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Comparative Analysis of Tourism Determination in 36 Countries: A Panel Approach

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Abstract

This study utilizes panel estimation models to analyse the determinants of tourism in 36 countries[1] with observations of 108, and countries are further disaggregated into sub-groupings of high income, upper middle income, low middle income and low income countries. The application of panel econometric methods allowed us to control for unobserved heterogeneity amongst different countries and that is necessary to circumvent certain econometric challenges indicated in the literature which include endogeneity of tourism variables and also measurement biasness. Our results shows that tourism arrivals have the expected effect on tourism with a positive elasticity on tourism receipts ranging from 0.41% in all countries to 0.63% in low income countries. However, exchange rates and inflation have an expected negative sign, which implies tourism earnings are affected by high exchange rates and inflation which is attributed to costs of tourism related to tourism services such hotel prices, domestic transportation and entrances to tourism facilities like for example, game reserves. Furthermore, the results show different specifications per income groups. Therefore some variables tend to change its effect as situations are different from one country to another.

Keywords: Fixed effects, economic development, hausman test, random effects and tourism.

Introduction

Tourism is classified amongst the largest industries in the world, as it contributes to countries' economic earnings. The industry is regarded as a dynamic force to boost wide economic growth and development (Vencovska, 2014; Beerli & Martin, 2004). The aim of the study is to analyse the determinants of tourism earnings in 36 selected countries, which comprised of low income countries, low middle income countries, upper middle income countries and high income countries. As demonstrated by Beard and Ragheb (1983), tourism was described by Hermann van Schullard (an Australian economist) in 1910 as a service industry were individuals or groups of people who enters, visit and transiting between countries, city as well as regions.

Furthermore, the World Tourism Organisation (WTO) explains tourism as the events where people move to, and then stay in dwellings outside their traditional environment for the period not exceeding one year for business, sports, leisure cultural and many more (Gilbert, 1990; Mohebi & Rahim, 2010; Harrison, 2015). There are six different types of tourism as suggested

[1] The high income countries include: Australia, Bahrain, Canada, Chile, Japan, New Zealand, South Korea, United Kingdom and Uruguay. The upper middle income countries are as follows: Albania, Algeria, Belarus, Botswana, Columbia, Fiji, Kazakhstan, Malaysia and South Africa. The low middle income countries include: Angola, Bangladesh, Bolivia, Cape Verde, Georgia, India, Indonesia, Jordan and Kenya. Lastly, the low income countries are as follows: Burkina Faso, Ethiopia, Malawi, Mozambique, Nepal, Sierra Leone, Senegal, Tanzania and Uganda.

by Vanhove (2005), which are as follows: (1) domestic tourism which includes traveling of residents within the borders of their country, (2) inbound tourism refers to when non-residents are visiting a specific country for business, leisure, sports or any other purposes that takes a period of less than a year, (3) outbound tourism is when residents are visiting other countries, (4) internal tourism refers to the earnings emanating from both domestic and inbound tourism, (5) national tourism caters for the combination of both domestic and outbound, and (6) international tourism refers to inbound and outbound tourism combined (Milne & Ateljevic, 2010; Vencovska, 2014).

The determinants of tourism earnings are interlinked to tourism demand and supply. According to Deluma and Jeon (2014), demand for tourism is normally measured by counting the number of non-residence arrivals, tourist expenditure and total nights spent in the destination country. On the contrary, the supply side of tourism is characterised by the attractiveness of a region or country, consistent supply of hospitality, facilities and interconnections in transport, accommodation, communications and amounts of investment destined to boost tourism infrastructure. Tourism earnings may contribute to employment, sales of goods in the host country, profits, income and tax revenue (Ardahaey, 2011; Ardahaey, 2011; Deluma & Jeon, 2014; Zidana, 2015).

According to Vencovska (2014), many studies in the tourism industry predominantly focus on the economic factors such as exchange rates, income, and relative prices as the explanatory variables for tourism earnings. Therefore, this study aims to close the existing gap in knowledge by using those variables as explanatory variables to analyse the determinants of tourism earnings in assorted countries comprised of four groups. However, the determinants of tourism earnings range from geographical, political, social and technological factors. Vencovska (2014) argues that variables such as proneness to terrorism attacks, abundance of tourist attraction sites and occurrence of civil wars are mostly overlooked in most tourism studies. Harrison (2015) argued that modernisation and neoliberal theories made developed countries extract tourism earnings out of developing and less developed countries, since most consortia who own hotels, airlines and other tourism facilities are based in developed countries and that invariably results in repatriations of tourism earnings to the developed countries. When it comes to international tourism, the developing countries are on the disadvantaged side concerning cultural, economic, social and political aspects, as they are exploited by transnational companies who operate the majority of value chains.

The hypotheses to be tested are as follows:

H_0: Tourism earnings are not determined by any of the selected independent variables in all 36 selected countries and four sub-groups.

H_1:At least one of the independent variable is a determinant for tourism earnings in all 36 selected countries and four sub-groups.

The remainder of this paper is structured as follows: section 2 outlines the literature review regarding the determinants of tourism earnings. Section 3 deals with theoretical argument and empirical framework; whereas section 4 provides the empirical analysis and section 5 paints the concluding remarks. Sections 6 represent the literature that has been cited.

Literature review

According to Vencovska (2014), consumer theory is important when measuring the reaction of explanatory variables in the literature of tourism earnings. Consumption theory indicates that consumption level is reliant on consumer income, the price of services, prices of

substitutes and other aspects that might trigger tourists to spend or not. Consistent with consumer theory, Mervar and Payne (2007) demonstrate that the income of tourist and relative prices are regarded as the main factors influencing tourism earnings.

The theory of factor endowments and international tourism as developed by Heckscher in 1919 and improved upon by Ohlin in 1933, states that natural endowments are an important driver to tourism earnings as tourists are normally attracted by natural resources and most of thse are considered to be the raw materials of tourism products (Vellas & Becherel, 1995). Furthermore, factor endowments drive countries to specialise in a particular form of tourism, for example Africa has an abundance of a variety of wildlife which makes this field an anchor of tourism earnings. Therefore, natural endowments remain a leading driver of tourism earnings for African countries.

Algieri and Kanellopoulou (2009) conducted the study on the determinants of earnings with specific emphasis on outbound tourism. Their study focused on four higher income countries, including Australia, France, Greece and Spain, whereas the period under review was from 1985 to 1996. The maximum likelihood method was adopted for econometric analysis, whereas the variables selected included price and foreign income, consumer taste, while a time component was introduced to cater for effect of time period on competitiveness of the tourism industry. In addition the structural model with error adjustment provides space for various causes of tourism fluctuations and better measure the contribution of each variable to tourism earnings through outbound tourism. However, their findings indicate that outbound tourism is influenced by consumer preferences, technological change as well as other exogenous factors identified to impact tourism flow which include exchange rate, political stability and civil war (Algieri & Kanellopoulou, 2009).

The study conducted by Phakdisoth and Kim (2007) was aimed at analysing the determinants of inbound tourism earnings in Laos and they have estimated the tourism earnings equation using the inflow data for the period ranging from 1995 to 2004. The study applied an econometric model which captured both static and dynamic effects of tourism earnings determinants. The results shows that bilateral trade agreements, communication networks, destination risks, the distance between Laos and country of origin for tourists and transport infrastructure are determinants of tourism earnings in the long-run. In the short-run significant variables include exchange rates, incomes of tourists, political stability and absence of war in the destination country. Their results demonstrate that inbound tourism in Laos is income and price inelastic. This implies that tourism in Laos is not regarded as a luxury good. However, the results from the dynamic model show that infrastructure and price are more critical determinants, rather than income, when viewed in the short run.

Deluma and Jeon (2014) completed the study on the determinants of global tourism demand for the Philippines for the period ranging from 2001 to 2012, using an augmented gravity model approach. The study focused on a second-log augmented form of gravity model, whereas the estimation used the robust random effects. The findings reveal that the number of tourist arrivals was increasing during the period under review. Furthermore, the results indicate that factors such as distance between origin and destination countries, income, relative prices, price of services in the neighbouring countries and market size are regarded as important determinants for tourism demand.

The study captured the impact of other supporting variables such as prevalence of conflicts, direct flights, common language, and common ‘coloniser’ was also included in the equation. The main findings reveal that tourism inflow is negative and significantly affected by the distance between the host country and country of origin. Direct flights between origin and destination countries tend to be positively significant in driving tourism earnings. However,

other variables were found to be relatively insignificant, which included the cost of living, price of services, prices in competing tourist destinations, conflict and common colonisers.

Modernisation theory and neo-classical theories are advocating for the globalisation of goods and services such as tourism as well as services related to the industry, hence globalisation favours developed countries due to highly sophisticated tourists attraction sites while developing countries are prone to civil wars, inadequate health and poor tourism infrastructure. Globalisation allows for free movement of tourists around the world and it assumed that service sector is booming and derailed most countries to achieve their industrialisation dreams. Therefore, both modernisation and neo-classical theories are arguing for the power of free market rather than government intervention tends to results in all countries benefiting equally from international tourism. Tourism earnings are determined by market forces and wide economic growth is the ultimate result of international tourism (Harrison, 2015).

Contrary to modernisation and neo-classical theories, the environmentalists challenged the neo-classical theory as they have argued that natural resources need to be safeguarded from possible damage. Their argument is that government should intervene in setting quotas regarding the number of tourists allowed during a specific period. Furthermore, the tourism earnings should benefit the surrounding community not multinational companies. Therefore, environmentalist are advocating for state intervention and socialism practices which is consistent to Karl Marx's theory of Socialism (Harrison, 2015)

The study intended to seek out the gap in the literature by explaining the determinants of tourism earnings using a panel of 36 countries, which were disaggregated by the different income groups. The study used old and new variables, which include yearly effects dummy to identify the performance of some variables on different years. Broad literature on tourism used variables such as income, exchange rates, war prevalence and terrorist attacks, which all variables are tending to have a positive significant relationship with tourism earnings. This study proposed using panel fixed and random effects to answer the questions pertaining to determinants of tourism earnings.

Theoretical argument and empirical framework

The underlying model to answer the research question concerning the determinants of tourism earnings is based on the Solow-Uzawa growth model and this model interlinks with neoclassical growth theory with externalities (Zhang, 2015). This is a simple framework for the proximate causes and the mechanics of economic growth and income across a variety of country differences (Solow, 1971).

The model synchronises several approaches in economic theories such as the Solow growth model, growth model with tourism sector, neoclassical growth models, Uzawa two-sector growth model, development theory, utility theory, comparative costs theory and demand theory (Chumni, 2001). The model puts emphasis on interactions between economic development and contributions from tourism earnings to economic wide growth (Copeman, 1991).

As demonstrated by Zhang (2015), the assumption is that the economic earnings are derived from two different products which are tradeable goods and services. Therefore, tourism is classified under the services sector and international tourists are thus consuming of services which boost economic growth. Interest rate r^*, is assumed to be fixed at international level. Capital is expected to depreciate at exponential rate; δ_k . The tourists generally hold some wealth and their spendings are derived from wages, property rentals and interest rates

accumulated from their wealth. All countries are assumed to be perfectly competitive, whereas capital is free to transition between different sectors of the economy. However, labour is anticipated to be homogenous and immobile.

Tourism industry requires three types of inputs, namely: capital $K_s(t)$, labour $N_s(s)$, and land $L_s(t)$. Therefore, the equation for the service industry is expresses as follows:

$$F_s(t) = A_s K_s^{\alpha}(t) N_s^{\beta}(t) L_s^{\gamma}(t), \alpha_s, \beta_s \gamma_s > 0, \alpha_s + \beta_s + \gamma_s = 1 \quad (1)$$

Where represent $A_s, \alpha_s, \beta_s, \ and \ \gamma_s$ are parameters. While $p(t) \ and \ R(t)$ are representative for the service price and rental costs. The model further assumed that prices are dependent on market mechanism. Therefore, the earning functions of international tourists are denoted as follows: In this case $y_f(t)$ represent the disposable income in international countries. As demonstrated by Schubert and Brida (2009), the following assumption was made which elastic earnings function:

$$E_T(t) = a(t) y_f^{\emptyset}(t)[(1 + \tilde{\tau}_s)p(t)]^{-\varepsilon} \quad (2)$$

Where $\emptyset$ and ε are indicating the income and price elasticities towards tourism earnings. Most studies such as Zoran *et al*., (2011); and Beerli and Martin (2004) used $a(t)$ as the dependent variable to denote tourism infrastructure such as airports, the entire transport systems in destination countries and total travel costs.

The general underlying assumption is that tourists pay similar prices to locals when consuming tourism services such as hotels, air tickets and natural reserve parks. Tourists prefer to travel to countries where currencies are less valued than countries of origin. For example, people enjoy travelling to places free from terror attacks, places where government is found to be prioritising health care, where there are reliable direct flights and no wars or brewing wars.

The Empirical Framework

The study employed panel data collected from 36 countries for the period of 2004, 2009 and 2014, which was comprised of four different sub-groupings ranging from low income countries, low middle income countries, upper middle income countries and high income countries. The main advantage of working with panel data is that it provides large observations, it leads to large degree of freedom which minimises collinearity among independent variables and estimation efficiency is improved (Witt & Witt, 1995; Wooldridge, 2013; Gujarati, 2003).

The study attempted to contribute to the theory by including new variables such as population as well as government spending on health care and also disaggregating the countries into different income groups as situations differ per income group. The dataset would enable the researchers to check for variables that vary little on the entire sample, but which tend to differ across countries (Vencovska, 2014). Table 1 below provides a summary of variables to be used in the study.

Table 1. Variables, explanation, source and period

Variables	*Description and expected sign*	*Source*	*Period*
Tsmrct	*tourism receipt (dependent var.)*	Econometrics facilitator and country income groups obtained from World Bank	2004, 2009 & 2014
Tsmrr	*tourism arrival (+)*	Econometrics facilitator and country income groups obtained from World Bank	2004, 2009 & 2015
Inf	*Inflation (-)*	Econometrics facilitator and country income groups obtained from World Bank	2004, 2009 & 2016
Exr	*exchange rate (-)*	Econometrics facilitator income and country income groups from World Bank	2004, 2009 & 2017
Govexp	*government expenditure on health (% of GDP) – (+)*	Econometrics facilitator and country income groups obtained from World Bank	2004, 2009 & 2018
Pop	*Population (+)*	Econometrics facilitator and country income groups from World Bank	2004, 2009 & 2019

Source: Own calculations based on results, 2018

The first principle before estimating the regression was to conduct the descriptive statistics in order to understand the dataset for the entire sample and also those of different income groups. The descriptive aspect is critical for understanding the mean, median, standard deviation, minimum and maximum points of the sample (Gujarati, 2003).

This type of data is a guiding principle for the econometric analysis, hence the econometric adjustment was required in order to obtain robust and reliable estimates between tourism arrivals and all explanatory variables. Therefore, this study employed panel estimation models for the main reason of dealing with unobserved heterogeneity of various institutional setups and different levels of economic development amongst country groupings (Phakdisoth & Kim, 2007; Vencovska, 2014). The model selection process was guided by literature on tourism earnings which provided stylised facts such the expected linear relationship between tourism receipts and exchange rates as well as other macro-economic variables.
The model can be presented in a static form:

$$Y_{it} = \alpha + \beta_i x'_{it} + \varepsilon_{it}, i = 1, \ldots., N; t = 1, \ldots., T;\ \varepsilon_{it} = \mu_i + \mu_{it} \quad (3)$$

Where *N* represent the sum of countries, *t,* denote time period, Y_{it} signifies the dependent variable, x'_{it} stands for vector for all explanatory variables and ε_{it} represent a zero average residual. However, unobservable time invariant specific effects such as tourism preferences are represented by μ_i (Vencovska, 2014; Clark & Linzer, 2012).

As argued by Clark and Linzer (2012), static panel models tend to suffer from several econometric problems such as spurious regression, not accounting for effects of changes and it also tends to lack structural stability.

However, the problem can be addressed by applying fixed effects estimator, this makes possible to eliminate μ_i. The other method of dealing with unobserved effect is to use random effects. However, this approach is applicable when unobserved heterogeneity is assumed to be uncorrelated with the entire explanatory variables. Therefore, unobserved effect is assumed to be a component of composite error term, which is comprised of the total idiosyncratic error and also individual unobserved effect.

Therefore, the study uses following estimated regression model which will enable us to choose between random and fixed effects.

$$lnTsmrct_{it} = \beta_0 + \beta_1 lnTsmarr_{it} + \beta_2 lnInf_{it} + \beta_3 lnExr_{it} + \beta_4 lnGovexp_{it} + \beta_5 lnPop_{it} + \varepsilon_{it}$$

Where both dependent variable and explanatory variables has been log transformed to control for linearity and allows interpretation of model to be elasticity format. Therefore, $lnTsmrct_{it}$ denote tourism receipts, $lnTsmarr_{it}$ represent tourism arrival, $lnInf_{it}$ is inflation, $lnExr_{it}$ is exchange rate, $lnGovexp_{it}$ is government expenditure on health (% of GDP), and $lnPop_{it}$ is population. The three benchmark procedures which include Ordinary Least Squares (OLS), fixed effects (FE) and random effects (RE) were applied to deal with unobserved heterogeneity hence the STATA statistical package was used to analyse data.

The OLS approach included time dummies to control for unobserved heterogeneity. However, there are two reasons for excluding entity dummies for 36 countries, as stated by Wooldridge (2013) that is when *n* is greater than *t*, then only time dummies are critical and that might amplify the multicollinearity problem.

Furthermore, time dummies were included in both fixed and random effects in order to obtain rich insights of the data. Inclusion of random effects provides better benefit by correcting the serial correlation of the error term and offers reliable standard deviations required for reliable inferences (Gujarati, 2003).

In addition to all countries analysis, the four specific analyses are conducted for four different income groups of countries which are sub-divided into 9 countries each, namely: low income countries, low middle income countries, upper middle income countries and high income countries. The different income groups have distinguishable tourism infrastructure, GDP per capita and levels of economic growth. The formal test to help choose either FE or RE is called the Hausman test which was developed by Hausman in 1978 (Gujarati, 2003: 651). The null hypothesis underlying the test is that fixed effects and random effects estimators do not differ extensively.

If a null hypothesis is rejected, then RE is disregarded and the better option is FE, hence statistical inferences depend on the ε_i of the sample. The shortcoming associated with fixed effects is that the estimations do not control for parameters that differ over time like income level and status of employment. The way to deal with that shortcoming is to create dummy variables for time, but plenty of dummies causes noise within the model and renders the model useless (Gujarati, 2003).

The main shortcoming of random effects specification is the challenge of bias that partial pooling might introduce in estimation of β. The greater scale of the correlation between x and α_j, the more bias occurs in the estimation of β (Clark an Linzer, 2012).

The Empirical Analysis

Table 2 shows a statistical summary of the variables for all countries, which include mean, standard deviation, minimum and maximum.

Table 2. Summary statistics of all countries

	Descriptive statistics of the variables			
Variables and unit of measurement	*Mean*	*Standard deviation*	*Min*	*Max*
Tourism receipt (USD)	20.99	1.848	17.034	24.860
Tourism arrival (USD)	14.311	1.547	10.519	17.300
Inflation (%)	1.378	0.962	-2.634	3.774
Exchange rate (%)	3.638	2.822	-1.532	9.381
Government expenditure (USD)	0.911	0.696	-1.005	2.210
Population (number)	16.6929	1.601	13.056	20.981
Observations				
N	108			
T	3			

Source: Own calculations based on results, 2018

Table 3 shows a statistical summary of the variables for low income countries, which include mean, standard deviation, minimum and maximum.

Table 3. Summary statistics of low income countries Source: Own calculations based on results, 2018

	Descriptive statistics			
Variables	*Mean*	*Standard deviation*	*Min*	*Max*
Tourism receipt	19.17	1.31	17.03	21.44
Tourism arrival	12.87	1.06	10.52	14.050
Inflation	1.81	0.9	-0.68	3.17
Exchange rate	6.44	1.29	4.3	8.42
Government expenditure	0.42	0.4	-0.30	1.270
Population	16.72	0.64	15.51	17.77
Observations				
N	21			
T	3			

Table 4 shows a statistical summary of the variables for low middle income countries, which include mean, standard deviation, minimum and maximum.

Table 4. Summary statistics of low income countries

	Descriptive statistics			
Variables	*Mean*	*Standard deviation*	*Min*	*Max*
Tourism receipt	20.40	1.44	18.15	23.76
Tourism arrival	13.78	1.18	11.74	16.390
Inflation	1.54	0.8	-0.62	3.77
Exchange rate	3.74	2.14	0.51	9.38
Government expenditure	0.52	0.64	-1.00	1.550
Population	16.85	2.19	13.06	20.98
Observations				
N	39			
T	3			

Source: Own calculations based on results, 2018

Table 5 shows statistical a summary of the variables for low middle income countries, which include mean, standard deviation, minimum and maximum.

Table 5. Summary statistics of upper middle income

	Descriptive statistics			
Variables	*Mean*	*Standard deviation*	*Min*	*Max*
Tourism receipt	21.75	1.39	19.71	23.84
Tourism arrival	14.85	1.77	11.11	17.130
Inflation	1.55	0.96	-0.54	2.90
Exchange rate	2.42	2.98	-1.53	7.87
Government expenditure	1.20	0.36	0.41	1.520
Population	16.62	1.26	14.15	17.81
Observations				
N	15			
T	3			

Source: Own calculations based on results, 2018

Table 6 shows a statistical summary of the variables for high income countries, which include mean, standard deviation, minimum and maximum.

Table 6: Summary statistics of high income Source: Own calculations based on results, 2018

	Descriptive statistics			
Variables	*Mean*	*Standard deviation*	*Min*	*Max*
Tourism receipt	22.80	1.27	20.20	24.86
Tourism arrival	15.7	0.89	14.38	17.300
Inflation	0.68	0.1	-2.63	2.21
Exchange rate	2.28	2.98	-0.98	7.15
Government expenditure	1.63	0.37	0.81	.210
Population	16.6	1.5	13.63	18.67
Observations				
N	27			
T	3			

Table 7 shows the correlation matrix which indicates that tourism receipt is highly positively correlated with tourism arrival at 0.9, while the lowest rating pair is between tourism receipt and population which is 0.3. The information lead to take caution of econometrics problems of multicollinearity which can result in biased findings. Fortunately, the panel estimation approach is a desired approach to deal with such challenges.

Table 7. Summary statistics of correlation matrix

	Tourism receipt	*Tourism arrival*	*Inflation*	*Exchange rate*	*Government expenditure*	*Population*
Tourism receipt	1					
Tourism arrival	0.8528	1				
Inflation	-0.4239	-0.4007	1			
Exchange rate	-0.4239	-0.2788	0.2035	1		
Government expenditure	0.4622	0.4327	-0.3243	-0.3743	1	
Population	0.2977	0.2154	0.16	0.3672	-0.3392	1

Source: Own calculations based on results, 2018

Table 8 represents results of all countries which were obtained from pooled Ordinary Least Squares (OLS), fixed effects (FE) and random effects (RE). Fixed effects and random effects are used to complement pooled OLS, however Hausman test was employed to assist in selection of either fixed effects or random effects. The preferable model is fixed effects, as the p-value is significant at 5% level.

Apparently, all chosen explanatory variables matters for tourism receipts, as these are significant with the expected signs. For all countries, increasing tourism arrivals by 1% leads to an increase in tourism receipts of 0.73% (OLS) and 0.41% (FE model) on average. Inflation has a negative expected sign as suggested by Vencovska (2014), as results indicate that 1% increase in inflation reduces tourism receipts by 0.02% (FE) and -0.04% in OLS. The results are consistent with the Solow-Uzawa growth theory as cited by Zhang (2015), which states that variations in exchange rates play a decisive role on costs of international tourism earnings and affect tourism flows which results in a decline of tourism receipts.

Table 8. Regression results from OLS, FE and RE for all sampled countries

Equation	*(1)*	*(2)*	*(3)*
		All countries	
	OLS	*FE*	*RE*
Variables	*lnTsmrct*	*lnTsmrct*	*lnTsmrct*
Constant	4.90***	12.46	7.65***
	(4.81)	(1.32)	(4.41)
lnTsmarr	0.73***	0.41***	0.48***
	(10.15)	(5.08)	(7.68)
Inf	-0.04***	-0.02***	-0.03***
	(-2.73)	(-2.84)	(-4.00)
lnExr	-0.78**	-0.61***	-0.21***
	(-2.35)	(-3.39)	(-3.78)
lnGovexp	0.59***	-0.16	0.18
	(4.09)	(-1.16)	(1.39)
lnPop	0.34***	0.29	0.42***
	(5.22)	(0.53)	(4.17)
Dum2009		0.28***	0.22***
		(3.13)	(2.91)
Dum2014		0.57***	0.40***
		(4.21)	(4.53)
Observations	108	108	108
Country dummies	No	No	No
Year dummies	No	Yes	Yes
Adj. R-squared	0.80		
R-squared (within)		0.77	0.72
R-squared (between)		0.39	0.75
R-squared (overall)		0.41	0.74
Hausman (p. value)		0.000	

Notes: t-statistics (OLS and FE) and z-statistics (RE) are represented in parenthesis below intercept and coefficients, *** denotes significant at 1% level (p<0.01), ** denotes significant at 5% level (p<0.05) and * represents at 10% significant level (p<0.1).

Table (9) provides the results for low income countries, which shows that the best model is fixed effects as p-value of Hausman test is 0.025. On average, all explanatory variables had the expected signs in fixed effects, but only exchange rate and inflation were negatively significant at 5% levels.

The results are attributed to fact that inadequate economic growth leads to high inflation and weak exchange rates against the US dollar which negatively affect tourism earnings. For fixed effects, a 1% increase in inflation causes tourism receipt to decrease by 0.05%, while 1% increase in exchange rate results in 0.64% decrease in tourism receipt.

According to Vellas and Becherel (1995: 20-21), inadequate tourism receipts in low income countries are attributed to high inflation and weak exchange rates.

Table 9: Regression results from OLS, FE and RE for low income countries

Equation	*(1)*	*(2)*	*(3)*
	Low income countries		
	OLS	*FE*	*RE*
Variables	*lnTsmrct*	*lnTsmrct*	*lnTsmrct*
Constant	-8.4	-10.74	-0.52
	(-1.75)	(-0.22)	(-0.04)
lnTsmarr	0.29	0.27	0.18
	(1.05)	(0.73)	(0.43)
Inf	-0.05*	0.05**	0.02
	(-2.02)	(2.35)	(0.73)
lnExr	0.2	-1.64**	-0.48
	(1.32)	(-3.47)	(-1.36)
lnGovexp	-0.29	-0.09	-0.27
	(-0.66)	(-0.24)	(-0.67)
lnPop	1.38***	2.19	1.22
	(3.27)	(0.74)	(1.28)
Dum2009		-0.16	-0.06
		(-0.38)	(-0.21)
Dum2014		0.31	0.17
		(0.40)	(0.44)
Observations	21	21	21
Country dummies	No	No	No
Year dummies	No	Yes	Yes
Number of countries	7	7	7
Adj. R-squared	0.69		
R-squared (within)		0.77	0.58
R-squared (between)		0.19	0.36
R-squared (overall)		0.19	0.36
Hausman (p. value)		0.025	

Notes: t-statistics (OLS and FE) and z-statistics (RE) are represented in parenthesis below intercept and coefficients, *** denotes significant at 1% level, ** denotes significant at 5% level and * represents at 10% significant level.

Table 10 shows that random effects is the best model for low middle income countries, as the p-value for Hausman test is significant at 5% level (0.025). On average, keeping all independent variables constant, the estimated tourism receipt contributes 11.92% (RE) in sampled low to middle income countries.

However, based on OLS model, tourism receipts contributed 5.38% in sampled countries. The results are consistent with those of Harrison (2015), who found that tourism contributes to the low-middle income countries in Asia Pacific countries and tourism arrivals are determinants for tourism receipts.

Table 10: Regression results from OLS, FE and RE for low middle income countries

Equation	*(1)*	*(2)*	*(3)*
	Low middle income countries		
	OLS	*FE*	*RE*
Variables	*lnTsmrct*	*lnTsmrct*	*lnTsmrct*
Constant	5.38**	33.94**	11.92***
	(2.35)	(2.52)	(4.07)
lnTsmarr	0.91***	0.45***	0.52***
	(5.38)	(5.37)	(6.88)
Inf	-0.04	0.03**	0.33**
	(-0.59)	(2.33)	(2.36)
lnExr	0.01	-0.14	-0.21
	(0.09)	(-0.42)	(-0.13)
lnGovexp	0.20	-0.33**	-0.21*
	(0.47)	(-2.36)	(-1.65)
lnPop	0.15	-1.16	0.06
	(0.96)	(-1.46)	(0.35)
Dum2009		0.33***	0.22***
		(3.28)	(2.66)
Dum2014		0.91***	0.65***
		(5.83)	(6.56)
Observations	30	30	30
Country dummies	No	No	No
Year dummies	No	Yes	Yes
Number of countries	9	9	9
Adj. R-squared	0.69		
R-squared (within)		0.96	0.95
R-squared (between)		0.19	0.64
R-squared (overall)		0.12	0.65
Hausman (p. value)		0.000	0.849

Notes: t-statistics (OLS and FE) and z-statistics (RE) are represented in parenthesis below intercept and coefficients, *** denotes significant at 1% level, ** denotes significant at 5% level and * represents at 10% significant level.

The results for upper middle income countries in table (11) shows that FE is best the model, as p-value for Hausman test was significant at a 1% level (0.000). All independent variables carried the expected signs, tourism arrival was positively significant at 1% level (both fixed effects and OLS), exchange rate was negatively significant at 5% level (FE) and 1% in OLS.

Therefore, a 1% increase in exchange rate causes tourism receipt to decrease by 0.62% (FE), while it results in 0.13% decrease in OLS. The two dummies were positively significant at 5% level which implies that time-effect is important for tourism receipts. When tourism arrival increases by 1%, tourism receipt tends to increase by 0.33%.

Table 11: Regression results from OLS, FE and RE for upper middle income

Equation	*(1)*	*(2)*	*(3)*
	Upper middle income countries		
	OLS	*FE*	*RE*
Variables	*lnTrmrct*	*lnTrmrct*	*lnTrmrct*
Constant	6.23***	12.66	7.19***
	(4.14)	(0.86)	(5.86)
lnTsmarr	0.40***	0.33***	0.32***
	(6.55)	(9.42)	(5.87)
Inf	-0.08***	-0.01	-0.09***
	(-3.26)	(-0.79)	(-4.56)
lnExr	-0.13***	-0.62**	-0.14***
	(-3.15)	(-4.69)	(-4.13)
lnGovexp	0.14	-0.27	-0.01
	(0.40)	(-1.25)	(-0.03)
lnPop	0.62***	0.34	0.63***
	(8.97)	(0.39)	(11.61)
Dum2009		0.38**	0.27**
		(4.74)	(1.94)
Dum2014		0.67**	0.42***
		(4.21)	(2.72)
Observations	15	15	15
Country dummies	No	No	No
Year dummies	No	Yes	Yes
Number of countries	9	9	9
Adj. R-squared	0.96		
R-squared (within)		0.96	0.91
R-squared (between)		0.19	0.99
R-squared (overall)		0.12	0.99
Hausman (p. value)		0.000	

Notes: t-statistics (OLS and FE) and z-statistics (RE) are represented in parenthesis below intercept and coefficients, *** denotes significant at 1% level, ** denotes significant at 5% level and * represents at 10% significant level.

Table 12 shows that the preferred model is random effects since p-value for Hausman test was not significant at a 5% level. Tourism arrival is positively significant at the 10% level, which implies that 1% increase in tourism arrival results in 0.35% (RE) increase in tourism receipt and that is attributed to adequate infrastructure in developed countries such as health care, education, sports and high quality tourism spots which attracts more tourists to high income countries.

Results showed that a 1% increase in exchange rate results in 0.14% decrease in tourism receipt and that was attributed to the costs of tourism services when the exchange rate is high which causes tourists to switch to other destinations where interest rates are minimal.

Table 12: Regression results from OLS, FE and RE for low income countries

Equation	*(1)*	*(2)*	*(3)*
	High income countries		
	OLS	*FE*	*RE*
Variables	*lnTsmrct*	*lnTsmrct*	*lnTsmrct*
Constant	9.02***	30.86***	8.43***
	(4.02)	(3.04)	(2.76)
lnTsmarr	0.08	0.63*	0.35*
	(0.35)	(2.04)	(1.57)
Inf	-0.01	-0.04	-0.05
	(-0.3)	(-0.82)	(-1.15)
lnExr	-0.23***	-0.30	-0.14**
	(-2.96)	(-0.43)	(-1.72)
lnGovexp	-0.25	-0.39	0.18
	(-0.47)	(-0.49)	(0.36)
lnPop	0.82***	-1.01	0.54
	3.83	(-1.63)	(2.82)
Dum2009		0.26*	0.11
		(1.80)	(0.88)
Dum2014		0.51**	0.33**
		(2.15)	(2.07)
Observations	27	27	27
Country dummies	No	No	No
Year dummies	No	Yes	Yes
Number of countries	9	9	9
Adj. R-squared	0.82		
R-squared (within)		0.85	0.75
R-squared (between)		0.1	0.86
R-squared (overall)		0.08	0.85
Hausman (p. value)			0.53

Notes: t-statistics (OLS and FE) and z-statistics (RE) are represented in parenthesis below intercept and coefficients, *** denotes significant at 1% level, ** denotes significant at 5% level and * represents at 10% significant level.

Conclusion

Exploring the determinants of tourism earnings in 36 countries and benchmarking with sub-groupings which comprised of high income countries, upper middle income, low middle income and low income is an empirical question, and several studies attempted to address the question on a country level (hence most studies were on high income and upper middle income groups) or regional level. This study attempted to fill the existing gap on assorted countries, which encompasses all four different income groups and provides benchmarking at specific income group level. The study used panel estimation models to address research question, hence the researchers' tested for a preferable model between fixed effects and random effects by applying the Hausman test. The reason for depending on panel estimation models is because it controls for unobserved heterogeneity and it also eliminates the scope of measurement bias hence intercepts removes all time-invariant variation.

The results showed that tourism arrival, inflation, exchange rates, government expenditure on health and population are determinants for tourism receipts in all 36 countries included in the sample of 108 observations. Exchange rates and inflation were expected to have a negative contribution towards tourism earnings according to the Solow-Uzawa growth theory and other empirical studies such as Zidana, (2015); Dube, (1997); Holzner (2010); Milne and Ateljevic (2010); Zhang, (2015); Vencovska, (2014); Uysal and Crompton, (1984). The government expenditure on health tended to be positively significant in low income countries, which shows that state investment is necessary in addressing healthcare which tends to impact on

countries' earnings from tourism. Hence low income countries are associated with outbreaks of diseases as well as inadequate health resources.

The weakness associated with the results is the aggregation according to income groups, which might be biased as situations and determinants of tourism earnings could be country specific. Therefore, further studies are needed to explore determinants at country level more specifically the low income countries. It will be interesting to analyse at an industry level as most earnings might be channelled to only a few countries due to globalisation as most multinational firms are now operating in many countries.

Therefore, it is recommended that government should prioritise the tourism sector as one of the determinants of economic growth and it can also likely employ the majority of unemployed people. The policy should be developed and implemented in order to align national as well as international tourism development priorities. Environmental, cultural and social factors should be taken into consideration when developing the tourism sector which has the potential to steer the convergence of low income countries, as stipulated by Zhang (2015).

References

Algieri, B. & Kanellopoulou, S. (2009). Determinants of demand for exports of tourism : An unobserved component model. *Tourism and Hospitality Research*, 9(June 2008), 9–19.

Ardahaey, F.T. (2011). Economic impacts of tourism industry. *International journal of business and management*, 6(8), 206–215.

Beard, J. & Ragheb, M. (1983). Measuring leisure motivation. *Journal of Leisure Research*, 15(1), 219–228.

Beerli, A. & Martin, J. (2004). Tourist's characteristics and perceived image of tourism destinations: a quantative analysis - a case study of Lanzarote, Spain. *Tourism management*, 25(1), 623–636.

Chumni, M. (2001). *Tourism demand model: determinants of Thailands's international tourist receipts*. Chulalongkorn University.

Clark, T.S. & Linzer, D.A. (2012). *Should I use fixed or random effects?*, Emory, United States of America.

Copeman, B. (1991). Tourism welfare and de-industrialisation in a small open economy. *Economica*, 58(232), 515–529.

Deluma, R. & Jeon, N.(2014). *Determinants of international tourism demand for the Philippines: An augmented gravity model approach*, Davao city, Philippines.

Dube, N.Z.(1997). *The contribution of tourism to growth and development in Kwazulu-Natal*. University of Pretoria.

Gilbert, D.C. (1990). Conceptual issues in the meaning of tourism. *Recreation and Hospitality Management*, 2(1), 4–27.

Gujarati, D.N.(2003). *Basic econometrics* Fourth., New York, United States of America: The McGraw-Hill Companies.

Harrison, D. (2015). Development theory and tourism in developing countries: what has the theory ever done for us? *International Journal of Asia Pacific Studies*, 11(1), 53–82.

Holzner, M. (2010). *Tourism and economic development: the beach disease?*, Vienna.

Mervar, A. & Payne, J.E.(2007). Analysis of foreign tourism demand for Croatian destinations: long-run elasticity estimates. *Tourism Economics*, 13(1), 407–420.

Milne, S. & Ateljevic, I.(2010). Tourism, economic development and the global- local nexus: theory embracing complexity. *Tourism geographies*, 3(4), 369–393.

Mohebi, M. & Rahim, K.A. (2010). Revenue determinants in tourism market. *American Journal of Applied Sciences*, 7(12), 1593–1598.

Phakdisoth, L. & Kim, D. (2007). The Determinants of Inbound Tourism in Laos. *ASEAN Economic Bulletin*, 24(2), 225–238.

Schubert, S. & Brida, J.(2009). *A dynamic model of economic growth in a small tourism driven economy*, Munich.

Solow, R.M. (1971). Note on Uzawa's Two-Sector Model of Economic Growth. In: Hahn F.H. (eds) Readings in the Theory of Growth. Palgrave Macmillan, London

Uysal, M. & Crompton, J.(1984). Determinants of demand for international tourist flows to Turkey. *Tourism management*, 12(1), 288–297.

Vanhove, N.(2005). The economics of tourism destinations. *Business and economics*, 25(2), 240–251.

Vellas, F. & Becherel, L. (1995). *International toursm: an economic perspective* 1st ed., New York, United States of America: Macmillan Education LTD.

Vencovska, J.(2014). *The determinants of international tourism demand*. Charles University in Prague.

Witt, C.A. & Witt, S.F. (1995). Forecasting tourism demand: a review of empirical research. *International Journal of Forecasting*, 11(1), 447–475.

Wooldridge, J.(2013). *Introductory econometrics: A modern approach* 5th editio., Michigan State, United States: South-Western, Cengage learning.

Zhang, W. (2015). Tourism, trade, externalities, and public goods in a three-sector. *UTMS Journal of Economics*, 6(1), 1–19.

Zidana, R.(2015). Macroeconomic determinants of tourism sector performance in Malawi. *International Journal of Social Science and Humanities Research*, 3(4), 1–12.

Zoran, I., Suzana, B. & Sinisa, B.(2011). Influence of FDI on tourism in Croatia. *UTMS Journal of Economics*, 2(1), 21–28.