Impact of Financial Development, Economic Growth and Energy Consumption On Environmental Degradation: Evidence from Pakistan

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Abstract:

With the advent of globalization and industrialization, the life of human being has become luxurious, efficient and comfortable but at the same time, the economies are facing the challenge of environmental degradation. Environmental degradation has become the significant problem around the world and increasing day by day. Amongst many, the key reasons of this environmental degradation are the financial development and energy consumption. The purpose of this study is to examine the impact of financial development, economic growth and energy consumption on environmental degradation in Pakistan. We construct financial development index for Pakistan by applying principle component method on the major four proxies of financial development available in literature namely; domestic credit by banking sector, domestic credit to private sector, stock market capitalization, and liquid liabilities. The unit root test, co-integration test, and ordinary least square analyses have been applied on the historical data over the period of 1972-2014. The empirical evidence shows that all the variables have a significant positive effect on environmental degradation which means an increase in any variable will increase the environmental degradation. This study will be beneficial for the strategy makers and government of Pakistan in the formulation of eco-friendly strategies.

Keywords: *Financial Development, Economic Growth, Economic Consumption, CO2 Emission, Pakistan*

Introduction:

Earth is a planet which is the combination of sky, forest and green valley but are being degraded and polluted by different activities held by humans. The vast growth has been observed in the countries social and economic development which increases the demand for energy (i.e., fossil fuels) rapidly (Al-mulali; 2014; Azam & Raza, 2018). Despite of efforts made by the economies to reduce the energy consumption, fossil fuels are one of the significant sources, representing 80% of the energy consumption used worldwide (World Development Indicators; 2013). Thus, economic degradation is one of the challenges which all the economies are facing (Al-mulali; 2014; Zaman et al., 2016).

The economic degradation impacts human health with different diseases like Asthma, cancer, lung problem and others. The environmental degradation also reduces natural resources, further impacting environmental quality which damages the country economy in terms of cleanup landfills, restoration of green cover and endangered species protection (Hitam and Borhan 2012). According to the inter-governmental panel on climate change (2014) the global temperature has been increased from 1.1˚C to 6.5 ˚C because of the environmental degradation. This change in global warming takes the attention of many researchers to take this issue seriously (Albiman, Suleiman and Baka, 2014; Omri, 2015).

Many studies have been conducted to study the factors that cause the CO2 emission at both micro and macro level (Al-Mulali, 2014; Raza et al., 2017). Urbanization, financial development, energy consumption, trade is identified as the main factors that increases the CO2 emission (Sharif, & Raza, 2016; Tamazian et al. 2009; Kasman and Duman, 2015; Omri et.al, 2015). The mix results have been found related to the association between financial development and CO2 emission. Some studies reported that a positive association exists between the CO2 emission,

financial development and energy consumption (Sadorsky 2011, Shahbaz and Lean, 2012; Islam et al, 2013; Tang and Tan, 2014). On the other hand, some studies reported that financial development reduces the energy consumption and co2 emission (Jalil and Feridun; 2011; Shahbaz et al; 2013)

The financial development contributes to the CO2 emission in a number of ways. Firstly, due to financial intermediations the loans are available to the consumers in the easiest manner by which people buy appliances, houses, refrigerators and automobiles and make their lifestyle more convenient. They can easily buy items like air-conditioners, automobiles, etc. that emits CO2 emission (Zhang, 2011). Secondly, under financial development the financial intermediaries increase the ways of credit channels by which people do invest more, launch new projects in a cheap way by which less transaction cost incurs and directly increase in Carbon emission (CO2) Sehrawat, Giri and Mohapatra, 2015). Third, financial developments also attract the FDI inflows which increases the economic growth and result in more CO2 emission (Tamazian and Rao, 2010). Fourth, the Industrial activities also increase due to financial development which lead to industrial pollution (Tamazian et.al; 2009). Energy consumption and the economic growth are the cause that increases the CO2 emission (Kivyiro and Arminen, 2014). In literature, the association between the two variables are mostly modelled by the environmental Kuznets curve (EKC) and reported that the association between them is unidirectional i.e., both economic growth (GDP) per capita and energy consumption cause CO2 emission (Chandran and Tang 2013; Albiman, Suleiman and Baka 2015). The studies on economic growth and energy consumption nexus has been done by taking different proxies, techniques and countries (Apergis and Payne, 2009, Lin and Li, 2011, Raza et al., 2015) and most of the studies showed mixed outcomes (Chen et al., 2007; Omri, 2014).

The association between financial development, energy consumption, economic growth and CO2 emission in spite of its importance did not receive the attention of the researchers in the context of Pakistan. So, this study refills the gap and investigate the association between the variables in Pakistan by using the data from 1972-2014. Pakistan economy transformed after 1990 when the government adopted the liberalization policies and steps were taken to improve the financial sector of the economy. The banking sector of the economy has been improved drastically in last 10 years, the total number of branches in 2004 was 6882 and increased to 11551 in 2014. The domestic credit provided by the financial sector (% of GDP) has also improved from 36.2% to 47.5% (World Bank indicators). Furthermore, the growth rate of Pakistan has also improved to 4.24% in 2014 to 4.03% in 2013 (Economic survey of Pakistan, 2014-2015). The increased in both financial development and economic growth has also caused the economic derogation in the country. According to the BP Statistical Review of World Energy report (June, 2016) the CO2 emission shows an increasing trend. In 1965, it was 20.79M, in 1975 it was 20.2M, in 1985 it was 41.8M, in 1995 it was 86.5M, in 2005 it was 135.3M, and in 2015, the CO2 emission is 179.5M. Thus, very few studies have been conducted that examine the linkages between financial development, economic growth and economic degradation in the context of Pakistan, this study contributes to the literature by exploring the association between financial development, economic growth and economic degradation by using the sample period 1972-2014.

The rest of the paper will be as follows: Section 2 explains the literature review, Section 3 shows the methodology, section 4 shows the result and conclusion and policy implications are presented in Section 5.

2. Literature Review:

2.1 Theoretical Background:

The theory based on the environment is the Environmental Kuznets Curve (EKC) introduced by the Simon Kuznets in 1950. The theory of EKC enlightens that with the increase of economic growth the pollution of the environment will also increase in early stages, but as the income rises more and reaches a certain point the improvement has been seen in the environment. Many past studies seen the correlation between the economic growth and environmental degradation by using EKC (Kuznets curve), although the hypothesis of EKC results often mix and debatable by many researchers and by different theories.

2.2 Empirical Studies:

In this section, we discuss the related empirical literature on energy consumption, economic growth, financial development and environmental degradation.

Energy consumption, economic growth & CO2 Emission:

Pao & Tsai (2010) explored the association between CO2 emission, energy consumption (EC) and economic growth (EG) in BRIC economies. The outcomes indicated that in the long run, the bi-directional causality association exists between energyconsumption-CO2 emission and EC-EG, whereas in the short run, both CO2 emission and EC causes economic growth unidirectionally. Omri (2013) used the simultaneous-equations models to study the nexus among CO2 emissions, ED and EC in MENA countries. The evidence showed the bi-directional causality between EG-EC and EG-CO2 emissions, whereas a unidirectional causality is found between energy consumption-co2 emissions. Vidyarthi (2014), explored the link of EG, carbon emission and EC in five different economies the South Asian countries by taking the data from 1972-2009. The result showed that in the long run, the bidirectional causal association exists between GDP and EC

and unidirectional causality from CO2 emission to GDP and EC is found. In the short run, EC causes the CO2 emission. Hassan and Salim (2015) examined the correlation between GDP and CO2 emission in Organization for Economic Cooperation and Development (OECD) economies by using the sample size 1980-1990. The result indicated that CO2 emission upsurges with the economic development but after reaching a certain level, it starts to decline and also reported that in all OECD countries the Kuznets curve shaped is U-Inverted.

Ang (2007) studies the causal association between EC, GDP and CO2 emission in France. The data comprised of the years 1960-2000 and reported that all the variables are co-integrated. Moreover, in the long run, a bidirectional causality is found between GDP- EC, GDP-CO2 emission, whereas, in the short run, a unidirectional causality from EC-GDP is found. Halkos and Tzeremes (2011) used the regression technique to examine the association between the CO2 emission and EG in China by using the yearly data from 1960-2006. The empirical result showed the invert u-shaped curve between the CO2 and GDP (gross domestic product). Hussain et.al (2012), find out the association between EC, EG and environmental pollution in Pakistan by utilizing the Granger causality test on the dataset 1971-2006. The result indicated that bi-directional causality exists between the variables.

Mugableh (2013), studied the CO2 emission, EG and EC, association in Malaysia by using annual data from 1971-2012. The empirical results showed that the gross domestic product (GDP) and EC are positively associated with CO2 emission in the long and short run both. Albiman, Suleiman and Baka (2015), examined the correlation between EG, CO2 emission and EC in Tanzania by using the data from 1975-2013. The findings revealed that EG and EC cause the CO2 emission. Ahmed and Long (2013) investigated the economic growth, environmental degradation and energy consumption relationship in Pakistan by using the Co-integration, (EKC) Kuznets

hypothesis and ARDL technique The findings of the study showed that in the short run the relation between variables does not support the EKC hypothesis but in the long run the EKC hypothesis shows the inverted U-shaped between the variables. Ahmed et.al (2016) used the VECM technique to examine the association between CO2 emissions, EG and EC in India and reported that all the variables are co-integrated in the long run.

Cialani (2007) explored the correlation between the economic growth and CO2 emission in Italy by using yearly data from 1990-2002. The result showed a negative relationship is found between economic growth and CO2 emission. Vidyarthi (2013) applied the Vector error causality and co-integration technique and reported that energy consumption insignificantly impact the Carbon emission whereas, economic growth have the positive impact on energy consumption, and similarly carbon emission significantly affect the economic growth in India.

Financial development (FD) & CO2 Emission:

Sadorsky (2011) studied the role of financial development (FD) in promoting co2 emission in 9 Central and Eastern European frontier countries and reported that the significant positive association exists between the two variables. Tamazian and Rao (2010) used the data of 24 transition counties from 1993-2004 to reexamine the role of financial development in increasing CO2 emission. They reported that financial development exert high impact on co2 emission. Al-mulali and Sab (2012) investigated the link between the EG, EC, FD, and CO2 emission in thirty Sub-Saharan African Countries. The data comprised of the years 1980-2008. They concluded that energy consumption increases the FD and economic growth, but at the same time also increases the co2 emission. Nasreen and Anwar (2015), enquired the effect of FD, EG and EC on environmental degradation in low income, high income and middle income economies. The data consist of the years 1980-2010. They concluded that financial development in high income will

reduce the CO2, however, in low and middle income the situation become vice versa. Moreover, the Granger causality test showed that bi-directional causality is found between financial development and CO2 in high income countries, whereas, in low and middle income the causality between the variables are unidirectional.

Zhang (2011) examined the impact of FD on CO2 emissions in China and reported that FD found an important driver that increases the CO2 emission. Sehrawati, Giri and Mohapatra (2012) explored the effect of EG, EC and FD on environmental degradation in India by using the yearly data from 1971-2011. They used the ARDL technique and reported that all the variables are co-integrated in the long run, and environmental degradation upsurges with the increase in any variable. Islam et.al (2013) applied the VECM to examine the association between EC, financial development and EG in Malaysia. The empirical evidence indicated that financial development and EG influenced the energy consumption. Shahbaz et.al (2013) employed the ARDL bounds testing approach to study the link between EG, CO2 emissions, FD and EC in Indonesia. They reported that EC and EG enhances the CO2 emission whereas as FD minimize the CO2 emission. Tang & Tan (2014) investigated the link between CO2 emission and FD in Malaysia by using the data from 1972-2009. They reported that significant positive relationship exists between the variables. Farhani & Ozturk (2015) applied the ARDL and ECM on the dataset of Tunisia to explore the role of FD in increasing CO2 emissions. The result indicated that FD increases the emission.

Tamazian, Chousa & Vadlamannati (2009) study the FD and economic degradation association in BRIC countries. The result indicated that financial development reduces the CO2 emission. Jalil & Feridun (2011) used the ARDL approach to study the association among financial development and economic degradation in china. They reported that negative association is found

between the variables. Ozturk and Acaravci (2013) tested the association between FD, CO2 emission and EG. They reported that financial development insignificantly effect the CO2 emission in Turkey.

3. Methodology:

In this study, we used the data from 1972 to 2014 of Pakistan. The data of environmental degradation, economic growth, trade openness and urbanization has been taken from World Bank. The stock capitalization data are taken from Handbook of Statistics the economic survey of Pakistan, banking sector proxies' data has been taken by the Global Financial development. We construct financial development index for Pakistan by applying principle component method on the major four proxies of financial development available in literature namely; domestic credit by banking sector, domestic credit to private sector, stock market capitalization, and liquid liabilities. After examining the empirical studies, the model to analyze the association between economic growth, financial development, and energy consumption on environmental degradation in Pakistan is determined by following function:

$$CO2_t = \alpha_0 + \beta_1 FDI_t + \beta_2 EC_t + \beta_3 EG_t + \beta_4 TO_t + + \beta_5 URB_t + \varepsilon_{i,t}$$

In the above model CO2 means Carbon Dioxide emission, FDI is the Financial Development Index, EC is the Energy Consumption, EG is the Economic Growth, TO means the trade openness and URB is the urbanization. The detailed description of all variables is presented in table-1.

-Insert table 1-

Construction of Financial development:

According to past literature, the effect of financial development in any economy can be analyzed by using two methods. In the first method, the different proxies from the financial sector can be taken to understand the characteristics and future performance of financial development on the economy. This method is adopted in numerous studies (Hye, 2011; Ang & McKibbin, 2007). In the second method, the financial index is constructed by using the principal component (PC), this is also used in some studies (Islam et.al, 2013). In this study, we have applied both methods (i) Proxies of financial development (five different proxies present in the literature) (ii) principal component (PC) to develop the financial index. The principal component method is a multivariate technique in which many quantitative variables are used. This technique is widely used in the area of environmental studies or in globalization. The PC is arranged in descending order of the Eigenvalues, which are equivalent to the variance of the components. The vector of Eigen can take only at unit length. The first component has the major assortment of unit length linear mixture of the formative variables.

-Insert table 2-

As seen from table 2, the initial principal component (PC) explains about 65.2, the next principal component (PC) clarifies 23.6%, the third shows 5.3%, similarly, the fourth one explains 3.8% and the last one explain about 1.49% of the standardized variance. Therefore, we pick the opening PC to work out financial development index. The primary PC is a linear mixture of the five standard measures whose weights decided by the initial eigenvector. After rescaling, the entity contributions of each series DMB, FSD, LL, SM and PSD of the PC1 the variance of standardized are established to 50.6%, 51.9%, 50.1%, 23.2% and 41% respectively. This study deploys these weights to build a financial development index.

The statistical approaches used in this study are unit root tests, co-integration test and regression examine the relationship between the variables.

Unit Root Analysis

The Augmented dickey fuller (ADF) unit root test has been used to analyze the stationary properties of the variables. The Dickey and Fuller (1979) test is employed to observe whether the approximations are equal to zero or not. This test provides the combined distribution of ADF statistics. If the prob value of the variables are less than the 0.1 at first difference this means that the variable is stationary and the unit root problem does not exist (Raza, 2015; Raza et al., 2016).

Cointegration Analysis

The present study also employs Johansen and Juselius (1990) co-integration technique to analyze the long run correlation among variables. The null hypothesis for J.J cointegration is no long run correlation exist among the variables. If the (λtrace and λmax) value is greater than the critical value, then the null hypothesis is rejected, which means that the alternative hypothesis is accepted, i.e., the existence of the long run relationship among the series of variables.

Moreover, the long run estimations among the variables is analyze through ordinary least square regression analysis.

4. Results and Estimations

The ADF unit root test is employed to see the stationary properties of the variables. Table-3 shows the results of unit root test results. As seen from the table the unit root null hypothesis is accepted and at 1st difference all the variables are stationary as the prob value is less than 0.1.

-Insert table 3-

By using Johansen and Juselius (1990) Co-integration method we evaluate the long run relationship between the dependent and independent variables. The results are displayed in table

4. As seen from the table both Eigen and trace values are higher than the critical values calculated which shows the rejection of null hypothesis and the acceptance of alternative hypothesis i.e, long run relationship is found between the two variables.

-Insert table 4-

Results of long run estimations based on regression analysis are presented in table-4. The result indicate that energy consumption has a significant positive effect on CO2 emission. The results in line with the studies of Halicioglu (2009); Arouri et al. (2012). The result suggests that Pakistan is highly dependent on energy consumption and it uses a large amount of energy in order to earn the economic growth. About 55% of energy consumption in Pakistan are reliant on gas and oil out of total primary energy that contributes the higher CO2 emission.

The Financial development index (FDI) also shows a significant positive relationship with CO2 emission. The result are consistent with the studies of Ozturk and Acaravcı, (2012); Islam et al. (2013). The Financial development index tends to be a new contributor towards the CO2 emission in Pakistan for the following reasons. Firstly, the development of stock market provides lower financing costs, dispersion of operating risks, increase financial channels, and optimize the structure of asset this helps out the investors in establishing new ventures and emit more CO2 emission. Secondly, well-organized financial intermediation and affluent seem favorable to consumers' loan activities, which gives the advantage to consumers to buy the big tickets like houses, air condition, automobiles, refrigerator and other big machines and contributes more carbon in the economy.

The economic growth also shows a significant effect on CO2 emission. This implies that as economic growth rise environment pollution will also rise. The findings are consistent with the work of Hussian et.al (2012); Saidi & Hammami (2015). In the context of Pakistan, the rapid

change in economy has been seen from 1970's due to the industrialization which leads to higher CO2 emission. Moreover, 60% production of total production is only dependent on cement production that contributes higher CO2 emission in the economy.

The positive association is also found between urbanization and CO2 emission. The result are in accordance with the studies of Zhang & Lin (2012); Al-mulali et.al (2013). This result implies that as the urbanization increases the CO2 emission also increases. As urbanization does not involve the transformation of the agricultural sector to non-agricultural sector, it also includes the process of migration from rural areas. According to the World Bank statistics, the urbanization in Pakistan is showing the upward trend and in 2015 the 39% of the total population has become urbanized. This increased in residents' increases the demand for energy products which results in C02 emission. Moreover, the urbanization also demands the development of megalopolises, advancement in infrastructures such as road networks and electricity networks which ultimately increases the C02 emission.

The trade openness has a significant positive effect on CO2 emission in Pakistan. The results are in accordance with the studies of Ozturk and Acaravci (2013); Jalil and Feridun (2011). The reason behind this positive association is, the economy since 1980's take place significant trade liberalization in the account, in which they reduced the import taxes, tariffs and modified their trade policies. Moreover, the high imports of vehicles and electronic items also lead to increase the pollution in Pakistan.

5. Conclusion & Recommendations:

The climate change in the developing world, more specifically in Asian countries is observed due to massive industrialization and population, so, the economic degradation becomes a sensitive issue in these developing economies. Pakistan is among one of the developing

economies that are producing more carbon and according to the World Bank, it is contributing about 7 to 8 percent carbon dioxide yearly in Global warming. The trend is continually moving upward due to high investment in industries, an increase in population size and most importantly, Pakistan is highly dependent on energy consumption, i.e., approximately 60 percent consumption of gas and oil. In order to mitigate this sensitive issue, this research is conducted to analyze the role of financial development, energy consumption, economic growth, on environmental degradation in Pakistan by using the data from 1972-2014. We applied the stationary analysis, co-integration and regression analysis to examine the association between the energy consumption, financial development, economic growth and environmental degradation. The empirical evidence showed that all the variables have a significant positive effect on environmental degradation which means an increase in any variable will increase the environmental degradation.

On the basis of the results, it is recommended to the industries to acquire advanced technologies as this will reduce the energy used and economic degradation. Moreover, the government should switch to renewable energy resources such as wind or solar on an urgent basis as this also minimize the C02 emission. The government of Pakistan should implement environmental policies that convince industries to boost their investment in cleaner technology and improve their energy-related R&D (Research and Development).

The financial development also has a significant effect on CO2 emission, so the economy should transform the industry structure. The efforts should also be made to reduce the industry's energy consumption by evolving high technology and modern service industries. Moreover, the increase in income also increases the CO2 emission so the awareness should be given to the individuals on energy saving and promote low carbon lifestyles.

The government should also developed energy efficient policies as it will minimize the CO2 emissions. The proper implementation of property rights and environment related laws should be implemented and revisited to mitigate the environmental degradation problem. If any violation is found strict action should be taken. To control the urbanization problem the government should also start developing the rural areas, and in urban areas the green belts should be planted. The co2 emission should be controlled by banning the deforestation. Furthermore, the policy makers should encourage green technologies and environmental friendly energies to promote economic growth and reduce CO2 emission.

This study also has some limitations. The industrial growth is ignored, which is one of the prime sources of CO2 emission in Pakistan. So the same research can be conducted by adding the role of industries. This study focuses on yearly data so future research can be conducted by using the monthly and yearly data. New proxy of financial development can be explored and used in future studies. Moreover, the sector based studies should also be done by the researchers to identify the role of each sector in environmental degradation.

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Table-1: Variable Definitions

Variable	Full Form	Measure	Definitions
CO2	Carbon dioxide emission	per capita metric tons	Carbon dioxide emissions are those that stems from the burning of fossil fuels and the manufacturing of cement. It also includes the carbon dioxide which is produced during the consumption of solid, liquid, and gas fuels and gas flaring.
FDI	Financial development Index	different proxies of capital sector	This index measures and evaluates the factors which enables the development of financial systems in the economy.
EC	Energy consumption	oil equivalent kg per capita	It refers to the use of primary energy before alteration to other end-use fuels. It is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.
EG	Economic growth	Gross domestic product (2000 constant US dollar	Economic growth refers to the quantitative change or expansion in a country's economy. In other words, it is the general rise in living standard of residents of a country.
TO	Trade openness	Percentage of imports and exports	Openness to ***trade*** is the value of merchandise ***trade*** (exports plus imports) as a percent of gross domestic product
URB	Urbanization	total population percentage	Urbanization is the migration of population from rural or remote areas to more developed or urban areas

Note: All the variables definition are taken from the source of World bank except for financial development.
Source: Authors' construction.

Table 2
Principal Components Analysis

Eigen values: (Sum = 5, Average = 1)

Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	3.261275	2.07787	0.6523	3.261275	0.6523
2	1.183405	0.896693	0.2367	4.44468	0.8889
3	0.286711	0.092576	0.0573	4.731391	0.9463
4	0.194135	0.11966	0.0388	4.925526	0.9851
5	0.074474	---	0.0149	5	1

Eigenvectors (loadings):

Variable	PC 1	PC 2	PC 3	PC 4	PC 5
DMB	0.506761	0.126148	0.182728	-0.829838	0.072526
FSD	0.519301	0.156932	-0.403183	0.189966	-0.712078
LL	0.501077	-0.253134	-0.48766	0.217926	0.638855
SM	0.232311	0.803375	0.325392	0.358172	0.257785
PSD	0.410454	-0.499971	0.684840	0.315441	-0.11444

Source: Authors' estimations.

Table-3: Stationary Test Result

Variables	ADF test statistics			
	I(0)		I(1)	
	C	C &T	C	C&T
CO2	-0.7134 (0.8323)	-2.0252 (0.5710)	-7.2130 (0.0000)	-7.2130 (0.0000)
EC	-0.3960 (0.2810)	-2.6220 (0.7532)	-6.2240 (0.0000)	-6.1460 (0.0010)
FDI	-2.0100 (0.9100)	-2.1670 (0.2730)	-4.8750 (0.0000)	-4.9120 (0.0000)
GDP	0.2570 (0.9730)	-2.9800 (0.1490)	-4.1212 (0.0024)	-4.1060 (0.0120)
TO	4.0044 (1.0000)	0.9768 (0.9998)	-4.7245 (0.0004)	-6.4187 (0.0000)
UG	1.4591 (0.5439)	-1.2712 (0.8811)	-3.6973 (0.0078)	-4.5752 (0.0446)

Source: Authors' estimations.

Source: Authors' estimations.

Table-4: Co integration Test Results						
Null Hypothesis No. of CS(s)	**Trace Statistics**	**5% critical values**	**Prob. Value**	**Max. Eigen Value Statistics**	**5% critical values**	**Prob. Value**
None *	142.0789	107.3466	0.0000	73.3716	43.4198	0.0000
At most 1 *	68.7073	79.3415	0.2411	33.6499	37.1636	0.1201
At most 2	35.0574	55.2458	0.7608	15.6954	30.8151	0.8655
At most 3	19.3620	35.0109	0.7463	11.1881	24.2520	0.8279
At most 4	8.1739	18.3977	0.6651	8.1216	17.1477	0.5896

Table 5: Regresssion analsysis			
Variables	**Coefficient**	**t-stats**	**Prob.**
C	-34.447	-0.319	0.752
EC	0.146	5.163	0.000
FDI	0.238	3.566	0.001
GDP	0.065	4.389	0.000
UG	0.177	3.211	0.003
TO	0.398	3.775	0.001
Adj. R^2	0.997		
D.W stats	2.218		
F-stats (prob)	2372.126 (0.000)		

Source: Authors' estimations.