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The Impact of Financial Development, Tourism, Population Density and Political Stability on Environmental Degradation in Case of Pakistan

Amna Rasheed[1]
Department of Economics, The Superior College Lahore, Pakistan

Farzana Kousar
Department of Economics, The Superior College Lahore, Pakistan

Aiza Shabbir
Department of Economics, The Superior College Lahore, Pakistan

Abstract

This study examined the impact of financial development, tourism, population density and political stability on environmental degradation in Pakistan over the time 1986-2017. Data of these variables is taken from World Development Indicator (WDI), World Tourism Organization (WTO), International country risk guide (ICRG) database and federal bureau of Statistics of Pakistan. To investigate the findings, three separate models are constructed by using three different indicators of financial development. Firstly, Co-Integration among variables is confirmed through Bound test of Co-Integration. The result of this test reveals that co-integration among all the variables exists in the long run. Auto Regressive Distributed Lag (ARDL) technique is used to examine short run and long run estimates. Findings of the study concluded that in all the models financial development has considerable positive relationship with CO2 related pollution in the long run while in the short run results depend on which dimension of financial development is used. As, M2 has significantly negative impact on environmental degradation whereas, Population density has negatively significant role in explaining carbon dioxide emissions in the long run but it is positive and inconsequential in the short run. Tourism has negative and significant effect on environmental deterioration in case of Political stability has statistically significant and inverse relationship with CO2 emissions both in short and long run. These outcomes may also become fruitful for Government

[1] *Corresponding author's email: amnarash33d@gmail.com*

regarding decision making. The result recommends that Government should try to focus on financial development, tourism sector and political stability more keenly. Government should impose some restrictions on financial sector as, loans and finance should only be given for productive and environment friendly projects. Taxes should be imposed on most visited tourist' places. Awareness among people regarding depreciation of environment should be promoted by different activities or programs conducted by Government.

Keywords: Environmental Degradation, Money Order, tourism, population density, political stability.

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In all economies whether they are developed or moving towards development, maintenance of environmental quality has become a forefront of all current issues. Carbon dioxide (CO2) is an extremely condensed greenhouse gas in the environment. The lifecycle of CO2 is more than ten years in the atmosphere (Wantzen et al., 2008). Ultimately, the Brundtland Commission report since 1987 has claimed that addition of CO2 in the atmosphere is the biggest danger to the life on earth (GEO_4, 2007). Definitely, process of photosynthesis, breathing, feeding of grass by animals and rock corroding are the natural procedures of CO2 production (Goodland & Anhang, 2009).

Empirical studies and research on population verified that it is an important source of development Zaman (2011) but on the other side, population growth is also an important component of environmental degradation when it super pass its threshold level (Fu et al., 2015). An increasing number of population required larger use of natural resources, increased number of demand for energy for the purpose of industrialization and transportation due to which fossil fuels emissions increased Ray et al. (2011) and higher production of waste materials also linked with environmental degradation like loss of biodiversity, air and water pollution, public health, loss of flexibility in ecosystem, deforestation and degradation of agriculture land. Almost a child can produce 20 times more greenhouse gas as compared to a person who save it by recycling, energy efficient appliances and by decreasing driving. In Pakistan, health issues in populous cities of Lahore and Karachi are increasing at alarming rate due to rise in level of air pollution. As compare to population, energy consumption is very low in Pakistan according to world principles but two main environmental pollutants in metropolitan areas are lead and carbon (Schwab, 2009). According to Marcoux (1999), these two ideas are totally conflicting: (1) alleviating the population for the security of environment (2) control the rapid increase in population to enhance the process of economic growth. Economic growth associated with population stabilization or slower population growth is still depreciating the environment.

Tourism as a well-structured, planned, consistent and multi-dimensional business activity has gained a significant world-wide importance in 20th century. Tourism sector is growing rapidly with time in both developed and developing economies and due to its vital role, it is contemplated as a vital component of economic development (Cortes-

Jimenez & Pulina 2011; Shi et al., 2011; Blanke & Chiesa, 2013; Tang & Abosedra, 2014; Bhardwaj et al., 2015). According to UNWTO (2015) instead of many national and international clashes, political disturbances, terrorist actions, natural disasters, energy issues, epidemics and socio-economic sufferings in various regions of the world, the number of international visitor's arrivals has expanded from only 166 million in 1970 to 1.33 billion in 2014 and it is also forecasted by UNWTO that on the average growth rate of international visitor's arrivals per annum will be near about 3.5% by 2030.

According to economists, political instability (PI) is a thoughtful disorder which reduces the efficiency of economic system. Numerous academics have investigated the influence of governments and their effects on economic performance. (Buitenzorgy, Mol et al. 2011) have examined that pathetic and instable governance causes sluggish economic development, exploitation, political volatility and small investment. (Easterly and Levine 1997) study also gave the same results related to slow growth process whereas Baumol (1990) stated that establishments effects entrepreneurship's actions and check whether these activities are fruitful or not. Chang (2011) investigated that establishments have a considerable positive impact on economic growth.

Financial development is also a valuable factor of economic growth due to its noteworthy role in enhancing efficient investment, organizing savings, creating production and employment opportunities, upgrading the transfer of goods and services, and use of better technological and innovational techniques (Al-mulali & Sab, 2012; Islam et al., 2013; Ohlan, 2017). Developed money markets become helpful in capturing the foreign investment and enhancing the speed of economic development (Frankel & Romer, 1999). A technological advance and established financial sector also becomes helpful in increasing productive activities by granting loans at lower charges and directing the firms to use environment friendly technologies which in turn increase the level of domestic output (Birdsall & Wheeler, 1993; Shahbaz, 2000; Frankel & Rose, 2000).

Rationale of the Study

Air pollution, toxic waste, smog, water contamination and scarcity of water resources are the recent and most highly alarming issues in Pakistan's economy. Due to the importance of this issue, a huge volume of studies have examined the various factors of environmental impacts.

But, there is dearth of environment related studies in Pakistan. Although, it is the responsibility of the Government to give priority to this highly concern issue. Because of instability in the Government's set up, formulation and implementation of environment related policies are in waiting list in Pakistan. Moreover, no empirical research is conducted to access the environmental influence of tourism only for Pakistan. This study attempts to investigate the effect of financial development, tourism, population density and political stability on environmental depreciation in case of Pakistan by using annual data over the period 1986-2017.

Literature Review

Environmental Kuznets Curve (EKC)

Gases release from fossil fuels, burning of coal, rapid industrialization and many other human activities causes a dangerous enhance in global temperature. Variations in climatic conditions may affect the environmental quality and in result, disturb the human activities. According to some previous studies an inverted U shape curve that is recognized as "Environmental Kuznets Curve" (EKC) is formed among economic growth and environmental deterioration. Therefore, for increasing the level of industrialization, productions, employment opportunities and economic growth rate a huge amount of natural resources and energy is consumed. This massive energy consumption boosts the release of toxins and numerous threatening pollutants into the atmosphere. This is the early stage of economic growth at which economic mediators remain unable to overcome on the rapidly increasing pollution due to low per capita income. However, in further stages of economic development, urbanization and industrialization, the quality of atmosphere goes on to improve due to increase in per capita income.

Malthus Theory of Population Growth and Climate Change

There are numerous connections that associate the human population and environment. But surely, increase in the size of rapidly growing population and its link with its surrounding environment and its resources is one of the most highly concerned issue in human history. Malthus (1798) presented the modern theory of relationship between population growth and environment and this theory claimed that "The power of population is indefinitely greater than the power in the earth to produce subsistence for man". Malthus proposed that undue human population growth will overburden the insufficient and limited quantity of natural resources. Malthus's study claimed that food production increases geometrically and quantity land is fixed while growth in population is exponential. This theory assumed that as human population grew, production of food would be inadequate to satisfy the humankind.

Financial Development and Environmental Degradation

A massive literature is present about the link between financial development and environmental depreciation. A large number of studies on single country or small regions showed that FD has inverse influences on the ecological quality (Jalil & Feridun, 2011; Zhang, 2011; Shahbaz et al., 2013; Kumar et al., 2016; Bekhet & Othman, 2017). Chousa et al. (2009) claimed that fiscal development is a powerful element for the development of an economy, energy utilization and CO2 radiations in BRIC countries and examined that development in financial sector not only reduce the financing cost but it also channelized the resources for new energy efficient projects and in result, lower the CO2 radiations. Tang and Tan (2014) overlooked the direct relationship between monetary development and energy utilization and nonlinear association between fiscal sector and environmental depreciation (Shahbaz et al., 2016). Results of both studies verified that financial development has opposite effect on environmental deterioration.

Tourism and Environmental Degradation

Tourism comprises the activities of people travelling towards other places separate to their traditional environment and stay there for less than one year time period for recreation, business and other motives (WTO, 2009). Intercontinental tourism has inward and outward consequences on the balance sheet of both economies. Now, tourism is a key factor of revenue production for many economies and its effect both lending and receiving country. In some situations, tourism gains a vital importance. According to United Nations report in 1994, there are three main forms of tourism which re as follows:

Domestic Tourism

This form of tourism represents citizens of the given country moving only within the country and it makes no difference on the balance sheet of the economy because money circulate within the economy.

Inbound Tourism

In this type of tourism, citizens of the other countries travel into the given country and this arrival causes improvement in the balance sheet due to the money earned by tourist's activities.

Outbound Tourism

In outbound tourism, citizens of the given state travel into another state which is known as host country for some purpose. This travel enhance the earnings of the host economy and it has positive effects on the balance sheet of the lending economy.

Some previous studies also investigated the effect of tourism on environmental deterioration which is measured by CO2 emissions. Another study of Katircioglu et al. (2015) investigated the correlation between tourism growth and environmental degradation by taking annual statistics from 1960 to 2009. The findings of these researches confirmed that there is a direct and significant influence of Tourists arrivals, development and energy utilization on CO2 discharges in Turkey. Fereidouni et al. (2014) used pooled data of 48 tourist places over the period of 1995-2009. The results of Co-Integration test showed that in Asia, Africa, America and Middle East there is long run correlation among tourism and carbon dioxide emissions and no long run relationship prevails among these variables in European regions. Solarin (2014) examined the interconnection between tourism and CO2 radiations with other variables like FD, energy utilization, urbanization and GDP. The practical outcomes of the study showed that positive correlation exists between the variables in the long period and direction of causality is from tourist's arrivals towards carbon dioxide radiations.

Population Density and Environmental Degradation

For viable development, the interconnection between population and environment has become a serious issue in recent literature. Various studies are held to investigate the effect of population growth and population density on environmental quality. Some

studies proposed that fastly increasing population not only causes deforestation, over exploitation of natural resources, burden on minimal land, flooding, soil corrosion but it also enhances the utilization of pesticides and fertilizers which in turn, deteriorates the quality of land and causes water contamination (Malthus, 1798; Ehrlich & Holdren, 1971; Repetto, 2013). Increase in density of population also encouraged the technological progress and gave rise to innovations in the field of agriculture (Boserup, 1965).

Numerous studies investigated the positive impact of population growth on environment. Trainer (1990) examined that most of the problems in developing economies are due to the rapidly increasing population. As, briskly growing population causes the limited or scarce resources to deplete due to more pressure on these environmental resources for sufficient production of food. Cropper and Griffiths (1994) examined that increase in population density motivates the transformation of forests into agriculture to accomplish the rising demand. Moreover, farming or cultivation is the primary source of income for the people of rural areas. So, one would assume expansion in deforestation with increase in population density.

They found that nature of activities in the US are intensely changing the structure of land and environment due to which ecological services are needed to save and help its population.

Political Stability and Environmental Degradation

Governance is a vast conception which is represented by different variables and political stability is one among these indicators. Governance can be described by different aggregated indices and each of these signify one particular side. Institutions have a significant role in determining the public choices and therefore, they have vital role in implication of environment related programs. So, the maintenance of natural resources and protection of environment by either direct or indirect means is related with institutional quality.

Deacon (1999) stated that governments control the execution of programs related to environment preservation so, the emission of institutional quality from the function of environmental quality might cause unreliable and inconsistent results. Bhattaray and Hammig (2001) claimed that with the help of implemented policies government can analyze the correlation between environment and political stability. Many studies used the indicator of democracy that represents another dimension of governance. According to some analyses democracy positively affects the environment. Congleton (1992) examined in case of cross country analysis that moderate democracies are important for the implementation of environmental policies. Barret and Graddy (2000) examined a direct impact of political stability on the environmental quality. Li and Reuveny (2006) investigated the impact of democracy on atmospheric degradation occurring due to human activities. The study concluded that democracy positively affects the excellence of environment.

Dutt and Sustainability (2009) explored the environment income nexus by using governance and political institutions as additional variables. The significant conclusions of this study verified that the countries where governance is capable in implementing

policies related to preservation of environment and political institutions are strong, these countries have lower emission of pollutants.

Hypothesis

H_1: *M2 has significant effect on environmental degradation.*

H_2: *Tourism has considerable impact on environmental degradation.*

H_3: *Population density has significant impact on environmental degradation.*

H_4: *Political stability has considerable impact on environmental degradation.*

Empirical Findings

Descriptive Statistics

Results of descriptive statistics are shown in Table 1. This table represents mean, median, maximum, minimum and standard deviation values for all variables. Normality of variable scan also be checked through Jarque Bera value based on skewness and Kurtosis value.

Table 1. Results of descriptive statistics

	CO2	M2	PD	POL	Tour
Mean	0.7698	167746.2	2.42789	6.68588	744148.3
Median	0.7666	46.59576	2.237086	6.790000	499000.0
Maximum	0.9910	5701821.0	3.340328	10.08000	3034000
Minimum	0.4803	38.59470	1.954080	2.170000	140300.0
Std.Deviation	0.1519	977846.2	0.440734	1.841556	679771.1
Skewness	-0.3178	5.570485	0.837142	-0.674527	1.739443
Kurtosis	1.8643	32.03030	2.321563	3.033269	5.560032
Jarque-Bera (P value)	2.3994 (0.3013)	1369.746 (0.0000)	4.623295 (0.09909)	2.575295 (0.275295)	26.42992 (0.000002)

P value greater than 5% shows that data is normally distributed in the variable. As p value of CO2, Population density and political stability are more than 0.05 indicates that these variables have normal distribution of data whereas, M2 and tourism data in not normally distributed.

Unit Root Test

To check the order of integration of desire variables, Augmented Dickey Fuller (ADF); Dickey and Fuller (1979) and Phillips-Perron (PP); Phillips and Perron (1988) unit root tests are used.

These tests also verify that these variables are not integrated at order 2 i.e. I (2). The results of Unit root test are shown in Table 2. As results of unit root test verified that all the variables are integrated at level or at order 1 so the essential requirement for the execution of ARDL approach is fulfilled.

Table 2. Unit Root Results

Variables	Augmented Dickey Fuller (ADF) Test		Phillips Person (PP) Test	
	Constant without trend	Constant with trend	Constant without trend	Constant with trend
At Level				
CO_2	-2.0998 (0) (0.2460)	-0.7609 (0) (0.9593)	-2.0367 [3] (0.2705)	-0.9076 [3] (0.9431)
M2	-1.1965 (0) (0.6641)	-3.5849** (1) (0.0472)	1.8712 [0] (0.9997)	0.7779 [0] (0.9995)
Tour	4.3584 (6) (1.0000)	4.2720 (8) (1.0000)	-1.2359 [3] (0.6468)	-3.9920 [3] (0.0189)
PD	-3.8063*** (3) (0.0072)	-2.1731 (3) (0.4866)	-2.8692** [3] (0.0499)	-1.0214 [3] (0.9271)
POL	-2.0158 (0) (0.2789)	-1.9988 (0) (0.5805)	-2.0158 [0] (0.2789)	-1.9988 [0] (0.5805)
At first difference				
CO_2	-5.7311*** (0) (0.0000)	-6.2921*** (0) (0.0001)	-5.7889*** [3] (0.0000)	-6.2540*** [3] (0.0001)
M2	-4.5362*** (0) (0.0010)	-4.4708*** (0) (0.0062)	1.1537 [0] (0.9971)	9279.896 [1] (1.0000)
Tour	-10.2902*** (0) (0.0000)	-6.6765*** (1) (0.0000)	-10.8798*** [1] (0.0000)	-15.3990*** [5] (0.0000)
PD	-1.4330 (2) (0.5529)	-3.2744 (2) (0.0899)	-1.6995 [3] (0.4219)	-2.1890 [3] (0.4793
POL	-5.9640*** (0) (0.0000)	-5.8584*** (0) (0.0002)	-5.9639*** [1] (0.0000)	-5.8587*** [1] (0.0002)

*, **, *** shows 10%, 5% and 1% level of significance respectively. The figures in () bracket represents optimal lag length on the base of Schwarz information criteria (SIC) and the figures in [] bracket denotes the band width used in the Phillips-Perron test based on Newey-West Bandwidth criterion.

The results of both ADF and PP tests shows that Population density is integrated at level, that is, I(0) while environmental degradation, broad money (M2), Tourism and political stability all are stationary at first difference or integrated at I(1). As, one variable is integrated at I(0) and other variables at order I(1) so ARDL is more suitable approach in this situation as compare to other co-integration techniques.

Lag Selection Criteria

Before estimating the short run and long run co-integration of coefficients it's important to find out the optimal lag length to be used. It is supposed that error term is free from serial dependency so it is essential that lag length should be appropriately large in order to reduce autocorrelation and sufficiently small to being over parameterized, particularly in case of small time series data (Shin et al., 2001). That's why, optimal lag length selected in this study is 4 as shown in table 3.1, 3.2 and 3.3.

Table 3. Model Results

CO2 = f (M2, Tour, PD, POL)

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-898.6933	NA	1.01e+20	60.24622	60.47976	60.32093
1	-763.8413	215.7633	6.82e+16	52.92275	54.32395	53.37101
2	-725.1080	49.06222	3.18e+16	52.00720	54.57606	52.82900
3	-670.8742	50.61821	6.99e+15	50.05828	53.79480	51.25363
4	-537.2905	80.15021*	1.45e+13*	42.81937*	47.72356*	44.38826*

Co-Integration Test

After selecting the optimal lag length, the next step is to conduct bound test to check long run co-integration in the estimated coefficients. F-statistic is used to identify co-integration in our desired variables. In table 3 calculated values of F statistic are described. As, F value (4.825) is greater than upper bound critical value which is (4.01) at 5% level of significance. The result of the models shows that F statistic value is greater than upper bound value at 5% significance level so, null hypothesis of no co-integration is rejected in all cases and alternate hypothesis of co-integration among variables of the models is accepted. It verifies that environmental degradation, M2, Tourism, Population density and political stability have co-integrational association in case of Pakistan.

Table 4. ARDL Bound Test Result

ARDL BOUND TEST		
Null Hypothesis: No long run co-integration exists		
Models	F-Statistic (P Value)	Result
Model	4.825** (0.021)	Co-Integrated
As, Significance Level	Lower bound critical values	Upper bound critical values
1%	3.74	5.06
5%	2.86	4.01
10%	2.45	3.52

** denotes 5% level of confidence

ARDL Long Run Coefficients

After verifying the co-integration among the desired variables of the models, ARDL model is used to find out short run and long run estimated coefficients. For suitable lag length selection Akaike Information criterion (AIC) is used. AS, computed F value is sensitive to the number of lags on each first differenced variable. The suggested optimal. Lag length based on AIC are (1, 3, 1, 4, 0). CO2 is the dependent variable in the model. Empirical evidence of long run coefficients are reported in table 5.

Table 5. Empirical evidence of long run coefficients

Variables	Model Coefficients (P values)
M2	0.8921*** (0.000)
PD	-0.2872*** (0.000)
POL	-0.7821** (0.044)
Tour	-0.4612** (0.024)

Note: *, **, *** shows 10%, 5% and 1% level of significance respectively.

The findings of all models are mentioned in Table 5. Findings verify that all the coefficients are significant at 1% or 5% level of significance. In case of M2 has positive and significant role in influencing ecological degradation at 1% level of significance with coefficient value of 0.8921 which shows that one unit increase in M2 will enhance CO2 by 0.8921 units while, population density has negative and significant influence on CO2 emissions at 1% significance level. The coefficient value of population density represents that one unit increase in population density will cause 0.2872 units reduction in CO2 emissions. Political stability and tourism has negative and significant influence on environmental deterioration at 5% level of significance. Precisely, one unit increase in political stability will decrease environmental reduction 0.7821 units and one unit increase in tourism will reduce pollution 0.4612 units. Overall, results indicate that the results of population density and political stability shows that PD and POL have negative and significant effect in explaining environmental degradation while financial development has positive and significant role in explaining CO2 emissions in the long run. Tourism has dual role as, it is negatively significant in where M2 is used as indicator of financial development.

ARDL Short Run Coefficients

After examining long run correlation among variables, subsequent step is to find out short run estimates of the model. ECM is used for short time period dynamics along with the presence of long run estimates. The results of estimated short run coefficients are reported in Table 6.

Table 6. Results of estimated short run coefficients

Variables	Coefficients	t-statistic (*P* value)
D(M2)	-0.0043**	-2.4636 (0.0255)
D(PD)	0.1541	0.8646 (0.4000)
D(POL)	-0.0047	-1.1717 (0.2585)
D(POL(-1))	-0.0021	-0.5246 (0.6071)
D(POL(-2))	0.0023	0.6479 (0.5263)
D(POL(-3))	-0.0074**	-2.6249 (0.0184)
D(Tour)	-0.0063**	-2.3842 (0.0298)
ECT(-1)	-0.8687***	-4.4344 (0.0004)

1%, 5% and 10% level of significance are shown by ***, **, * respectively.

Error Correction Model (ECM) is used for investigating the short run association among the variables. The findings of short run estimated coefficients for model are presented in above tables. The findings reveal that in case of Model, M2, Tourism and lagged three of political stability have negative and significant relationship with CO2 emissions in the short run in Pakistan. However, the role of population density is insignificant in determining CO2 emissions instead of its positive value. The ECM term which is (-0.8687) is negative and significant at 1% level of significance indicates that it fulfills econometric conditions and convergence towards the equilibrium point in the long run is possible in case of any shock. To confirm goodness of fit of the models the values of R^2, F-statistic and probability values are all mentioned in table 6. The values ensures that model fit is good as value of R^2 is near to 1 and P value is also less than 0.05.

Diagnostic Tests Analysis

After empirically investing the short run and long run coefficients, a set of diagnostic tests such as autocorrelation, heteroscedasticity, normality and functional form are conducted to ensure the reliability of results. Results of all diagnostic tests are reported in following table:

Table 9. Results of the ARDL Diagnostic Tests

Test Statistic	Model
A: Serial correlation	0.604 (0.560)
B: Functional Form	2.549 (0.131)
C: Normality	0.663 (0.718)
D: Heteroscedasticity	0.741 (0.704)

Results of four diagnostic tests are reported in above table. Lagrange multiplier test presented by Breusch Godfrey is used to check autocorrelation among residuals. Null hypothesis of this test states that there is no auto-correlation among errors against alternate hypothesis of serial correlation among residuals. As the P value of LM serial correlation test is more than 5% so we cannot reject null hypothesis and accept that

residuals are free from serial correlation in all the models. Ramsey Reset test is used to check whether there is any misspecification in the functional form of the model or not. Results of the model ensure that functional form of the model is accurately specified as p value is greater than 0.05. Jarque Bera statistic is used to investigate the normality of the model by skewness and kurtosis values and findings depict that p value which is greater than 5% is in favor of accepting null hypothesis that is there exist normality in the model. Breusch Pagan Godfrey test checks the variance of the error term. Null hypothesis of this test indicate that variance of the error term is constant and residuals are homoscedastic against alternate hypothesis of heteroscedasticity of residuals. As, p value of Breusch Pagan test is greater than 5% so we accept that there is homoscedasticity in the model. Thus, overall findings reveal that ARDL estimated model of this study clear all diagnostic tests.

Stability Tests

For reliable and consistent results, parameters of the model should be stable. As, suggested by Pesaran (1997) Cumulative Sum of Recursive Residuals (CUSUM) and cumulative sum of square of Recursive Residuals (CUSUMQ) tests are used to examine the structural stability of the model. The figures of both the tests for the model reported below:

Model

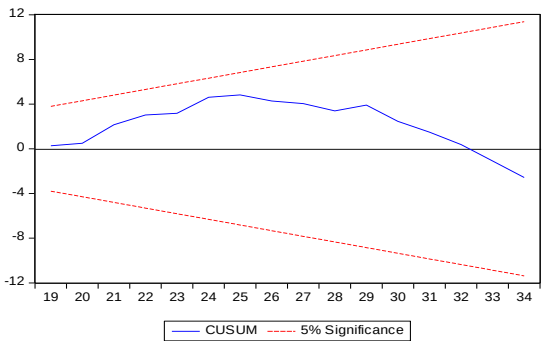

Figure 1

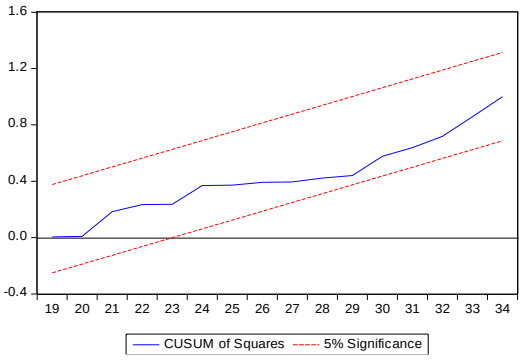

Figure 2

As, blue line is between two red straight lines which shows critical bounds at 5% level of significance in all the figures so, it is concluded that the model were stable within the studied time period in Pakistan.

Conclusion

This study investigates the impact of financial development, tourism, population density and political stability on environmental degradation measured by CO2 emissions in Pakistan by using annual time series data over the period 1986-2017. Auto Regressive Distributed Lag (ARDL) bounds testing approach to co-integration is used to find out whether significant long run association among variables exist or not. Three different indicators of financial development like broad money (M2), The estimated empirical findings clarifies that in long run financial development has positive and significant effect

on CO2 emissions indicating that financial development has happened by sacrificing environmental quality (Sharif et al., 2016). The short run results ensures that in case of the model when M2 dimension of FD is used, increase in FD will also increase the environmental quality but this finding is only restricted to short run not in long run (Habibullah et al., 2017). Overall, financial development is the key contributor of Carbon emissions in Pakistan. The findings of tourism coefficient demonstrates that in the model it has significant and negative impact on CO2 showing that increase in tourist arrival will deteriorate the emissions of toxic pollutants both in short and long run, this may be due to the better infrastructure by private sector, financing in energy efficient project and proper ways of waste recycling (Seetanah et al., 2014). The outcome of the models indicate that tourism and environment are positively inter connected with each other means increase in international tourist arrivals will enhance the environmental devastation due to the lack of good infrastructure, shortage of proper places for waste material dumping and more use of transportation (Alam et al., 2018). The impact of population density on environmental deterioration is also checked in this study. The coefficient values of PD indicate that it has inverse and statistically significant effect on degradation of environment in the long run in the model due to the awareness of people regarding cleaner environment (Panayotou, 2000; Hao & Liu, 2016) but in short run, though coefficient value is positive but it is insignificant showing that in the short run population density is not a key contributor of environmental degradation in the model (Long et al., 2012; Mahmood, 2013; Chaudhary et al., 2013). At last, the results of political stability ensures that it has negative and significant influence on CO2 emissions both in short and long run (Fredriksson & Svensson, 2003). From above discussion it is concluded that M2 has considerable negative whereas Domestic credit to Private sector and Domestic Credit to private sector by banks have positive influence on devastation of environment both in short and long run. Population density and environment are negatively associated with each other in the long run but positively interconnected in the short run and this. Political stability increases the quality of environment by implementing proper policy measurements. Impact of tourism on CO2 is significant both in short and long run but direction of its coefficient value depends on the selected model whether it will be positive or negative.

Findings of the Study

Keeping in view the objectives of this study, following are the findings of this research work:

- The first objective of this study was to estimate the short run and long run association among dependent and independent variables. The findings reveal that financial development, CO2 emissions, population density, political stability and tourism all variables are co-integrated both in short and long run.

- The second objective was to find the impact of independent variables on dependent variable. The results demonstrates that impact of M2 on CO2 is negative and significant both in short and long run. Political stability has negative effect on environmental degradation which is statistically significant in the long run but insignificant in the short run. Tourism has negatively significant role in explaining CO2 emissions.

Policy Recommendations

In the light of above mentioned findings of this study, following policy implications can be adopted to enhance the quality of environment and control harmful radiations of CO2.

- To control the CO2 emissions in the country, the Government should incorporate green values in the financial zone. Policy makers can implement green values in the fiscal sector by controlling the credit quantity through appropriate measurements or by giving directions to the banking sector like it should be ensured that credit will be used for environment cleaner projects either by firms or households or by advancing loans at lower rates to urge motivation in the people to invest this credit in environment friendly projects.

- The policy makers can implement and regulate better environmental policies instead of out dated longer time period policies by enforcing strong supervision, stable law and order conditions and spreading awareness among people regarding these harmful and fatal radiations by conducting awareness programs in the country.

- Since the government's public expenditure provide strong support to an enterprises' low carbon emission activities so the government must step up capital investment, create a special fund for reduction in corporate emissions and actively support enterprises to carry out emission reduction practices.

- The government can develop tourism sector without compromising on the quality of environment by giving incentives to the domestic and private investors to upgrade the infrastructure of the country by construction of roads, investment in energy proficient programs and proper measurements for the disposal of waste garbage.

- For protection of environment in the long run the government should introduce ecotourism with appropriate supervision, assessment and management of Eco tourist sites. Moreover, environmental taxes should be imposed by Government on most visited tourist's places to protect the environment from being deteriorated.

- Political Stability accelerates macroeconomic performance and attracts more foreign investment. Thus, policy makers need to target some selected projects that have little pollution in order to preserve the environment.

- Government can carry out policies that lower pollution levels and formulate minimum environmental standards in order to decrease the emission of hazardous substances.

- A thoughtful population maintenance policy would also helpful in reducing carbon emissions and promoting sustainable development.

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