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ROLE OF FOSSIL FUEL AND URBANIZATION ON ENVIRONMENT PANEL DATA OF CHINA AND JAPAN

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ABSTRACT

This study explore the association between the fossil fuel base power plants, increasing urbanization, manufacturing with (CO2) emissions and their role toward the environmental deterioration of two economies china and Japan. We have used the data of thirty six year 1980-2015, and apply the panel data analysis technique and fixed effect and random effect model for the analysis and find fixed effect model is appropriate by the use of hausman test study conclude that coal base power plants in china and Japan are the significant and positive contributor to raise the level of (CO2) in atmosphere. Oil base power plants are emitting the Carbon significantly and having the positive relationship with (CO2) emissions, natural gas base power plants show a negative effects on (CO2) emission and insignificant in this study .Raising level of urbanization in the cities raise the level of (CO2) emissions, increasing level of manufacturing value addition also significant contributor of (CO2) emission and negatively influencing the environment of the world. China's and japans government should try to reduce the electricity production from fossil fuels and try to develop the new renewable source of energy which having least carbon emission with optimal cost and also Reduced the level of urbanization and manufacturing to make the environment clean and friendly.

Contribution/Originality: This study contributes to existing literature by investigating The Role of Fossil Fuel and Urbanization on Environment Panel Data of China and Japan covering the year 1980-2015.

1. INTRODUCTION

China becomes now the second biggest economy of the world from the thirty years it replaced Japan's economy. Thirty years process of development is very astonishing because china gains the growth rate of nine percent annually during this phase. Demand of energy and electricity in china increases during the entire period of thirty year from 1980-2010.To meet the demand of electricity in China and Japan uses of fossil fuel like coil, natural gas and oil is inevitable.

To meet the energy demand they use the Coil which is the least expensive source of generating electricity using of coal is the serious threat to the environment and the health of the peoples. Spring festival2013 in china shows an

alarming situation of the carbon effects and smoke during the festival. Environmental effect from coil is the biggest challenge for the policy maker and people of china (Wu et al., 2014).

During the recent decades problem of environment is raising concern. Fluctuation in the environment cause abnormal raining, earth quick, melting of glacier, increase in desertification is growing and recent year's problem of environment is going worse day by day. Fossil fuel power plants are the greater emitter of the (CO_2) Coal base power plants are polluting environment in two ways long run it emit the Carbon dioxide (CO_2) and in the short run it affects the ozone layer and aerosol precursors. One third (1/3) of emission of carbon oxide (CO_2) from coal base power plants in 1970 and it increased from 1970 to 2000 rapidly (Shindell & Faluvegi, 2010).

The attentiveness for ecological and environmental harms is mounting day by day, due to the reason of greenhouse gases releases all over the sphere of world are increases and it is anticipated to rise considerably in future, use of energy is anticipated to be rise almost fifty percent in 2003 to 2030 (Iaea & Iea, 2005).

1.1. Problem Statement

What is the impact of fossil fuel base power plants, manufacturing and urbanization on environment?

1.2. Objectives of the Study

Purpose of this Study to analysis the following research problems.

1. Role of urbanization in deteriorating the environment in china and Japan.
2. Role of power generation sector in deteriorating the environment in china and Japan.
3. Role of manufacturing value addition in damaging the environment.

2. LITERATURE REVIEW

Nielsen et al. (2012) analysis the impact of aid for trade on the export sector of the country aid for trade is are recent being the main focus for the development of the country he uses Generalized Method of Movement (GMM).

Kreith, Norton, and Brown (1990) studied on the carbon dioxide emission from the coal base power plants and solar power plants. This study expresses about method for calculation of (CO_2) emission from the fossil fuel power plants like oil, coal and natural gas. This study concludes those coal fired power plants are the big source of the carbon dioxide emission and solar power plants. Solar power is also the source of the carbon dioxide emission in the US power generating sector .Results of the study shows significant impact of power generation sector in the (CO_2) emission in the US economy.

Mavrotas (2000) study the Greek economy and major elements on Greek manufacturing and their impact on the changes in the (CO_2) emission. This paper concludes that if the production in the manufacturing increasing it will increase in the level of (CO_2) emission in the economy.

M. STEEN (2000) studies the effect of the fossil fuel on the greenhouse gases emission from fossil fuels power generation plants in the Europeans economies he analysis that greenhouse gases are now becoming the main issue for rest of the world because it influencing the environment and major contributor of the carbon emission. Concludes 75% of the global (CO_2) is from the fossil fuel plants and fossil fuel plants are the largest contributor of the (CO_2) emission. In the European Union countries one third of the emission of (CO_2) is from transportation and fossil fuel burning. Gale and Freund (2001) study over the sources of the carbon dioxide emission in the environment he says that fissile fuel base power plants sources of the carbon dioxide emission mainly the fossil fuel combustion like oil, natural gas, coal. Industrial sector and also the transport sector also is the contributor in the emission of the greenhouse gases. Murat (2015) study the sub Saharan African countries to analysis the effect of urbanization and consumption of the energy and the emission of greenhouse gases like (CO_2) , NO_2. if the urbanization increase it will also raise the pollution in the economies and it badly effect on the environmental concern. Martha (2001) analyzed the impact of the coal on the environment and he explore the different types of the

effects in which way the coal pollutes the environment. According to the study coal is the big source power generation in the US economy almost half of the power generation is produced from coal. Coal is the dirtiest source of the power generation it pollute the environment in the many ways. Release of the toxic gases from the power plant, coal mining, coal also polluting the air and at the same time water quality in the country

Kagel, Bates, and Gawell (2005) study is conducted by the Geothermal Energy Association (GEA – Washington, DC) that shows that there is the positive correlation between the power production from the fossil fuel and their impact on the environment damage and (CO_2) emission They concluded that Geothermal is a another source of energy to produce the electric power other than the fossil fuel they level of emission of the (CO_2) is near to the zero. Hiroki (2005) study in the Japanese economy power generation sector and analysis the electricity produces from the 9 different source of power generation used in Japan and analysis all the sources of energy and their effect on the environment of the Japan. shows that fossil fuel are more emitter of the greenhouse gases comparatively to the nuclear, wind and hydro and PV technology also emit less pollution comparatively to the coal, oil and natural gas power plants. 10 John Marion, Timothy Griffin, Clodic, El Hitti, Younes, Bill, and Casier (2005) study that power plant are the big source of (CO_2) emission which are using the fossil fuel like Coil, oil, gas are great contributor of CO2 emission in the economies. Padilla and Escolano (2006) study on the role of productive sector and their impact on the (CO_2) emission in the economy of Spanish economy. Different production sector of the economy emit the (CO_2) some of the sector emit less and some of the sector emit high .During the increase in the value addition in the sector effect to raise the (CO_2) emission the economy. This study concludes that increase in the value addition in the different productive sector of the economy will raise the level of (CO_2) emission in the economy. Evangelos (2008) study on the European economies and the use of energy and due to that reason there is increase in the (CO_2) emission in the Europe. According to the study there is focus to increase in energy consumption and their impact on (CO_2) emission in the economies. Use of energy in the power plant and other fossil fuel plants like coal, oil, natural gas and industries it raise the level of (CO_2) in the Europeans areas.

Shindell and Faluvegi (2010) study over coil power generation and their net effects on environment of the countries like china and India and on the entire world. Researcher studies before 1970 and after the 1970 to 2000 on china and India. He says that 1/3 of the emission of the carbon dioxide is from the coil fire plant till 1970.

Perry (2014) study on the 14 emerging economies of the world from 1971–2009 And analysis the role of urbanization in the emission of (CO_2) in the world he uses the panel data analysis technique and (STIRPAT) model and concludes that the level of the negative and positive role in the emission of carbon dioxide (CO_2).

Mishra and Siddiqui (2014) study on the cement manufacturing industry and their impact on the environment and health condition of the peoples. Cement is the major contributor of the growth it used to envisage the quality of the peoples and used in the construction industry of every country but with this benefit there are a lot of disadvantages of cement manufacturing .this are becoming the biggest source of the (CO_2) emission and health effect of the peoples. Swarnim (2014) national planning commission of Nepal study of Nepal's manufacturing sector with the collaboration of united Nation industrial development organization and concludes if the manufacturing value addition increases it will raise the level of (CO_2) emission in the economy (Yazdi & Mastorakis, 2014) study on the economy of Iran to explore the relationship between the role of urbanization and their impact on the environmental damage or carbon dioxide emission. Used the ARDL model and concludes that with the urbanization and (CO_2) emission there is also positive relationship between the urbanization and carbon dioxide. This study also confirm the environmental Kuznets curve effect between the GDP and (CO_2) emissions, Fatemeh, Mahboubeh, and Fatemeh (2015) study on (CO_2) emission in the Iranian economy .he used the (CO_2) emission as the dependent variable and electricity consumption, industry value added as the independent variable in this study. Relationship between the industrial value addition and (CO_2) is positive and having the long run association between them.

Naoto and Hiroaki (2015) study the Japanese economy and concludes that if value addition in the industry will increases it will raise the level of (CO_2) emission in the environment also emission may be defer from industry to

industry some also have the negative impact on the emission of (CO_2).iron and steel study play a vital role in the emission of (CO_2) in the environment. Guo, Sun, and Dai (2016) study on panel data 30 provinces of china from the period of ten years from 2003–2012 and study concludes that from the period of 2003 to 2012 in ten years the level of (CO_2) emission is raised 4.2117 billion tons in the china's economy. This study proved that rising the urbanization in cites of the china has raised the level of (CO_2) emission in the economy. Harrison et al. (2014) study on the us economy power sector according to the study that there is the big source of (CO_2) emission is the fossil power plants and increasing use of energy will raise the level of (CO_2) emission in the economy.

Brantley (2014) study the role of population, urbanization and age structure of population and their impact on emission of carbon dioxide and form the cross country analysis study concludes that Urbanization are having the positive and increasing level of relationship between (CO_2) emission. Cowtan et al. (2015) studied the comparison of two power generation plants one used coal and 2nd used natural gas for power production It concludes that natural gas is the big source of bridge between the coal and natural gas. The emission rate from natural gas power plants is less than Coil base power plants. Coil has the highest emission rate comparatively.

3. THEORETICAL FRAMEWORK

3.1. Carbon Dioxide Emissions

(CO_2) emissions almost increase 1000 mil tones/5 years in the world. Asia's growing faster, 1980 to 2000 increased 100%. Asia had exceeded North America as the world's largest carbon emissions‟ region at the 1995. In particular, since 1990 Europe (CO_2) emission has been reduced year after year. After the 2000 level of carbon raises due to following reasons.

- Industrialization in least developed reason of the worlds.
- Increase in the demand of electricity consumption and production.
- Increase level of manufacturing.
- Rising level of urbanization.
- Electricity production from fossil fuels.

Carbon dioxide emission is briskly growing during the period of 2000 to the 2005.value of emission is 4562.52 mil tones which is the highest and equivalent to the previous 23 year in Asia till 2000.in Asian economies carbon dioxide (CO_2) increase 83.6 percentage between the 2000 and 2009 European and north American economies shows the reduction in the carbon emission during this period. China stand at the leading role in Carbon emission related to the top ten carbon dioxide emission economies. After the 1979 Gross domestic product (GDP) growth of china approaches 10 % in a year, this happened due to rising level of foreign trade and investment and opening of the market free for trade (Jiansheng & Lina, 2015a).

3.2. China

China is presently the world's 2ndleading economy, major trader of the world, 2nd biggest in context of FDI (foreign Direct Investment) and manufacturing. This growth and development also bring issues of environment like this rapid progress has come with costs, for example unprecedented environmental deterioration, colossal amount of use of energy and carbon dioxide (CO_2) emissions. China is now become world's leading carbon dioxide emitting country in 2007.china is having the biggest energy consuming economy of the world in 2010. According to the International Energy Agency (IEA) forecast china will consume more than 70 % in 2035 more than the USA which is the 2nd biggest consumer of energy. Internationally pressure exerted on the china to reduce the level of energy consumption and carbon emission. Conference in Copenhagen and Cancun organized by UNFCCC China give assurance to reduce the carbon 40 -45 percentage before 2020 comparatively to 2005.

3.3. Reason for High Emission Carbons Emission in China

1. Growth of china is high as growth rises energy consumption also raises.
2. Electric power generation from fossil fuel like coil, natural gas and oil in 2007 electricity production from coil source is 67 percent in china.
3. China is producing for the different goods like clothes IPod, automobile, manufacturing etc. for the different economies so its energy consumption is increasing day by day which ultimately raise the level of carbon in the economy.

China is the agriculture country and gradually converted into the industrialized economy with the rise in economic growth. Production and level of exports and import rise after the 1980.Rising in the production and energy consumption which raise the carbon emission in china, s economy. Thermal power production are used the fissile fuel to produce the electricity and due to raising the level of demand of electricity in the country new plants are commission to produce the electricity from coal. Fossil fuel power plants are greatest emitter of carbon. China relaying too much on coil to produce the electricity e g in 2000 use of coil in china was 28% of the entire world and in 2009 consumption of coil in china approaches at 47%. Almost half of the coal is used by china of the entire world. China emission now the biggest all over the world .china surpasses the carbon dioxide emission of USA in 2007 and china is globally biggest emitter of carbon and USA is now at the 2nd in (CO_2) emission. After the 2005 china buy large amount of large vehicle and buying is having the increasing buying trends. Due to biggest population of the world having the biggest car market Use of oil and fuel rises in transport, automobile and manufacturing sector. Manufacturing sector are using the oil to meet its requirement .china now become the industrial hub use of energy in power sector in heating and industrial is become the source of 74.3% of total carbon dioxide emission (CO_2) in china. There we are studying the (CO_2) emission from the fossil fuel base power generation stations and manufacturing sector and from the industrial units.

As the population increases in the economy pressure of the economy will raises. More peoples are demanding the more cars, vehicles more electricity computers and article of use and it ultimately raise the use of energy utilization in the economy and it raise the per capita energy consumption and raise the level of carbon dioxide in the economy.

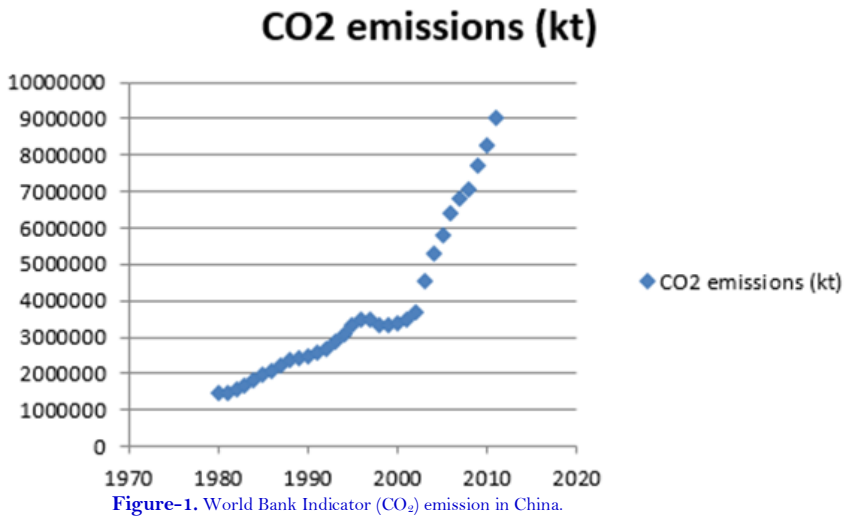

Figure-1. World Bank Indicator (CO_2) emission in China.

From the above graph we can say that after the 1980 Carbon dioxide (CO_2) emission increases sharply still 2000. But after the 2000 it is increasing and steeply due to rise in the new electric production from the coal source is rapidly increases. And also rise in the manufacturing to meet the grow population demand.

3.4. Japans Energy Consumption Pattern

During the period of 1950 carbon dioxide emission is very low in Japan. After the 1950 emission is raises in 1970 and 1980.alterations of Japan energy use from coil to oil and then natural gas. Power generation sector having the total emission in 2000 is 31 percentages as the whole. Transport section is emission is 21 % and 33 % from the other industry .japans is the fourth biggest emitter of the carbon dioxide (CO_2) of the world. Fist one is china 2nd is USA and 3rd is Russia. Power generation sector alone producing almost 30 % of the greenhouse gases in the atmosphere so this is necessary to reduce the emission During the period of 1990 to 2010 switching from the fossil fuels and use of energy conservation policy and increasing the production from the nuclear source and natural gas and more efficient coal generation plants to reduce the (CO_2) emission from power generation sectors Nakata, Oda, Heaps, and Von Hippel (2003) and Michael., Raymond, and Bradley (1999).

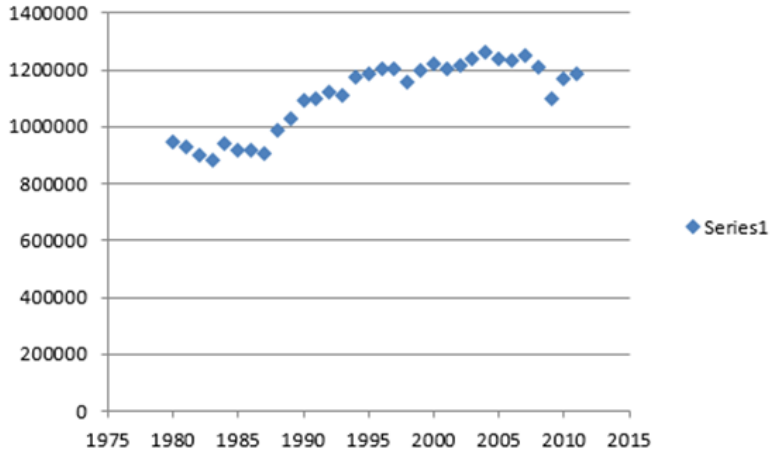

Figure-2. World Bank Indicator. (CO_2) emission in Japan.

3.5. Electrical Production from Fossil Fuel

Recent decade's population is growing to meet the demand of the population for the energy and electricity is also increases. To overcoming the gap between supply and demand of electricity new plants are needed. Power plants use the fuel to produce the electricity there are a lots of fuel uses to produce the electricity in this study we analysis the fossil fuel fossil fuel consist of three basic fuels.

1. Coil
2. Oil
3. Natural gas

Greenhouse gases are increasing annually in the upcoming years the problem of emission is going so much critical due to intensive use of fossil fuel and energy like coil, oil and natural gas in the power generation and industrial sectors growing demand of fossil fuel in power generation sector transport sector and other heat production sector. Due to combustion of the fossil fuel are also raising day by day it and it raising the (CO_2) emission and other greenhouse gases in the world. Third Assessment Report (TAR) (IPCC, 2001).

3.6. Energy Consumption Pattern of China

Area of china is 9.6 million Sq KM (kilo meter).china having the 34 provincial administrative regions and total population is china is 1.37 billion. Energy demand for this big population is high. Development of the industrial structure stared after 1950. China is having the abundant resources of fossil fuel. Fossil-fuel are the non-renewable resources are consider as the asset of for the country there are following advantage for using fossil fuel

1. Economical.
2. Easily transported and stored.
3. Appropriate to transform power.

4. DATA AND METHODOLOGY

In this study we get the data of two developed economies china and Japan. Data taken from the World Bank indicator (WDI) data source for the period of thirty six years 1980 to 2015 this study uses carbon dioxide (CO_2) emission as the dependent variable and electricity production from fossil fuel like coil , natural gas and oil base electricity production, manufacturing value addition and urbanization (Population in urban agglomerations of more than 1 million) as the independent variables. We use the panel data analysis technique and use the fixed and random effect model for analysis detail of the model as follows.

4.1. Model

$$CO2 = (EPFCS, EPFNGS, EPFOS, MVA, Urbanization \quad (1)$$

(CO_2) =Carbon dioxide emission in Kilo tons.
EPFCS = Electricity production from coil sources in %.
EPFNGS=Electricity production from natural gas sources in %.
EPFOS=Electricity production from Oil sources in %.
MVA= Manufacturing Value Addition in current US dollars.
Urbanization =Population in Urban Agglomerations of more than 1 Million.

4.2. Definitions of the Variables

4.2.1. Carbon Dioxide Emission

Carbon dioxide is the gas emitted from the burning of the fissile fuel like the coil, natural gas and oil .cement industry and other manufacturing industry also emit the carbon. Carbon dioxide also produces from the burning of the solid fuel, liquid fuel and burning of gases and gas flare. The data of (CO_2) emission is take from the world development indicator (WDI) and data in kilo tons (World Bank).

4.2.2. Electricity Production from Coil

For the production of electricity coil is used to convert the energy of coil into heat energy and production of steam in boiler. Electricity generating plants used different type of coil including brown primary and secondary coil like (gas coke), patent fuel, and peat. Data of this variable is taken from World Bank indicator (WDI) data source and it is percentage production of electricity from coil sources (World Bank).

4.2.3. Electricity Production from Natural Gas

Natural gas is the used as input to produce the electricity. It converts the energy of natural gas into electricity production total production of electricity in percentage from the natural gas included in this variable. Data of natural gas electricity production is taken from the World Bank indicator (WDI) data source (World Bank).

4.2.4. Electricity Production from Oil

Power plants used the oil as the input to generate the electricity it convert the energy of oil into production of electricity oil can be crude oil and petrol diesel and their products. Data of electricity production is taken from the World Bank indicator data source (WDI) and it is the percentage production from the electricity from oil (World Bank).

4.3. Manufacturing Value Addition

Manufacturing refers to industries belonging to ISIC divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for

depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current U.S. dollars.

4.4. Urbanization

Urbanization refer to population living in the metropolitan areas and population of cities is more than one million in 2000.urbanisation is high if the peoples are migrating from the rural to the urban areas and create burden and problems on the metropolitan areas. Data of urbanization is taken n from the World Bank indicator data source. (World Bank)

4.5. Econometric Models

$$CO_2 = \beta_0 + \beta_1(EPFCS) + \beta_2(EPFNGS) + \beta_3(EPFOS) + \beta_4(MVA) + \beta_5(Urbanization) + \mu$$

4.6. Model Estimation

This study we uses the data of china and Japan. We get the data from the World Bank data source. Data of electricity production in percentage and manufacturing value addition data is in current us dollars .data of urbanization of peoples in the cities is in more than Population in urban agglomerations of more than 1 million and apply the fixed and random effect model to analyzing the data.

4.7. Fixed Effect Model

In statistics a fixed effects model is a statistical model that represents the observed quantities in terms of explanatory variables that are treated as if the quantities were non-random. This is in contrast to random effect models and mixed models in which either all or some of the explanatory variables are treated as if they arise from random causes. Contrast this to the bio statistics definitions, as biostatisticians use "fixed" and "random" effects to respectively refer to the population-average and subject-specific effects (and where the latter are generally assumed to be unknown, latent variables. Often the same structure of model, which is usually a linear regression model, can be treated as any of the three types depending on the analyst's viewpoint, although there may be a natural choice in any given situation in panel data analysis, the term fixed effects estimator (also known as the within estimator) is used to refer to an estimator for the coefficient in the regression model. If we assume fixed effects, we impose time independent effects for each entity that are possibly correlated with the repressors.

4.8. Qualitative Description

Such models assist in controlling for unobservable heterogeneity when this heterogeneity is constant over time. This constant can be removed from the data through differencing, for example by taking a first difference which will remove any time invariant components of the model.

There are two common assumptions made about the individual specific effect, the random effects assumption and the fixed effects assumption.The random effects assumptionis that the individual specific effects are uncorrelated with the independent variables. The fixed effect assumption is that the individual specific effect is correlated with the independent variables. If the random effects assumption holds, the random effects model is more efficient than the fixed effects model. However, if this assumption does not hold, the random effects model is not consistence. The Durban- Wu-Hausman test is often used to discriminate between the fixed and the random effects model

Consider the linear unobserved effects model for N observations and T time periods:

$$Yit = Xit\beta + \alpha i + \mu it$$

t=1,,,,, T and i=1,,,,,,N

Where

Yit=dependent variable observed for invidual i at time t.

Xit=is the time variant 1*K regressor matrix.

α=unobserved time invariant invidual.

μ=error term.

Unlike Xit ,α i cannot be observed by the econometrician. Common examples for time-invariant effects α i are innate ability for individuals or historical and institutional factors for countries.

Unlike the Random effects (RE) model where the unobserved αi is independent of Xit for all t=1,,,,, T, the FE model allows αi to be correlated with teregressor matrix Xit. Strict exogeneity , however, is still required.

Since αi is not observable, it cannot be directly controlled forFE model eliminates αi by demeaning the variables using the *within* transformation:

$$Yit - Yi = (Xit - Xi)\beta + (\alpha i - \alpha) + (\mu it - \mu) = \ddot{y}it = \ddot{X}it\beta + \mu it$$

Where

$$X = 1/T\sum Xit$$

$$\mu = 1/T\sum \mu it$$

And.

Since α_i is constant, $\overline{\alpha_i} = \alpha_i$ and hence the effect is eliminated. The FE estimator $\hat{\beta}_{FE}$ is then obtained by an OLS regression of $\ddot{y}$ on $\ddot{X}$.

At least three alternatives to the *within* transformation exist with variations. One is to add a dummy variable for each individual $\dot{i}$. This is numerically, but not computationally, equivalent to the fixed effect model and only works if the sum of the number of series and the number of global parameters is smaller than the number of observations.

The dummy variable approach is particularly demanding with respect to computer memory usage and it is not recommended for problems larger than the available RAM, and the applied program compilation, can accommodate. Second alternative is to use consecutive reiterations approach to local and global estimations.

This approach is very suitable for low memory systems on which it is much more computationally efficient than the dummy variable approach. The third approach is a nested estimation whereby the local estimation for individual series is programmed in as a part of the model definition.

This approach is the most computationally and memory efficient, but it requires proficient programming skills and access to the model programming code; although, it can be programmed even in SAS.

Finally, each of the above alternatives can be improved if the series-specific estimation is linear (within a nonlinear model), in which case the direct linear solution for individual series can be programmed in as part of the nonlinear model definition.

4.9. Random Effect Model

The justification behind model of random effect instated using of the fixed model , The changes across entities is assumed to be random and having no correlation with thePredictor or independent variables which are included in model:"…the important difference between fixed and random effects is that whether the unseen or overlooked Individual effect embodies elements which are correlated with the repressors in the[1]Model, these effect may be stochastic or not stochastic " (Iglesias-Rodriguez et al., 2008) If we are having the reason to consider that difference across entities having the some of influence On dependent variable so we should use the random effects. A benefit of random effects is that we can include the variable which is invariant with the time (i.e. Gender) in the fixed effects model these variables are absorbed by the intercept. The random effects:

$$Yit = \beta Xit + \alpha + \mu it + €it$$

Random effects suppose that error term of entity's is not correlated with the Predictors which allows for time-invariant variables to be part as the as explanatory Variables In random-effects we have to specify their individual characteristics that may or may not influence the predictor variables. The problem with this is that some are not available which leads to the biasness due to omission of the variable in Model. RE allows generalizing the inferences beyond the sample used in the model. After applying the fixed and the random effect model for the testing that which method is good and suitable Hausman test is used.

4.10. Hausman -Taylor Test

Need to have more than one time-variant repressor X and time-invariant repressor Z and at least one X and one Z that are uncorrelated withα_i.

$$X = [X1itTN * K1 : X2itTN * K2]$$

$$Z = [Z1it\,TN * G1 : Z2itTN * G2]$$

Partition the X and Z variables such that

Where X1 and Z1 are uncorrelated withαi. Need K1> G2.

Estimating γ via OLS on$di = Zi\gamma + yit$ using X1 and Z1 as instruments yields a consistent estimate.

4.11. Testing Fixed Effect and Random Effect Model by Using the Hausman Test

The Durbin–Wu–Hausman test (also called Hausman specification test) is a statistical hypothesis test used in econometrics and statistical hypothesis test in econometrics named after jamesdurbin, De-min Wu, and jerry a hausmanThe test evaluates the consistency of an estimator when compared to an alternative, less efficient, estimator which is already known to be consistent. It helps one evaluate if a statistical model corresponds to the data.

Hausman test can be also used to differentiate between fixed effect and Random effect models in panel data. In this case, Random effects (RE) is preferred under the null hypothesis due to higher efficiency, while under the alternative fixed effects (FE) is at least consistent and thus preferred.

H0: Random effect is appropriate.

H1: fixed effect is appropriate.

Then we if the probe value is less than the 5 % we accept the random affect model.

Table-1. Results of Random effect model estimation results when CO2 emissions are utilized as the dependent variable

Variables	Coefficients	Std. Err.	p- values	z
Electricity production from Coal source	29640.2	7607.981	0.000	3.90
Electricity production from oil source	28745.98	8539.103	0.001	3.37
Urbanization	.0137851	.001548	0.000	8.90
Manufacturing value addition	1.60e-06	1.33e-07	0.000	12.05
Electricity production from Natural Gas source	-23103.77	12794.76	0.071	-1.81

Note: ***, ** Significant at 1% and 5% levels, respectively.

Table-2. Results of Fixed effect model estimation results when CO2 emissions are utilized as the dependent variable.

Variables	Coefficients	Std. Err.	p- values	T
Electricity production from Coal source	47722.46	12272.44	0.000	3.89
Electricity production from oil source	31314.48	8498.254	0.001	3.68
Urbanization	.0112163	.0020552	0.000	5.46
Manufacturing value addition	1.73e-06	1.47e-07	0.000	11.74
Electricity production from Natural Gas source	- -46210.04	17681.9	0.011	-2.61

Note: ***, ** Significant at 1% and 5% levels, respectively.

5. RESULTS INTERPRETATION

5.1. Random Effect Model

After applying the fixed and random effect model we get the results of models shown below .our model is statistically significant because Prob> chi2 = 0.0000 which less than 5% percent. Overall change in dependent variable is explained by the independent variable. Coal base power plants are having the positive relation with Carbon Dioxide CO_2in the atmosphere. Higher level of the production from Coil base power plants raised the level of carbon in the atmosphere and contaminating the environment of China and Japan as stated by that coal power plant are the biggest source of (CO_2) emissions. if 1% rise in production from coil base power plants raise the Carbon emissions (29640.4) k tonoil Base power plant variable is significant in our study and it prob value is (0.000) which less hen the 5 %.s. Oil base power are having the significantly relation with carbon emission individually. Value of coefficient is positive and if the 1% raise the production from the oil base power plants raise the (CO_2) emissions 28745.48 kilo tons. Urbanization is significant in our study because its prob value is 0.001 which is less the 5% and having the positive effect on carbon emission. Higher the level of urbanization higher will be the one million rise in the population in the urban areas and raise (0.01378) kilo tons of carbon in the atmosphere. Manufacturing value addition having the adverse effect on the environment and it raise in the (CO_2) emissions (1.6e-0.6) kilo tons. Natural gas is consider best substitute over the coal the EPA (environment Protection agency) stated by. Natural gas is insignificant in this study because its prob value is (0.071). Which is greater the 5 %. By 1% raising the production from the natural gas will reduced the (CO2) emission (-23103.7) kilo tons.

5.2. Fixed Effect Model

From the below table results of fixed effect model prob value of overall model is (0.00) less than the 5% so overall model is significant and independent variable completely explains the dependent variable .coil base power are having the positive relation with the (CO_2) emission in the atmosphere .higher level of production from the coil base power raise the level of (CO_2) emissions. prob value of coal base power generation variable (0.00) which is less than 5% and significant in this study. By 1% rise for electricity production coal base power plants has raising the (CO_2) emissions (47722) kilo tons in atmosphere. Oil base power plants variable is significant in our study it value is (0.000) which is less the 5%. 1% rise in the production from oil base power plants raise the (CO_2) emission (31314) kilo tons. Urbanization is significant in this study because the prob value is less than the 5 % .one millions rise in the level of urbanization in the cities raise the level of (CO_2) emissions (.0112163) kilo tonsaccording. Manufacturing is having the significant contribution to raise the level of (CO_2) emission in the atmosphere 1$ raise

the manufacturing value addition raise the (CO_2) emissions (1.73e-06) in the atmosphere. Natural gas is insignificant in our study because the prob value is (0.011) greater than 5%.and having the negative relationship with the (CO_2) emission .1 % raise the electricity production from the natural gas source reduced the (CO_2) emission in the atmosphere (-46210.04).oil base power generation also having the positive relation with (CO_2) emission and 1% rise in the production of electricity from the oil base power raise the emissions (31314.48).

5.3. Hausman Test

Test summary.

Ho: Random effect is appropriate.

Ho: Fixed effect is appropriate.

Results of Hausman Test.

Table-3. Hausman test.

Chi Sqr.	Prob.
7.99	0.1563

Because of prob value is greater than α so we reject HO and accept the H1 so fixed effect model is the appropriate to be applied.

6. CONCLUSION AND FUTURE WORK

This study use the data of thirty six year 1980-2015 and apply the panel data analysis technique and fixed and random effect model after the analysis study concludes that fossil fuel base power plants are having the adverse effect on the environment. Coal base power plants are raising the level of Carbon Dioxide ((CO2)) in environment and deteriorating the environment of the China and Japan as well as the entire world. Oil base power plants are also raising the level Carbon dioxide emission. China is now reducing the electricity production from the oil base power plants and currently it producing less the 1% from oil base power plants but Japan is producing almost 10 % from the oil base power plants. Natural gas base power is having the negative effect on the (CO2) emission and insignificant in our study. Higher level of urbanization in Japan and china are the serious threat to the environment and raising the level of (CO2) emission in atmosphere. Value addition in the manufacturing sector also raising the level of (CO2) emission in environment and higher level of value addition in the manufacturing sector higher will the carbon emission in the atmosphere. So the china and Japan, s government try to limit the (CO2) emission in the atmosphere to reduce the adverse effect of environment like floods, abnormal raining, and earth quick melting of glacier which are the biggest challenges for the economies.

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