growth is analyzed in a transnational context. The results are then verified in a panel data framework on per capita GDP levels to control the effects of reverse, non-linear and interactive causality. It was found that there was no risk of beach disease effect. On the contrary, tourism-dependent countries do not face real exchange rate distortion and deindustrialization, but above-average rates of economic growth. Investment in physical capital, such as transport infrastructure and investment in tourism, are complementary.

Ivanov, Stanislav, Webster and Craig (2007) apply a methodology to measure the contribution of tourism to economic growth, which is tested using data for Cyprus, Greece and Spain. They use real GDP growth per capita as a measure of economic growth and a break down in economic growth generated by tourism and economic growth generated by other factors. The methodology is compared to other existing methodologies; namely, the Tourism Satellite Account, computable general equilibrium models and econometric modeling of economic growth.

3.2 Relationship between tourism and FDI

Perić, Jože, Radić and Maja Nikšić (2017) investigate the causal link between the stock of foreign direct investment (FDI) in tourism and the number of international tourist arrivals in the Republic of Croatia between 2000 and 2012 using quarterly statistics, time series from 2000 (1) to 2012 (4). The enhanced Dickey - Fuller test (ADF) was applied to check the stationarity of the variables. The Johansen co-integration test was used to test a long-term relationship between the variables and, given the absence of the same, the automatic vector regression model (VAR) was created. The Granger and Toda - Yamamoto test was conducted to test a short - term causality between the selected variables. As a result, they found a one-way short-term causal relationship ranging from FDI in tourism to international tourist arrivals with a high level of significance of 1%. The research findings highlight the need for a favorable macroeconomic environment, as well as a policy of incentive investment measures specifically targeted at the tourism sector in order to strengthen the conditions for a greater influx of FDI which is essential for the qualitative and quantitative positioning of Croatian tourism compared to competing destinations.

KhoshnevisYazdi, Soheila, Nateghian, Niloofar, Sheikh Rezaie and Niloofar (2017) study the impact of foreign direct investment (FDI), the official exchange rate and international trade on international tourism, using panel data from 27 countries from 1995 to 2014. The result based on the pooled estimator of average dynamic panel groups shows that there is no causal relationship between FDI and tourism receipts, nor between a bidirectional causal relationship between the real exchange rate, trade openness and tourism receipts, and explains that FDI plays an important role in the tourism sector in EU countries. Adequate policies to discover tourism resources, development plans for new tourist sites and facilities may need to be considered in order to cope with the growth of tourism revenues.

Kaur, Harwinder, Sarin, Vishal (2016) examine the causal link between economic growth and tourism by selecting certain indicators such as real gross domestic product, foreign exchange earnings from tourism, the arrival of foreign tourists and FDI. They use popular time series models for the period from 199I to 2014, providing evidence of long-term unidirectional causality ranging from tourism activities to economic growth in the country. Therefore, the government can consider this relationship as an important tool of political involvement in order to achieve sustainable development of tourism and the economy.

Fereidouni, Hassan Gholipour, Al-Mulali and Usama (2014) conducted an empirical study explaining the link between foreign direct investment (FDI) in the real estate sector (FDIRE) and international tourism (TOUR). Granger co-integration and causality techniques are used to analyze short- and long-term linkages in the case study of selected OECD countries. Our empirical results show the existence of a long-term and bidirectional causal link between FDIRE and TOUR. The results have implications for the decision-makers.

Craigwell, R, Moore, W (2008) uses panel-based causality methods to study the relationship between foreign direct investment (FDI) and tourism in small island developing states (SIDS). The results of homogeneous and instantaneous causality tests suggest that there is a two-way causal relationship between the selected variables. However, this causality is not homogeneous for the group of countries. Indeed, heterogeneous causality procedures indicate that there is a bidirectional causal relationship only for a small group of countries. For the most part, the cause-and-effect relationship ranges from FDI to tourism, implying that FDI provides a much needed capacity for SIDS and thus allows these countries to increase their tourism product.

3.3 Linkage between Tourism and Trade

Hanafiah, Mohd Hafiz Mohd, Harun and MohdFauziMohd (2013) study tourism demand in Malaysia on the basis of key economic factors such as income, price, exchange rate, consumer price index, distance, population and economic crisis using a modified Gravity econometric model. they also examined the movement, structure, and changes in international tourist arrivals by applying, using the modified gravity model, a time series of tourist arrival groups from Australia, Hong Kong, Indonesia, the United Kingdom, Thailand, Taiwan and China by cross-cutting group. The log-linear equation indicates that tourism demand is strongly correlated with countries' gross national income (GNI) showing the impact on standard of living. In addition, tourism demand is negatively correlated with the exchange rate (ER), with tourists with higher purchasing power preferring to travel to Malaysia. The consumer price index (CPI) or inflation rate reduces the number of tourists. The increase in numbers of incoming tourists has been influenced by population growth and distance could reduce tourism demand. The economic crisis has negatively affected the tourism demand of the ASEAN countries, but has had a positive correlation with the western continent and other continents. This study makes it clear that, despite the regional economic crisis, the Malaysian government can still count on the tourism sector to support the economy through international tourists.

Holloway, JC (2012) stated that tourism would become one of the world's largest industries starting in the 21st century, if positive political goals and global leadership emerged in the 1990s. Develop tourism policy guidelines explaining and demonstrating to decision makers why they should pay special attention to the tourism industry. He discusses the symbiotic links between the economic aspects of international tourism trade and non-trade issues, such as the increased benefits of cultural exchange and the promotion of mutual goodwill, and recommends the importance of increased dialogue on tourism. He examines the role of international tourism as a commercial and economic activity; the political and foreign implications of international tourism; obstacles to international travel; socio-cultural and environmental aspects of international tourism; as well as projections, implications and political perspectives until 2000. In a specific way, it analyzes the place of tourism in the current revolution of services in the world and presents data on the micro and macroeconomic aspects of tourism.

Hafiz, Mohd, Hanafiah, Mohd, Harun, MohdFauzi, Jamaluddin and MohdRaziff (2011) argue that the tourism industry can be claimed as one of the important sectors for modern Malaysian economic development. It has been identified as the second largest sector earning foreign exchange earnings and has boosted the performance of Malaysia's gross domestic product and trade balance. Many studies have been done to support the theory that there is a link between trade and tourism and most of them have shown a positive correlation. This research work specifies tourism demand patterns in Malaysia and estimates the demand equations using data on the influx of tourists for the period 1997-2008. Researchers have identified bilateral trade, population, income, tourism price and geographical distance between Malaysia and Asian countries as the main determinants of tourism. This clearly shows that tourism demand is significantly related to trade. By taking more proactive action on the part of policy makers to understand the dynamics of this sector, Malaysia can still improve the quality of the tourism industry to be the main focus of tourism in Asia and the world after 2020.

Keum, Kiyong (2010) discusses that international trade represents the transnational flow of goods, while international tourism refers to the flow of humans from one country to another. This article analyzes trade and tourism flows to determine whether typical business theories can form a theoretical basis for tourism flows. Using a data panel analysis approach, this article uses the gravity model and Linder's assumption for the two international flows in Korea.

The empirical results show evidence supporting the gravity model in terms of applicability and robustness to commercial and tourism flows. However, Linder's hypothesis based on the gravity model does not give the same result.

4. Methodology

The study has used the panel data method, through which we will use the following three models: Pooled regression model (PRM), fixed effect model (FEM) and random effect model (REM). To know the best models to use in the analysis, two tests will be applied: the first test (LM test) Lagrange multiplier proposal from Preusch and Pagan in (1980). This test is used to choose between (PRM), (FEM) or (REM), the second test is Hausman test (1978), to choose between (FEM), (REM). Using a variety of studies applied to different models in the estimation of FDI on economic growth in addition to the use of different methodologies, accordingly, the standard model in this study, the general equation is as follows:

$$GDP = (LNNTA, LNETS, LNOPT, LNEXR, FDI)$$
(4.1)
Thus, our growth function

becomes:

$$GDP_{t} = C + \beta_{1}NTA_{t} + \beta_{2}ETS_{t} + \beta_{3}OPT_{t} + \beta_{4}EXR_{t} + \beta_{5}FDI + \varepsilon_{t}$$
 (4.2)

Where:

GDP_t: Economic growth (proxy for Gross domestic product in period t,

NTA: Number of tourism arrival in period t,

ETS_t: Expenditure of tourism sector in period t,

OPT_t: Openness trade in period t,

EXRt: Exchange rate in period t,

FDI_t: Foreign direct investment in period t,

By taking the LN to GDP, the equation becomes:

$$LNGDP_{t} = C + \beta_{1}LNNTA_{t} + \beta_{2}LNETS_{t} + \beta_{3}LNOPT_{t} + \beta_{4}LNEXR_{t} + \beta_{5}FDI + \varepsilon_{t}$$
 (4.3)

4.1 The Pooled OLS Regression Model

It can clarify the compound regression model as follows:

Suppose pooled regression model homogeneity of variances random error between the countries under study limits ($\sigma_i^2 = \sigma_t^2$), together with zero covariance between countries $Cov(\varepsilon_{ii}it, \varepsilon_{js}) = 0$ for $i \neq j$. The model also assumes the formation fixed limit transactions ($\alpha_{i,s}$) and slope coefficients (β , s) for all countries.

4.2 The Fixed Effect Model

The fixed effect model is simply a linear regression model in which the intercept terms vary according to the individual units i.

$$Y_{it} = \alpha_1 \delta_{1it} + \alpha_2 \delta_{2it} + \dots + X_{it} \beta + \varepsilon_{it} \dots (4.4)$$

Where it is usually assumed that all X_{it} are independent of all \mathcal{E}_{it} , we can write this in the usual regression framework by including a dummy variable for each unit i in the model:

$$Y_{it} = \sum_{j=1}^{N} \alpha_j d_{ij} + X_{it} \beta + \varepsilon_{it} \dots (3)$$

Where $d_{ij} = 1$ if i=j and 0 elsewhere. We therefore have a set of N dummy variable in the model. The parameters $\alpha_1, \ldots, \alpha_N$ and β can be estimated by ordinary least squares in equation (3).

The implied estimator for β is referred to as the Least Squares Dummy Variable (LSDV) estimator. It may, however, be numerically unattractive to have a regression model with so many repressors.

4.3 The Random Effect Model

It is generally assumed in regression analysis that all factors that affects the dependent variable, but which have not been included as repressors can be appropriately summarized by a random error term. In our case, this conducts to the assumption that the αi are random factors, independently and identically distributed over individuals. Thus, we write the Random Effects Model as,

$$Y_{it} = \mu + X_{it} \beta + \alpha i + \varepsilon_{it}, \varepsilon_{it} \square IID(0, \sigma_{\varepsilon}^{2}); \alpha_{i} \square IID(0, \sigma_{\alpha}^{2})....(4.5)$$

where $\alpha i + \mathcal{E}_{it}$ is processed as an error term composed of two components: an individual specific component, that will not vary over time, and a remainder component, that is assumed to be uncorrelated over time, this is all correlation of the error terms over time is attributed to the individual effects. It is assumed that α_i and \mathcal{E}_{it} are mutually independent and are independent of X_{js} (for all j and s). This implies that the OLS estimator for μ and β from (5) is unbiased and consistent. The error components structure implies that the composite error term $\alpha i + \mathcal{E}_{it}$ exhibits a particular form of autocorrelation (unless $\sigma_{\alpha}^2 = 0$).

4.4 The Hausman Test

The Hausman test allows choosing between the fixed effect model and the random effects model. The null hypothesis is that the preferred model is the random effects model vs the alternative which is the fixed effects model. It essentially tests whether the unique errors (ui) are correlated with the regressions; the null hypothesis is that they are not.

5. Results and Interpretations

5.1 Pooled regression Model

Table 1: Pooled regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNNTA LNETS LNOPT LNEXR FDI	-0.120129 0.157100 1.529988 -0.142211 0.007267	0.073887 0.080024 0.174914 0.041065 0.012505	-1.625854 1.963161 8.747105 -3.463072 0.581101	0.1064 0.0518 0.0000 0.0007 0.5622
R-squared Adjusted R-squared S.E. of regression Sumsquaredresid Log likelihood Durbin-Watson stat	0.694577 0.685180 0.708431 65.24362 -142.4743 0.102680	Schwarz c	ndent var o criterion	7.059293 1.262601 2.184805 2.292407 2.228531

Source: author's calculation

According to table 1, we see that the p-value of the LNOPT and LNEXR are less than 5%, meaning the variable can explain the GDP at level of 0.05. While, the variables LNNTA, LNETS and FDI are not statically significant at 5% level. But for the time being, we shall not accept the result of this pooled regression model. For we see that the thirteen countries are not same. Then now, we shall develop Fixed Effect model and we are assuming that our thirteen countries have different intercept.

5.2 Fixed effect Model or LSDV Model

The fixed effect or LSDV model allows a heterogeneity or an individuality among thirteen countries by letting them have their own intercept values.

Table 2: Fixed effect results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C LNNTA LNETS LNOPT LNEXR FDI	3.027756 0.113029 0.125287 -0.143893 0.179753 0.001818	0.295150 0.026564 0.017713 0.059577 0.045552 0.001677	10.25838 4.254940 7.073359 -2.415259 3.946093 1.083924	0.0000 0.0000 0.0000 0.0172 0.0001 0.2806
	EffectsSpecification			
Cross-section fixed (d	ummy variabl	es)		
R-squared Adjusted R-squared S.E. of regression Sumsquaredresid Log likelihood F-statistic Prob (F-statistic)	0.996047 0.995622 0.083541 0.844475 150.9595 2345.155 0.000000	S.D. depe Akaike in Schwarz o Hannan-O	endent var endent var fo criterion criterion Quinn criter. Vatson stat	7.059293 1.262601 -2.029030 -1.727742 -1.906595 0.420578

Source: author's calculation

Our model is acceptable and fitted, also all coefficients of the model are equal to zero, because our Prob>F = 0.0000 less than 0.05. The probability of LNNTA variable is 0.000 less than 5%, LNETS variable is 0.0000 less than 5%, and LNEXR variable is 0.0001less than 5%, are statically significant to explain the variable GDP. Only the p-values of FDI variable is 0.2806 is bigger than 5%, meaning not significant to explain the variable GDP.

5.3 Random effect Model

Table 3: Random effect results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C LNNTA LNETS LNOPT LNEXR FDI	3.016359 0.124230 0.123059 -0.127687 0.146889 0.001935	0.464159 0.026108 0.017699 0.059396 0.044021 0.001676	6.498545 4.758233 6.952763 -2.149761 3.336828 1.153993	0.0000 0.0000 0.0000 0.0334 0.0011 0.2506
	EffectsSpecification S.D.		Rho	
Cross-section random Idiosyncraticrandom			1.075433 0.083541	0.9940 0.0060
	WeightedStatistics			
R-squared Adjusted R-squared S.E. of regression F-statistic Prob (F-statistic)	0.632134 0.617875 0.086570 44.33419 0.000000	Meandependent var S.D. dependent var Sumsquaredresid Durbin-Watson stat		0.141562 0.140044 0.966772 0.365107
	UnweightedStatistics			
R-squared Sumsquaredresid	-0.378545 294.4813		endent var Vatson stat	7.059293 0.001199

Source: author's calculation

The results of the random effect show that the probability value of the F-statistic is equal to 0.0000 less than 0.05, meaning our model is well fitted and acceptable. We find also that the variables LNNTA, LNETS, LNOPT and LNEXR are statically significant to explain the variable GDP. However, FDI is not significant to explain the variable GDP.

5.4 Hausman test

Here our nine countries that have common mean value for the intercept. Now we shall apply Hausman Test to check which model is appropriate (Fixed Effect or Random Effect).

Hypothesis:

H₀: Random effect Model is appropriate

H₁: Fixed effect Model is appropriate

Table 4	Hausman	test results
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Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		14.523156	5	0.0126
Cross-section rand	dom effects tes	t comparisons:		
Variable	Eirod	Dandom	Van (Diff)	Daob

Variable Random Var (Diff.) Fixed Prob. LNNTA 0.113029 0.124230 0.000024 0.0222 **LNETS** 0.125287 0.123059 0.0000000.0012 **LNOPT** -0.143893 -0.127687 0.000021 0.0005 LNEXR 0.179753 0.146889 0.000137 0.0050 FDI 0.001818 0.001935 0.0000000.0231

Source: author's calculation

P-value is 0.0126 < 5%, we reject the random effect Model. So, the fixed effect model is appropriate.

$$LNGDP_{it} = 3.016359 + 0.124230LNNTA_{it} + 0.123059LNETS_{it} - 0.127687LNOPT_{it} + 0.146889LNEXR_{it} + 0.001935FDI_{it}$$

The above equation shows that influence of LNNTA, LNETS and LNEXR as predicated are positive and significant at 5% level of significance. The results of the "log-log= model should be treated as elasticity – one percentage change in independent variable leads to β_i percentage change in the dependent variable. In this case, an increase in LNNTA by 1% is related to 0.124% increase, an increase in LNETS by 1% is related to 0.124% increase, and an increase in LNEXR by 1% is related to 0.146% increase in a specific region's growth, which means that Tourism influence positively the economic growth in COMESA economies. These results are consistent with Pelinescu et al. (2009).

6. Conclusions

The study aimed to examine the impact of Tourism on Economic growth in COMESA countries members during the period of 2003 to 2017. The results show us that The probability of LNNTA variable is 0.000 less than 5%, LNETS variable is 0.0000 less than 5%, are statically significant to explain the variable GDP. And an increase in LNNTA by 1% is related to 0.124% increase, an increase in LNETS by 1% is related to 0.124% increase, and an increase in LNEXR by 1% is related to 0.146% increase in a specific region's growth, which means that Tourism influence positively the economic growth in COMESA countries members. The results of our analysis indicate that the Tourism sector contribute on economic growth in COMESA countries members, also the tourism sector is one of the priority sectors identified by the COMESA Treaty. Similarly, there are a number of private sector associations representing the tourism stakeholders at national and regional levels in COMESA. These include: tour operator's associations, tourism associations, hotel associations and others. One key factor to note in the case of tourism associations and councils is that some of the associations are public-private institutions or quasi-governmental bodies. But the p-values of FDI variable is 0.2806is bigger than 5%, meaning not significant to explain the variable GDP meaning that the government does not have a policy of directing investments to specific geographical areas but encourages investment in job-creating, currency-generating sectors and creating upstream and downstream linkages with rural areas.Governments of COMESA member countries must manage and direct the tourism sector towards productive activities in order to avoid the adverse effects of tourism on GDP.

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