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Original article

Estimating International Tourism Demand using Cross-Sectional Regression: A Comparative Study on International Tourism Expenditure of Lower and Higher Income Economies

Muhammed Salim Anappattath[1], Shiby M Thomas[2]

[1]*Department of Economics, MES Mampad College (Autonomous), Kerala, India.*
[2] *Department of Economics, St. Joseph's College (Autonomous)- Devagiri, Kerala, India.*

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Abstract *- The present study attempts to identify the determinants of international tourism expenditure that proxies international tourism demand in three cases of economies such as overall economies case, higher-income economies case, and lower-income economies case. Income is the most relevant factor driving tourism demand, followed by tourist arrivals in all three cases of economies. Immigrant stock is a decisive factor driving tourism demand in the higher-income economies only as higher tourism expenditure is reported from the countries where migrant stock is greater. Migrant stock is indeed greater in advanced economies as well. While the Population is relevant only in higher-income economies, the urban Population makes at least some sense only in lower-income economies. The number of air passengers carried is irrelevant in explaining international tourism expenditure in all three cases.*

Keywords *- International tourism expenditure, Income, Tourist arrivals, Immigrant stock, Tourism demand, Lower-income economies, Higher-income economies.*

1. Introduction

The tourism industry has been vital in leading the economies forward as it generates income and employment considerably in every economy. International tourism is more important as it helps add foreign exchange reserves to the country besides generating income and employment opportunities appreciably. The international tourism industry broadly comprising international travel, destination's hospitality, destination's travel arrangements, shopping facilities in the destination, entertainment industry, and restaurant industry are all required to be fully fledged to fuel the economy in general and feed millions of people employed directly or indirectly in the tourism industry all across the world in particular. The entire world recognized its vitality as normal international travel remains uncertain off and on since March 2020 due to Covid-19 induced worldwide lockdown. It could, however, be highly likely that international travel expenditure could be a decade low as per reports. International tourism could decline by 60-80 percent in 2020, with a revenue loss of $910 billion, according to World Tourism Organisation (UNWTO, 2020a). According to the September issue of the World Tourism Barometer from the UNWTO, international tourist arrivals are down 65 percent in the first half of 2020 already (UNWTO, 2020b). The present study is on international tourism demand, one of the most researched areas of tourism economics. Although it is highly researched, various aspects of the international tourism demand remain untouched. An attempt is made here to analyze the determinants of international tourism expenditure of higher and lower-income economies.

Many studies were conducted in tourism economics to measure tourism demand (Narayan, 2004; Papatheodorou and Song, 2005; Vu and Turner, 2006; Ouerfelli, 2008; Falk and Lin, 2018; Naude and Saayman, 2005; Lim, 1997a and 1997b; Roget and Gozalez, 2006; Alegre and Pou, 2004; Alegre et al., 2011; Marcussen, 2011; Kim et al., 2011; Jingwen and Mingzhu, 2018; Gani and Clemes, 2017; Thrane and Farstad, 2012; Moniz, 2012; Santos et al., 2012; Daniel and Rodrigues, 2012; Downward and Lumdson, 2003; Mervar and Payne, 2007; Uysal and Crompton, 1984; Zamparini et al., 2017 & Song et al., 2003). World tourism demand may be proxied by any segments of tourism expenditure, tourist arrivals, and tourism overnight stays. This study on world tourism demand is done by tourism expenditure in line with the studies of Ghosh et al. (2003), Kim et al. (2011), Marcussen (2011), and Jingwen & Mingzhu. (2018). However, all the studies initiated to measure tourism demand were to identify the determinants of nations' or regions' tourism demand. Here it is attempted to measure the determinants of world tourism demand.

2. Variables in the study

Six explanatory variables are selected based on theoretical and logical relations and previous studies in tourism demand. It includes income measured by GDP, civil aviation measured by air passengers carried, Population, immigrant stock, international tourist arrivals, and size of urban Population. All the data are collected for the year 2017 across 167 countries.

2.1. Income

Income is the most cited variable that could be affecting the tourism demand positively the researchers of tourism demand (Song et al., 2003; Kim et al., 2011; Naude & Saayman, 2005; Garau-Vadell & De-Juar-Vigaray, 2017; Narayan, 2004; Malec & Abrham, 2016; Alegre & Pou, 2004; Lee, 1996; Narayan, 2004; Dhariwal, 2005; Lim, 1997a & 1997b; Divisekara and Kulendran, 2006; Algieri, 2006; Roget & Gozalez, 2006; Gani & Clemes, 2017; Malec and Abraham, 2016; Zamparini et al., 2017 and Shafiullah et al., 2019). In line with the demand theory, it is presumed that high income could result in high tourism demand and vice versa. It is, however, highly likely that world income could impact world tourism demand significantly. Various studies found a positive relationship between the two, although all the studies did not find significance in the results (Dhariwal, 2005; Xie, 2020; Algieri, 2006); Roget and Gozalez, 2006; Malec and Abrham, 2016; Narayan,2004).

2.2. Civil Aviation

The Vastness of the civil aviation industry could reflect the enormity of air passengers carried so as the tourist arrivals and tourism expenditure. Spasojevic et al. (2017) have authored a review article on air transportation and tourism. They have reviewed as many as 329 research articles published in selected journals on air transport and tourism from 2000-to 2014. Tourism, especially international tourism, is that much associated with air travel. A higher level of air passengers on board could reflect the favorable state for which international tourism expenditure is maximized. This is presumed as a potential driving force of international tourism demand as most international travel happens through air routes.

2.3. Population

Tourism expenditure could rise with increased arrivals of tourists, increasing with the Total Population. The population has been used as an explanatory variable of tourism demand by various researchers (Alegre & Pou, 2004; Tang & Tan, 2015; Cho, 2010). Cho (2010) found positive and significant relation with tourism demand. The present study used the size of the Population, which is presumed to impact the tourism expenditure positively.

2.4. Immigrant Stock

The international migrant stock has been used in various studies on international tourism demand (Lim, 1997; Shafiulla et al., 2019; Simpson, 2010; Ratha, 2009; Rathika et al., 2011). People travel abroad to meet friends and relatives (Shafiulla et al., 2019; Simpson, 2010). Normally advanced nations host the most number of immigrants as migration is, in fact, primarily an economic phenomenon (Ratha, 2009 Rathika et al., 2011). This could well be an indicator of increased tourism expenditure.

2.5. International Tourist Arrivals

Tourist footfalls are a direct reflector that could affect tourism expenditure. The higher the arrivals of tourists, the higher the tourist spending. This is in line with the study of Rosello-Nadal & HE (2019), which confirms the significant positive relation between tourist arrivals and tourism expenditures.

2.6. Urban Population

The urban population's size is a potential determinant of international tourism expenditure in the presumption that urban people are highly likely to spend more on leisure activities. This is line with the studies of Wu et al. (2020) and Czepkiewicz et al. (2018). Czepkiewicz et al. (2018) found that people living in densely populated urban centers tend to travel more to cover long distances than those living in the suburbs. At the same time, Wu et al. (2020) conclude that urbanization does not help tourism development. However, this variable is chosen in the presumption that urbanization could be a factor driving international tourism in various circumstances.

3. Objectives of the Study

The study is initiated:

i) To identify the factors responsible for international tourism expenditure in 2017
ii) To compare the factors responsible for international tourism expenditure of lower and higher-income economies in 2017

4. Hypotheses

All six variables such as income, civil aviation, Population, immigrant stock, international tourist arrivals, and urban population size are positively related to international tourism expenditure in 2017.

5. Data and Sources

This is a quantitative study as the data are continuous, and the analytical tool is computational. To identify the determinants of international tourism expenditure in 2017, six explanatory variables are chosen that could be grouped under economic, travel-related, and demographic variables. The purely economic variable is income measured by GDP. Two travel-related variables are civil aviation measured by air passengers and international tourist arrivals. Three demographic variables are Population, size of the urban population, and immigrant stock. The data are entirely collected from the World Bank's open data portal on the dependent variable and 6 independent variables for 2017 across 167 countries.

6. Analytical Framework

Cross-sectional regression is employed in the study to estimate 6 unknown parameters that may have affected the world's overall international tourism expenditure in 2017. It is designed to form a multiple regression model for the common economy case (CEC) with relevant and valid variables.

The world tourism demand equation can possibly be written as:

$$ITE_{2017} = \beta 0 + \beta 1GDP + \beta 2CA + \beta 3PPN + \beta 4IMS + \beta 5ITA + \beta 6UPN \quad (1)$$

Where:

ITE_{2017} = Predicted value of the dependent variable: International tourism expenditure in 2017 in the US $ million (World Bank, 2020a)

$\beta 0$ = Constant value or T intercept

$\beta 1$, $\beta 2$,….., $\beta 6$ are the regression coefficients that measure a unit change in the outcome variable when the predictor variable changes over 167 countries in 2017

GDP = income measured by gross domestic product in the US $ million (World Bank, 2020b)

CA = Civil aviation measured by Air passengers carried in a million (World Bank, 2020c)

PPN = Population in thousand (World Bank, 2020d)

IMS: Immigrant stock in 2015 (2017 data are not available. It could represent 2017) (World Bank, 2020e)

ITA = International tourist arrivals in million (World Bank, 2020f)

UPN: Size of urban Population (World Bank, 2020g)

The above model represents the common economies case (CEC). The same structure is followed for the second and third models, also representing international tourism demand for lower-income economies case (LIEC) and higher-income economies case (HIEC), respectively. According to World Bank data, lower-income economies are poor, with a current per capita GDP of $ 5394 and below. Higher-income economies are the countries with relatively higher per capita GDP of above $ 5394. It is therefore clear that all higher-income economies are not advanced ones. This classification is done just by dividing the sample units into two.

7. Result and Discussion

An attempt is made to identify the determinants of international tourism expenditure in 2017 across 167 countries based on six select explanatory variables. A linear regression model is employed in CEC, LIEC, and HIEC.

7.1. Correlation Results

It is found to have a positive correlation for all the independent variables (IVs) with the dependent variable (DV) of international tourism expenditure (ITE) in 2017 in all the three cases of common economies, lower-income economies, and higher-income economies out of which 3 (GDP, AP, and UPN) are highly correlated (above .8) in all the three cases. The rest of the 3 variables, PPN, IMS, and ITAs, are moderately correlated (between .5 and .8). All the variables are associated with the DV positively with the statistical significance at one percent level. N in Table 1 shows the number of observations in the dataset on which data are collected for 2017. It varies with models 1, 2, and 3. (See Table 1).

Table 1. Pearson correlation coefficient of the select explanatory variables

Variables	Correlation coefficient	Sig. (1-tailed)	N
ITE (DV)	1	-	167
GDP*	.890	.000	167
AP*	.872	.000	167
PPN*	.646	.000	167
IMS*	.610	.000	167
ITA*	.670	.000	167
UPN*	.801	.000	167
GDP**	.870	.000	84
AP**	.854	.000	84
PPN**	.812	.000	84
IMS**	.581	.000	84
ITA**	.743	.000	84
UPN**	.860	.000	84
GDP***	.886	.000	83
AP***	.869	.000	83
PPN***	.867	.000	83
IMS***	.584	.000	83
ITA***	.635	.000	83
UPN***	.889	.000	83

Source: Authors' calculation on the basis of collected data

ITE= international tourism expenditure (US $ m); DV = Dependent variable; GDP = gross domestic product (US $ m); AP = Air passengers carried (million); PPN = Population ('000); IMS = Immigrant stock (total); ITA = International tourist arrivals (million) & UPN = Urban population

* Common economies (Both lower and higher income economies); ** lower income economies & *** higher income economies

7.2. Regression Results

Of the total six select variables that could have a significant relationship with the dependent variable of international tourism expenditure in 2017, four are used to fit the model for the common economies case as they fulfilled all the multiple linear regression requirements of linearity, homogeneity, normality, lack of multicollinearity and lack of autocorrelation. GDP, PPN, IMS, and ITA are those designated variables. The other two, such as AP and UPN, failed to fulfill the requirements of the regression test. However, UPN is significantly related to tourism expenditure, and AP is highly linearly related. (See Table 2).

7.2.1. Income and International Tourism Expenditure (ITE)

Global income measured by GDP is significantly related to international tourism expenditure, with an expected positive sign confirming the positive theoretical relationship between income and tourism demand. It is found that a change in GDP by $ 1 million leads to a change in international tourism expenditure by $ 0.871 million, $.667 million, and $.472 in the common economy case, lower-income economy case, and higher-income economy case, respectively. It is not only statistically significant at a 1 percent level but also included in the model in all three cases. GDP is the relevant variable, commonly for the three cases, impacting international tourism expenditure. It is 99 percent confident, along with a low error value and higher t

value. The standard error and t values are .001 and 13.026 for the common economy case, .001 and 11.042 respectively for the lower-income economy case, and .001 and 9.238 respectively for a higher-income economy case. Its collinearity is in the tolerable limit of above 0.10 for all three cases. Hence GDP is a much more relevant independent variable in explaining international tourism expenditure in 2017 and therefore used to fit the model for all the three cases. The null hypothesis of no significant positive relationship between GDP and ITE is rejected. The alternative hypothesis of a significant positive relationship between the two is accepted in all three cases. Income is more relevant for lower-income economies concerning beta values and t values. (See Table 2). Therefore, income is the common and most decisive factor driving ITE well in line with the consumer demand theory. It is also in line with the studies of Roget and Gozalez, 2006; Malec and Abrham, 2016; Narayan, 2004, Lee (1996), and Algieri (2006).

Null hypothesis 1: Income measured by GDP is not positively related to international tourism expenditure

Alternative hypothesis 1: Income measured by GDP is positively related to international tourism expenditure

7.2.2. Civil Aviation and International Tourism Expenditure (ITE)

Although negatively related, the number of air passengers carried is insignificantly related to the international tourism expenditure in both common economies case and lower-income economies case. It is not even significant at the 10 percent level in those cases. At the same time, it is significantly related to ITE in the higher income economy case with a negative beta value unlike expected. However, it is not an accurate estimate as its t values are well below the error values in all three cases. Isn't that surprising that the variable of air passengers does not directly relate to international tourism demand represented by international tourism expenditure even as the majority of international travel happens through air routes?

Moreover, the variable of air passengers includes both domestic and international passengers who were on board in 2017. Whatever null hypothesis 2 is accepted and alternative hypothesis 2 is rejected in the common economy case and lower-income economy case as no significant positive relationship is found between the two. The reverse is done in the higher-income economy case simultaneously (see table 2).

Null hypothesis 2: The number of air passengers carried is not positively related to international tourism expenditure

Alternative hypothesis 2: The number of air passengers carried is positively related to international tourism expenditure

7.2.3. Size of Population and international tourism expenditure (ITE)

The size of the Population could be a factor driving international tourism demand. It is a significant explanatory variable for ITE in all cases as well. But surprisingly, it has got a negative impact in lower-income economy cases. A change in Population by one thousand would lead to a change in international tourism expenditure by .133 million USD in common economies case and .483 million USD in higher-income economy case. This positive relation is significant at a 1 percent level. It is an accurate measure in both cases since its error values are well below the t values. The population is a more relevant determinant of the higher-income economy case as its t value (10.842) is well above the common economies case (3.236). This proves that richer nations could generally contribute substantially to international tourism expenditure by their population size. Specifically, it is a pretty important factor driving higher-income economies' tourism expenditure. This is, however, not accurate as GDP as it is almost equally driving the international tourism demand in the same direction in all three cases. Null hypothesis 3 is rejected, and alternative hypothesis 3 is accepted instead for all the three cases as statistical significance is found between Population and tourism demand. (See table 2).

Null hypothesis 3: Population is not positively related to international tourism expenditure

Alternative hypothesis 3: Population is positively related to international tourism expenditure

7.2.4. Immigrant stock and international tourism expenditure (ITE)

Though the immigrant stock is significantly related to international tourism expenditure of common economies case only, it is negatively impacting it. Surprisingly, a change in the stock of migrants from other countries could instigate international tourism expenditure by -.241 US million $. It is significant at a 1 percent level as well. It is, however, not highly an accurate measure as its t value (-4.212) lies below the error value (.000). This lack of the desired accuracy might have been reflected in lower and higher economies for not being included in models 2 and 3. At the same time, it is positively related to tourism expenditure in the lower-income economy case with no statistical significance. It is, however, positively related to tourism demand and significant as well at a 1 percent level. Null hypothesis 4 is rejected, and alternative hypothesis 4 is accepted in all categories of economies. (See table 2). It is to be noted here that many countries have lower tourism expenditure and higher migrant stock. Bangladesh, Belarus, Burkina Faso, Cote d'Ivor, Jordan, Kazakhstan, Kenya, Lebanon, Oman, Pakistan, Rwanda, South Africa, Sudan, Ukraine, Uzbekistan, Venezuela, and Zimbabwe belong to this category. There are some countries like Indonesia and the Philippines with higher tourism expenditure and lower migrant stock. It is interesting to note that all these nations are developing rather than developed ones. Developed nations are generally on top of the list of countries by tourism expenditure and immigrant stock. Immigrant stock is positively related to tourism expenditure with higher accuracy with higher t value and statistical significance at a 1 percent level.

Null hypothesis 4: Immigrant stock is not positively related to international tourism expenditure

Alternative hypothesis 4: Immigrant stock is positively related to international tourism expenditure

7.2.5. Tourist arrivals and tourism expenditure

Tourist arrivals and tourism expenditure are two possible proxies for tourism demand, and therefore both could be strongly related. It is found that the independent variable of tourist arrivals is positively related to tourism expenditure with the statistical significance at a 1 percent level in all the cases of common economies, lower-income economies, and higher-income economies. A change in international tourist arrivals by one million could induce international tourism expenditure by US $ .212 million. It is highly accurate in estimation in all the three cases of economies, just like GDP, as its error values (0.073 in CEC, 0.058 in LIEC, and 0.080 in HIEC) are well below the t values (5.294 in CEC, 5.365 in LIEC and 3.089). However, the tourist arrivals have been slightly less relevant for HIEC comparatively as the positive difference between error value, and t value is lower than CEC and LIEC. However, null hypothesis 5 is rejected, and its alternative hypothesis is accepted in all three cases. (See table 2).

Null hypothesis 5: International tourist arrivals are not positively related to international tourism expenditure

Alternative hypothesis 5: International tourist arrivals are positively related to international tourism expenditure

7.2.6. Urban Population and international tourism expenditure

Urban Population was included in the list of potential determinants of international tourism demand as urban people are presumed to spend largely on leisure. It is significantly related to international tourism expenditure with a positive sign in CEC and LIEC. Surprisingly, it is inversely related to tourism expenditure in HIEC. One percent change in urban Population could instigate tourism expenditure by the US $ 1.132 million and the US $ .942 million in CEC and LIEC, respectively. It is a 1 percent level significant in CEC and only a 10 percent level significant in LIEC. It is accurate too in both the cases with an upper edge in CEC as its error values (.054 in CEC and .032 in LIEC) lie well below its t value (7.183 in CEC and 1.786 in LIEC). However, it could not find its place in any of the three models as it failed to clear the issue of multicollinearity with Population in CEC and LIEC.

Meanwhile, it harmed tourism expenditure in HIEC with less accuracy in estimation. However, null hypothesis 6 is rejected, and its alternative hypothesis is accepted in all three cases. (See table 2).

Null hypothesis 6: Size of urban Population is not positively related to international tourism expenditure

Alternative hypothesis 6: Size of urban Population is positively related to international tourism expenditure

Table 2. Regression test for model fitting and other variables (Model 1: Lower and higher-income economies; Model 2: Lower-income economies & Model 3: Higher-income economies)

Variable	Model 1					Model 2					Model 3				
	Std. error	Beta	t value	Sig.	Collinearity	Std. error	Beta	t value	Sig.	Collinearity	Std. error	Beta	t value	Sig.	Collinearity
(Constant)	930.938	873.224	.938	.350	-	179.946	132.884	.738	.462	NA	1448.214	1971.166	1.361	.177	NA
GDP*#@	.001	.871	13.26	.000	.199	.001	.667	11.042	.000	.606	.001	.472	9.238	.000	.396
PPN*@	.007	.133	3.236	.001	.530	.008	-1.256	-3.563	.001	NA	.010	.483	10.842	.000	.520
IMS*	.000	-.241	-4.212	.000	.272	.000	.090	1.315	.192	NA	.001	.335	4.068	.000	NA
ITA*#@	.073	.212	5.294	.000	.555	.058	.324	5.365	.000	.606	.080	.127	3.089	.003	.611
AP	.036	-.048	-.425	.671	-	.030	-.103	-.565	.574	NA	.041	-.281	-2.168	.033	NA
UPN	.054	1.132	7.183	.000	-	.032	.942	1.786	.078	NA	.127	-1.165	-3.481	.001	NA

Source: Authors' calculation on the basis of collected data

ITE= international tourism expenditure (US $ m); GDP = gross domestic product (US $ m); PPN = Population ('000); IMS = Immigrant stock; ITA = International tourist arrivals (million); AP = Air passengers carried (million); UPN = Urban population & NA= Not applicable

*part of model 1; # part of model 2; @ part of model 3

Model 1: The regression model for the determinants of international tourism expenditure (ITE) of common economies case (CEC) in 2017 across 167 countries is written as:

$ITE_{2017} = \beta 0 + \beta 1GDP + \beta 2PPN + \beta 3IMS + \beta 4ITA$ (2)

$ITE_{2017} = 873.224 + (0.871*GDP) + (0.133*PPN) + (-.241*IMS) + (.212*ITA)$ (3)

R square adjusted for the number of predictors in the model is 0.852. It shows that much of the data points fall within the regression equation line. The regression model is free from autocorrelation as the Durbin-Watson test value is 2.038. (See table 3). The multivariate normality of the data points is shown in figure 1.

Table 3. Model summary (Both lower and higher-income economies-common economies case)

R	R square	Adjusted R square	Std error of the estimate	Durbin-Watson
.925	.856	.852	10145.08992	2.038

Source: Authors' calculation

Model 2: The regression model for the determinants of international tourism expenditure (ITE) for lower income economy case (LIEC) in 2017 across 84 countries is written as:

$ITE_{2017} = \beta 0 + \beta 1GDP + \beta 2ITA$ (4)

$ITE_{2017} = 132.884 + (0.667*GDP) + (0.324*ITA)$ (5)

R square adjusted for the number of predictors in the model is 0.816. It shows that much of the data points fall within the regression equation line. The regression model is free from autocorrelation as the Durbin-Watson test value is 2.005. (See table 4).

Table 4. Model summary (Lower-income economies case)

R	R square	Adjusted R square	Std error of the estimate	Durbin-Watson
.906	.821	.816	1384.13394	2.005

Source: Authors' calculation

Model 3: The regression model for the determinants of international tourism expenditure (ITE) for higher income economy case (HIEC) in 2017 across 83 countries is written as:

$ITE_{2017} = \beta 0 + \beta 1GDP + \beta 2PPN + \beta 3ITA$ (6)

$ITE_{2017} = 1971.166 + (0.472*GDP) + (0.483*PPN) + (.127*ITA)$ (7)

R square adjusted for the number of predictors in the model is 0.915. It shows that much of the data points fall within the regression equation line. The regression model is free from autocorrelation as the Durbin-Watson test value is 2.108. (See table 5).

Table 5. Model summary (Higher-income economies case)

R	R square	Adjusted R square	Std error of the estimate	Durbin-Watson
.958	.918	.915	10476.30738	2.108

Source: Authors' calculation

The common regression line for model 1 for the common economies case is shown in Figure 2. Table 6 shows that GDP accounts for 79.2 percent, 75.7 per cent, and 78.5 per cent of the variability of international tourism expenditure (ITE) in CEC, LIEC, and HIEC, respectively. It shows that income is the most relevant factor driving international tourism demand irrespective of the type of the economy in line with the demand theory. Air passengers carried are highly linearly related to ITE in all the cases, although not significantly related as per the regression tests. It, however, accounts for 76.1 per cent, 72.9 per cent, and 75.5 per cent variability of ITE in CEC, LIEC, and HIEC, respectively. Urban Population is another highly linearly related variable with the R^2 linear values of .642 in CEC, .739 in LIEC, and .791 in HIEC. These three variables, viz. income, air passengers, and urban Population, are equally linearly related to tourism expenditure in all three cases. The population is another important factor driving ITE. It is responsible for 41.7 per cent, 65.9 per cent, and 75.1 per cent variability of the independent variable in CEC, LIEC, and HIEC, respectively. The population is another crucial determining factor of tourism expenditure after income as it is a part of models 1 and 3. Although international tourist arrivals are not as linearly related to the predicted variable as the other variables, tourist arrivals are undoubtedly a common factor driving international tourism demand in all three models. Its R^2 values are 44.9 per cent, 55.1 per cent, and 40.5 per cent for CEC, LIEC, and HIEC, respectively. Immigrant stock is the least linearly related variable to ITE among the six predictors, with the R^2 linear values of .372 in CEC, .338 in LIEC, and .343 in HIEC. (See Table 6).

Table 6. Responsiveness of dependent variables with tourism expenditure (per cent)

Variable	CEC	LIEC	HIEC
GDP	79.2	75.7	78.5
PPN	41.7	65.9	75.1
IMS	37.2	33.8	34.3
ITA	44.9	55.1	40.5
AP	76.1	72.9	75.5
UPN	64.2	73.9	79.1

Source: Scatter plots and R^2 linear values on SPSS

CEC = Common economies case; LIEC = Lower income economy case; HIEC = Higher income economy case; GDP = gross domestic product (US $ m); PPN = Population ('000); IMS = Immigrant stock; ITA = International tourist arrivals (million); AP = Air passengers carried (million); UPN = Urban population (per cent)

Note: responsiveness is measured by percentage from the R^2 linear values of each variable (Eg: For GDP under CEC, R^2 value is .792)

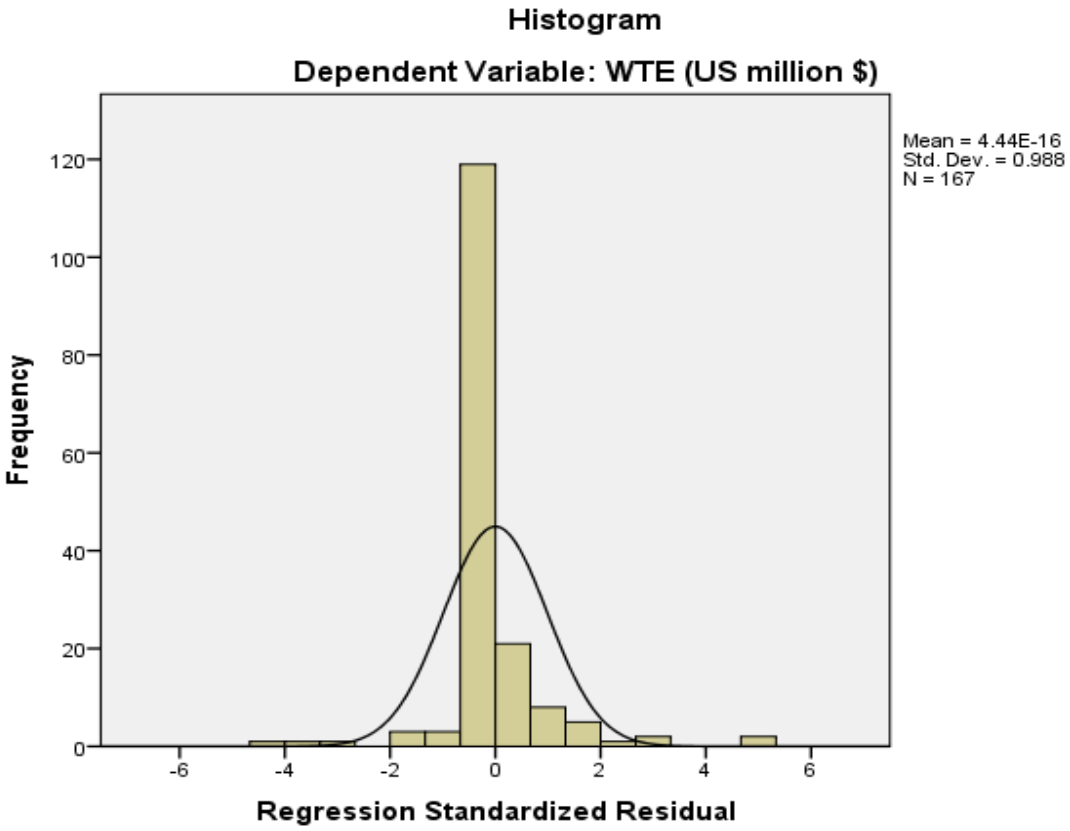

Fig. 1 Normality of the dataset

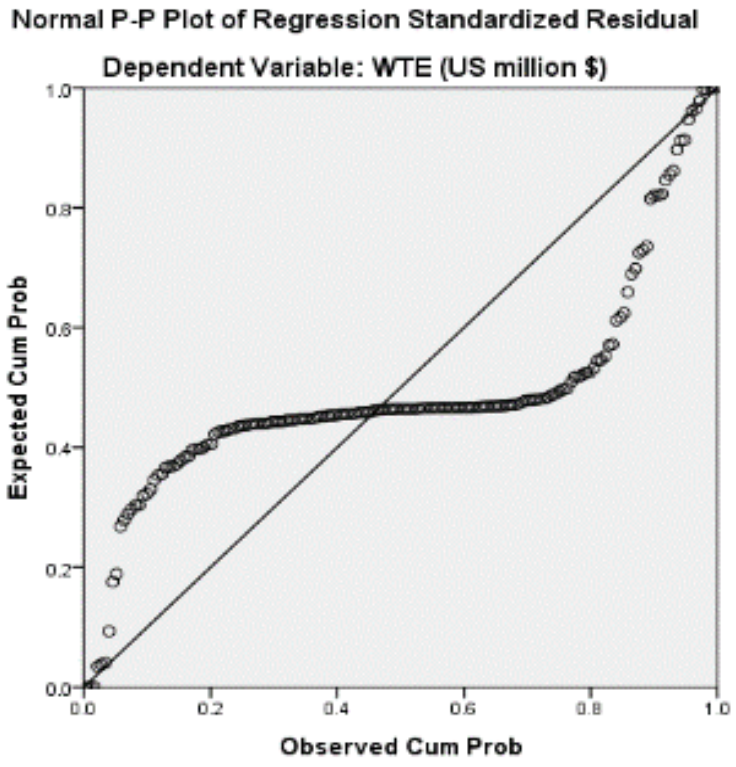

Fig. 2 Regression line

8. Conclusion

The cross-sectional study on determinants of international tourism demand proxied by international tourism expenditure in 2017 found three kinds of factors in the common economies case (CEC), lower-income economy case (LIEC), and higher-income economy case (HIEC). Some determinants are common to the three cases with equal relevance and precision in estimation; two, some other factors are uncommon with varied precision and relevance; three, there are some common factors to at least two cases with varying relevance and precision. Four predictor variables such as income, international tourist arrivals, Population, and immigrant stock are found as the set of determinants in model 1 with validity and varied accuracy in CEC. At the same time, only income and tourist arrivals, which are the common determinants of all models, are included in model 2. In model 3, Population is added besides the common determinants. Income is the most important and valid factor driving international tourism expenditure in all three cases of common, lower-income, and higher-income economies in line with the demand theory. Due to its strong theoretical base and empirical accuracy, income measured by GDP is regarded as the most relevant variable in explaining international tourism demand, especially international tourism expenditure, irrespective of the type of economy. The higher the income, the higher would be the international tourism demand. All the factors dampening the global economy would contract international tourism demand too. The apparent fall in international tourism expenditure in 2009 after the global economic crisis compared to the 2008 level is a clear indicator. Covid 19 is expected to moisten the international travel desire of many in the coming years, not only due to lockdown and travel ban. It is attributed to the significant contraction in global income and loss of employment. The international travel numbers are expected to return to the pre-Covid stage only in a couple of years.

The second most important variable in explaining international tourism expenditure is international tourist arrivals in all three cases considering its higher accuracy in estimation and higher linearity given all conditions of regression analysis. It is a direct impact-making factor in driving the international tourism demand of CEC, LIEC, and HIEC. The population is also highly relevant and accurate in estimating the international tourism demand of CEC and HIEC. Higher international tourism demand would come from the highly populated country. It is negatively related to tourism expenditure but is less relevant in lower-income economies. Although statistically significant, the immigrant stock is a relatively less relevant variable in models 1 and 2. It is less accurate in estimation as well. However, it is part of model 1 though negatively related. Nonetheless, the immigrant stock is a vital factor driving international tourism demand in higher-income economies, although not part of the model.

The study could not include the urban population's size in the models, even though valid and accurate, at least in common economies cases and lower-income economy cases, due to multicollinearity. It has impacted the international tourism expenditure in both cases with statistical significance at least at 10 per cent level. Although negatively related in the higher-income economy case with statistical significance, the measure is less accurate. The insignificance of the number of air passengers carried in explaining international tourism demand should be connected to the abundance and recent phenomenal growth of domestic air passengers across the world. This should be noted along with the fact that most international travel takes place through air routes. It was, however, positively related to tourism expenditure with strong linearity in all the three cases of common economies, lower-income economies, and higher-income economies.

In line with the demand theory, income was the strong and common determinant of international tourism demand in all three models. International tourist arrivals are a true reflection of tourism expenditure in all cases. Immigrant stock is proved to be a decisive factor in affecting the tourism demand only in higher-income economies where migrant stock is significant. It is irrelevant in lower-income economies where migrant stock is insignificant as well. It is proved here that immigrant stock is a strongly developed country determinant of international tourism demand. Although Population is significant in all the three models, it makes some sense in higher-income economies compared to lower-income economies. The reverse is the case for the urban Population. Civil aviation measured by air passengers carried is found irrelevant in both types of economies as international travel is powered by air traffic and sea travel and land routes. Moreover, civil aviation does include both international and domestic passengers.

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