Environmental Degradation, Quality of Institutions and Tourism: New Evidence from Pakistan

Faqeer Muhammad,[1] Rehmat Karim,[2] Javed Akhter Qureshi,[3] Naveed Razzaq,[4] Madeeha Zahra,[1] Irfan Ali[5]

[1]Department of Economics,[2]Department of Tourism & Hospitality Management,[3]Department of Earth Sciences, [4]Xinyu University, China, [5]Department of Business Management, Karakoram International University Gilgit-Baltistan, Pakistan

*Email: faqeer@kiu.edu.pk

Abstract: This study explores the effects of tourism, quality of institutions and FDI on environmental degradation in Pakistan for the two time periods i.e. 1996-2017 and 2000-2017. Quality of institutions is included in the time period 2000-2017 which is adopted from world governance indicators but due to lack of the data it has not been included in second time (1999-2017). To find out the relationship among given variables, Ordinary Least Square (OLS) regression was carried out, moreover, Breusch-Godfrey Serial Correlation LM test, Heteroscedasticity Test and Histogram-Normality test were also applied to diagnose the econometric issues in the given models. The findings of the study revealed that tourism is significant and influential factor of environmental degradation in Pakistan. Similarly, foreign direct investment is also contributing in environmental degradation but its effect is insignificant for both time periods. On the other hand, an inverse relationship is observed between quality of institution and environmental degradation. The outcomes of the study suggest that environmental degradation can be overcome by increasing the quality of the institutions. Moreover, the government initiatives to attract foreign tourists by introducing new visa policy, which includes; electronic visa, on arrival visa and opening new avenues for tourists (e.g. Kartarpur Corridor and CPEC initiatives etc.) will have tremendous impact on the national economy. However, environmental degradation is the outcome of tourism, therefore, policy maker's needs to consider the negative effects of tourism in addition to its positive effects on the economy.

Keywords: Environmental degradation, quality of institutions, tourism and foreign direct investment.

Introduction

Certainly, many industries are playing vital role in the economic development of a country but tourism industry became one of the prominent industries in recent decades and it has been enormously contributing in global business. Further, tourism is an activity carried out by the nonresidents of any destination with the aim to spend the leisure time outside usual environment for different purposes; holidays, business, employment, investigation, family and religious rituals for certain period of time. The trend of international tourist arrivals has been dramatically increased for last few years. Similarly, the international tourist arrivals increased during 1999 to 2011 and 4% growth in year 2012 confirmed its importance (Euromonitor International Database, 2012). Tourism industry is also demonstrating multiplier (increasing employment and revenues, developing infrastructure, business opportunities for private sector) effect to promote economic growth. Gee (1997), reported the importance of tourism industry by revealing that it increases employment opportunities, income, motivates private entity and improves infrastructure.

World Economic Forum (WEF), travel and tourism competitiveness report (2017) highlighted that tourism contributes 10 % in global GDP, 7% in world trade and one job in every eleven job in the world. In addition, a report on European Union Tourism in 2018 presents that in the future tourism will be considered as an important factor for positive economic growth in European Union. Therefore, travel and tourism attained attention of numerous academic researchers as vital determinant of economic growth and its nexus with environmental development (degradation) is being discussed. Environmental Kuznets Curve (EKC) is widely discussed by Grossman and Krueger (1991) related to environment since 1991, which shows the relationship between environmental quality and economic development.

Various studies i.e. Narayan (2004), Narayan, Narayan and Prasad (2010) and Oh (2005), have been carried out to find out relationship between tourism and economic growth. On the other hand, several studies also carried out on link between corruption and environment i.e. Leitao (2006), Pellegrini (2003), Pellegrini and Reyer (2006a, b), Welsch (2002) and Wilson and Damania (2005). Indeed, tourism plays a significant role by enhancing the income level and economic growth of a country but also tourism development encourages enhancing the economic growth for developed and emerging economies, whereas many academic researchers and scientists have discussed and identified CO_2 (carbon emission) association with economic growth determinants and efficiencies to fight with contamination.

Incidentally, the economies have to spend more money on research and development to introduce the environment friendly technologies; therefore, they need to do amendments and new environment protective transportation policies. The development of tourism also causes pollution (environment degradation) due to excessive use of transportation. Therefore, the government should reckon out and control this environmental degradation originated by tourism (Sharif et al., 2017). Government of Pakistan has relaxed visa policy for the 97 countries to attract foreign tourists. Tourists can now visit all parts of the country, including Kashmir and Gilgit-Baltistan without obtaining any NOC (Business Recorder, 2019). Although, this is good initiative to enhance tourism industry in Pakistan but the positive and significant effect of the tourist inflow has indicated alarming situation in terms of environmental quality. Keeping in view the importance of tourism, economic growth, FDI and its impact on environment and quality of institutions is also included in order to find out environmental degradation in Pakistan during the two periods i.e. 2000 to 2017 and 1996 to 2017.

Materials and Methods

This study uses linear model to examine the factors affecting environmental degradation in Pakistan for the two periods i.e. 2000 to 2017 and 1996 to 2017. The study includes quality of the institutions, which is obtained from the World Governance Indicators. The quality of the institution data available from 2000 onwards. The details of the variables and sources of the data are given in Table 1.

Table 1 Variables Description.

Variables	Description	Source
gdp	Annual growth rate	World Development Indicators
fdi	Foreign direct investment as % of GDP	World Development Indicators
instit	Institutional quality	World Governance Indicators
tourist	Number of tourist inflow	World Development Indicators
CO₂	Carbon dioxide emissions proxy for environmental degradation	World Development Indicators

This study proposes two models, which are given below;

Model I:

$$ED= f (gdp, fdi, tourist, instit) \qquad (1)$$

Alternatively, equation 1 is written as
$$ED = \beta_1+\beta_2 tourist+ \beta_3 fdi+\beta_4 gdp+ \beta_5 instit +\mu_t \qquad (2)$$

In equation 1 and 2, *ED* is the environmental degradation, *gdp* is economic growth, *fdi* is foreign direct investment, *tourist* is tourism, *instit* is the institutions and μ_t is the error term.

Model II:

$$ED= f (gdp, fdi, tourist) \qquad (3)$$

Alternatively, it is written as

$$ED_t = \beta_1+\beta_2 tourist + \beta_3 fdi+\beta_4 gdp+\mu t \qquad (4)$$

In equation 3 and 4, *ED* is the environmental degradation, *gdp* is the economic growth, *tourist* is the tourism and *fdi* is foreign direct investment.

Results and Discussion

The outcomes of the descriptive analysis for Model I and Model II are given in Table 2 and 3.

Table 2 Descriptive statistics (Model I).

	CO₂	tourist	gdp	fdi	instit
Mean	142105.8	5.844972	4.321357	1.285704	-0.970556
Median	141355.5	5.821550	4.535582	0.907979	-1.015000
Maximum	166298.5	6.064832	7.667304	3.668323	0.000000
Minimum	106449.3	5.635484	1.606692	0.382827	-1.180000
Std. Dev.	20652.90	0.117737	1.788601	1.023556	0.257647
Skewness	-0.393399	-0.069967	0.180628	1.335305	3.136422
Kurtosis	1.776419	2.123326	2.273848	3.378533	12.61354
Jarque-Bera	1.587151	0.591105	0.493352	5.456586	98.82647
Probability	0.452225	0.744121	0.781394	0.065331	0.000000
Sum	2557905.	105.2095	77.78442	23.14267	-17.47000
Observations	18	18	18	18	18

Mostly, the values of the kurtosis of variables are less than three i.e. normal skewness and Platykurtic except for the two variables *fdi* and *instit* (Table 2). Similarly, only variable fdi has a large tail and leptokurtic (Table 6). On the other hand, the value of the normal skewness should be zero. The descriptive statistics of the Model-I shows that p-value of Jarque-Bera statistics is higher than 5% for majority of the variables, which means that variables are normally distributed except institutional quality. Similarly, the p-value of Jarque-Bera statistics of *fdi* is lower than 5% (Table 3). Hence, majority of variables in both the models are normally distributed.

Table 3 Descriptive statistics (Model II).

	CO₂	**tourist**	**fdi**	**gdp**
Mean	133868.7	5.798204	1.245653	4.084353
Median	133868.7	5.821550	0.907979	4.328272
Maximum	166298.5	6.064832	3.668323	7.667304
Minimum	94447.25	5.567026	0.382827	1.014396
Std. Dev.	25812.45	0.147181	0.931985	1.798608
Skewness	-0.210598	-0.090322	1.545005	0.199411
Kurtosis	1.582121	1.901467	4.202927	2.397454
Jarque-Bera	2.005471	1.136122	10.07893	0.478611
Probability	0.366875	0.566623	0.006477	0.787174
Sum	2945111.	127.5605	27.40436	89.85576

The coefficient tourism is positive and significant which shows that tourism is increasing environmental degradation in Pakistan for the both the time periods

(Table 4). The outcome of this study is consistent with the study of Chen, Thapa and Yan (2018) which shows that the major contributor of CO_2 emission is tourism. Similarly, Sekrafi and Sghaier (2018) study also shows the CO_2 emission because of tourism. In contrary, the study of Lee and Brahmasrene (2013) shows that tourism reduces CO_2 emissions in European Countries. The recent study of Paramati, Shahbaz and Alam (2017) also shows that tourism is increasing CO_2 in Eastern European countries in contrast to reducing CO_2 in Western EU. Keep in view the different outcomes of the empirical studies, the nexus between tourism and environment is still unsettled issue in the academic literature.

Table 4 OLS Estimation Results.

Variables	Model I	Model II
tourist	1.125*** (6.19)	1.273*** (11.50)
fdi	0.00495 (0.25)	0.00363 (0.21)
gdp	0.0118 (0.97)	0.0110 (1.24)
instit	-0.0653 (-0.79)	
c	5.155*** (4.87)	4.355*** (6.82)
R-squared	0.793982	0.889469
Prob(F-statistic)	0.000214	0.000000
N	18	22

t statistics in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Despite the negative effects of tourism growth and development on environment, international tourism plays a significant role for the economic development of many countries in the world. Tourism brings foreign exchange and economic prosperity to the host communities by integrating tourists' services at the destination. It also creates job opportunities in various allied sectors e.g. transportation, entertainment and hotels etc. which eventually increases the income level and economic growth of the country. Result in Table 2 shows the significant effect of economic growth on environment but it is critical to claim that economic growth alone is not sufficient to improve the quality of environment (Almeida et al., 2017). Similarly, foreign direct investment is not an influential factor of environmental degradation in Pakistan. Lastly, this research outcome shows the negative relationship between institutional quality and environmental degradation. The findings of Asici (2013) also showed a significant negative effect on the pressure on nature. The findings suggest that environmental degradation

can be reduced by increasing the quality of the institutions and by controlling corruption.

Table 5 Diagnostic Tests Results.

A: Breusch-Godfrey Serial Correlation LM Test		
	Model I	Model II
Obs*R-squared	3.906578	3.971400
Prob. Chi-Square(2)	0.1418	0.1373
B: Heteroscedasticity Test: Breusch-Pagan-Godfrey		
Obs*R-squared	0.864383	1.336434
Chi-Square(4)	0.9296	0.7205
C: Histogram- Normality Test		
Jarque-Bera	4.061083	7.926717
Probability	0.131264	0.018999

This research used diagnostic tests to check the serial correlation, heteroscedasticity and normality in both models. It is shown that both models lack serial correlation and heteroscedasticity. However, normality issue exists only in Model II and the results of the diagnostic tests are given in Table 5.

Table 6 VIF Results.

Model I			Model II		
Variable	VIF	1/VIF	Variable	VIF	1/VIF
gdp	1.28	0.781557	*gdp*	1.02	0.977581
fdi	1.16	0.862875	*fdi*	1.09	0.915925
instit	1.25	0.802725	*tourist*	1.07	0.936239
tourist	1.26	0.795945			
Mean VIF	1.24		Mean VIF	1.06	

In addition, the above diagnostic tests this research also utilizes Variance Inflation factor to check the collinearity among the explanatory variables. The results given in Table 6 reveal the absence of the Multicollinearity the regressors for both the models given in Table 4. In sum, the OLS do not have econometric problems i.e. Multicollinearity and serial correlation. Therefore, findings of the study can be used for the policy implications.

Conclusion

This study investigates the effects of tourists' inflow, quality of institutions and foreign direct investment on environmental degradation in Pakistan. The first time period (2000-2017) includes quality of the institutions, which is, developed from world governance indicators but it is not included in second time due to lack of the data. The findings of the study have shown tourism is significant and influential factor of environmental degradation in Pakistan. Similarly, foreign direct investment is also contributing environmental degradation but its effect is insignificant for both the time periods. On the other hand, an inverse relationship is observed between quality of institutions and environmental degradation. The outcomes of the

study suggest that environmental degradation can be overcome by increasing the quality of the institutions. Lastly, the government initiatives to attract foreign tourists by relaxing the visa for many countries will have tremendous impact on the economy. However, environmental degradation is the outcome of the rise in tourists' inflow. Therefore, policy makers should consider the harmful effects of tourism in addition to its positive effects on the economy.

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