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Research Paper

Impact of commercial cycles on Carbon dioxide emissions in selected countries in Asia (1993-2013)

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Abstract

The problem of environmental degradation to human actions and activities is one of the most important global issues thah many countries encounter with. According to the result of the study, along with the increase of economical action, we should turn the investment in a direction that lead to technical changes and use technologies compatible to environment which has less contamination in place of destructive and contaminant technologies.

Keywords : business cycle, air pollution, Carbon dioxide emissions.

Introduction

The problem of environmental degradation to human actions and activities is one of the most important global issues many countries encounter with. About 60% of greenhouse gases are being resulted from CO2 and the amount of this gas in air pollution is more than the others kinds. Although different developments (in controlling the local pollutions such as air pollution) have been occurred in the developed countries by using the modern technologies and investments, the developing countries face a serious problem toward this issue (Ghorbani, 2009)financial development is one of the important factors regarding environmental effects .Because the increase of financial development lead to more usage of natural and environmental sources and also increase the improper outcomes which are effective in destruction the environment. In different countries, various policies and tools such as tax collection, subsidiary endowment, permits of transferable pollutions, standards and etc have been used for controlling the air pollution .Increasing the greenhouse gases such as CO2 increases the heat-degree of earth, raises the sea's levels, causes the biological changes in the bio-environment and also damages the plants and the animals. In accordance with the theory of Kuznets based on a reverse relationship between bio-environment pollution and economic growth, some of the economists believe that by improving the economic growth of countries, pollution will decrease.

At the time being, decreasing the greenhouse gases' dispersion and atmospheric pollutants is the main aim of energy policies and bio-environment in the world. The other factors affect the CO2 dispersion such as economic factors, population, technological changes, institutional framework, life-style, and international trade. In the economical theories, the relationship between economical growth and the quality of bio-environment is being presented in a framework of Environmental Kuznets Curve (EKC). Based on Environmental Kuznets Curve, while a country develops simultaneously, the pollution increases and after achieving an especial level of economical growth, the pollution decreases. In fact, damaging the bio-environment during the economical growth stage is an inevitable issue and a country which is in the initial stage of development must accept this event for development(Lotfali Poor,2010).

But after achieving an acceptable level of economical growth, the significance of stable growth and the issues of bio-environment will become clear and by doing the efforts for preventing the bio-environment damage, the economical growth with less pollution will happen, and based on these issues, there is a reverse relationship between economical growth and bio-environment pollution which is EKC (Bagheri,2010). Many studies have been done about pollution:

Shahbaz has been studied the causality between energy consumption, urbanism, economical growth and CO2 dispersion in Iran and the results of his study indicated that there is a casual relationship between energy consumption, urbanism, and gross domestic production or GDP to CO2 dispersion in Iran(Shahbaz,2011).

Fetras and NasiratDoost have been studied the relationship between air pollution, water pollution, energy consumption and economical growth in Iran and shown that there three casual relationships;(Fetres,2009)

1- From CO2 dispersion to income per capita,
2- From CO2 dispersion to energy consumption per capita
3- From energy consumption per capita to water pollution.

Then, EKC has been rejected for CO2 dispersion, income per capita, water pollution, and energy consumption per capita and has been accepted for CO2 relationship dispersion, and energy consumption per capita

Jalil and Feridun has been studied the effect of financial development, economical growth and energy consumption in the bio-environment pollution of China and his results shown that the financial development decreases CO2 and also improves the bio-environment of China(Jalil,,2010).

Tamazian and Rao have been studied the financial and economical development approach on CO2 and found that these factors are important in the production of greenhouse's gases especially CO2 in the less amount and also they have been studied the significant of EKC(Tamazian,2010).

Halicioglu has been studied the relationship between income per capita, CO2 dispersion, energy consumption and the openness of trade in Turkey and also he shown that the energy consumption, trade and CO2 are the main factors for economical growth in the long term(Halicioglu,2009).

Ang has been studied the long-term relationship between economical growth and CO2 dispersion in French and shown

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that this relationship exists in the long term and in the short term; the energy consumption improves the economical growth(Ang,2007). Soytaş et al have been studied the relationship between CO2 dispersion, GDP and energy consumption in USA(Soytaş,2010). The results of their study have been shown that income is not the cause of CO2 in the long term but energy consumption is the cause of their granger.Lantz and Feng, by using the statistics of five regions in Canada,for the period 1970 to 2000 and by considering the population and technology as the explanatory variables, came to this conclusion that GDP per capita has not a relationship with CO2 and CO2 has a hump-shape relationship with population and technology(Lantz,2006).

Shi has been shown that the population had a positive and significance effect on CO2 dispersion. Lindmark, for studying CO2 dispersion, technology, fuel price and economical growth in Sweden, came to this conclusion that the effect of these variables is significant on CO2 dispersion. Cramer and Cheney have been studied the effects of population growth on the air pollution in California and found a positive relationship toward some of the air pollution sources (Cramer,2000).

Materials and Methods

We can transform the filter into the frequency domain and understand its effects on various cycles that make up the time series. In frequency domain changes to λ determine the shape of the frequency response function of the HP filter and the cut-off frequency. The frequency response function shows how the filter affects certain frequencies, it shows which frequencies are retained and which are let through. The cut-off frequency is defined as the frequency where 50% is let through and 50% is retained from the original power of the cycle. Thus we can align the λ parameter with our goal to filter out economic cycles in a certain frequency range with the help of the transformation into the frequency domain. Before the frequency domain interpretation emerged there were only rules of thumb to set the λ parameter. Rule of thumb values later proved to be in line with values that had been determined by frequency selection criteria, i.e. separating the "trend" cycles with a wavelength larger than 8 years. See for example Maravall and del Rio[15] to learn more on how the λ parameter translates to the frequency domain.

Properties of the HP filter:

The cut-off region is not steep; meaning that leakage from cycles just outside the target region can be significant. In engineering applications filter leakage is a sign of a poor filter. However in business cycle analysis there are arguments to support at least a small degree of desirable leakage. Since the frequency band of 1.5 to 8 years has been selected based on expert decision several decades ago, the boundaries 1.5 and 8 years should not be regarded as carved in stone. The filter leakage for example allows strong 9 year cycles to appear in the filtered series.

• It is asymmetric. With the exception of the central values the double HP filtered series are phase shifted compared to the underlying ideal cycle. Phase shifts fade out for a given observation as newer observations arrive.

We apply the HP filter twice to achieve a smoothed de-trended cycle. First we remove the long term trend by setting λ to a high value, and we preserve the business cycle frequencies and the high frequency components. Second, we apply the HP filter with a smaller λ, meaning that the cut-off frequencies are much higher, and so, preserve the trend part of the filter results. The first step is trending the second step smoothes.

Panel data estimation is often considered to be an efficient analytical method in handling econometric data. Panel data analysis became popular among social scientist because it allows the inclusion of data for N cross-sections (e.g., countries, households, firms, individuals etc.) and T time periods (e.g., years, quarters, months etc.) the combined panel data matrix set consist of a time series for each cross-sectional member in the dataset, and offers a variety of estimation methods. In this case the number of observations available increased by including developments over time. Both DF and ADF unit root tests are extended to panel data estimations, to consider cases that possibly exhibit the presence of unit roots. Most of the panel unit root tests are based on an extension of the ADF test by incorporating it as a component in regression equations. For our empirical study, we specify the model of Selected Asian countries 's Air Pollution. In this study, air pollution, carbon dioxide was considered. function as follows:

$$LCO2_{it} = \beta_0 + \beta_1 LPOP_{it} + \beta_2 LGAP_{it} + \beta_3 LCgazoil_{it} + \beta_4 LCoil_{it}$$

Lco2= Logarithm of CO2 countries
Lpop = Logarithm of countries population
Lgap= Logarithm of the business cycles of countries
Lcgazoil= Logarithm of gasoil consumption countries
Lcoil== Logarithm of oil consumption countries

The population of this study are selected Asian countries. Including Iran, China, Japan, Turkey, South Korea, Malaysia, Indonesia, India, Pakistan. The data are used from the period 1993-2012. This information are extracted in Unktad, IMF, World Bank and the Central Bank.

Results and Discussion

Based on the results of static tests have Pesaran and Shine,variables total population, CO2, the business cycles, gasoil consumption, oil consumption are a non-stationary . The first-order difference variables had in 5 % and 1% significance level and the null hypothesis can be excluded. Thus, the variables are the first order of static .then f test is used, using the fixed effects model was adopted integrated. Then the Husman test is used to choose between fixed effects and random effects, it was found that the null hypothesis cannot be rejected based on

the adjustment coefficients, so the random effect method is adopted.

Table 1: Results of model selection (F Limer test and Husman test)

Type of test	test statistic	quantity	P-Value
bound	F	3.9	-
Husman	H	7.41	0/11

Source: findings of this paper

The model specified for the period 1993-2013 using panel data and random effects estimation and the estimation results in Table 2 are visible.

Table 2: Results of the estimation procedure combine

Variable	Coefficients	T
$LPOP_{it}$	0.11	2.16
$LCgazoil_{it}$	0.12	5.84
$LCoil_{it}$	0.90	6.14
$LGAP_{it}$	0.44	3.18
C	-1.01	-1.11

Source: findings of this paper

In Table(2)it can be seen that the consumption of oil and gas have the greatest effect on the carbon dioxide emissions. One percent increase in gasoline consumption and business cycle variables have respectively, 90 percent and 44 percent growth in air pollution and also carbon dioxide emissions. Consumption of energy, including oil and gasoil have increased by a factor of polluted air. Population growth has a positive effect on the carbon dioxide emissions of countries that air pollution is. This could be the main reason for the increase in energy demand due to population growth in these countries . Merman believe that there is a positive and significant relationship between business cycle fluctuations and economic growth and There have direct relationship, so we can say that in addition to increasing economic growth will increased pollution . business cycle variable is increased carbon dioxide emissions. Be accompanied by increased economic activity should investment, technical changes made to the direction of motion that causes the emission of environmentally friendly technologies and less polluting alternative to the technology of malicious.

Conclusion and Suggestions

The present study was investigated the effect of business cycles on air pollution of infection in Asian countries. Our results indicate that fluctuations caused by the recession and prosperity (business cycle) also add to air emissions. Fluctuations are accompanied with uncertainty. In this case the fluctuations of in the business cycle Showed no increased risk and thus reduc investment which lead to the not efficient use of energy resources and the producing factors and caused to increase the contamination. Increased domestic and foreign investment lead to leading to intensified deforestation, land degradation, water traumatic stress groundwater, pollution from energy production and the increase of energy lead to the increase of pollution . in order to decrease the transfer of contamination, there is a need for internal and external investments, transferring the advanced technology in countries so that this technology is less dependent on carbon.also Long-term strategy must seek alternative energy
sources, pollution regulation and awareness of the challenges posed by the need to achieve efficiency.

Generally, regulatory issues, urbanization, efficient energy production and attention are the issue of sustainable development requirements with a view to reducing environmental degradation and air pollution affect.

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