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THE REALITY OF ECONOMIC GROWTH TOWARDS GREEN ENVIRONMENT: A STUDY OF SELECTED OECD COUNTRIES 1990-2010

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Abstract

Economic growth and green environment has a direct relation with health, habitat and well being of our society which depends largely on the natural environment. But on the other side the society is neglecting and often ignoring the benefits that nature provides for economic prosperity. This paper studies the role of environment in economic growth, the role of environmental policy in achieving improved environmental results, closely examine the evidence of decoupling production from environmental damages and discuss decoupling in the context of global economy. In order to study these aspects, we explored our comparative research with special reference to selected eight OECD nations namely-France, Germany, Ireland, Japan, Portugal, Turkey, UK and USA with coverage period of 1990-2010. The selection of the countries is based on their prominence in industrialised world and their close economic bounding with each other over a considerable period. The coverage period in the study is 20 years because some of the emission data are available till 2013 and some only up to 2010. In order to do a comparative research on various dimensions we take in to our study period between1990-2010.

Keywords: Environmental depletion, Absolute & Relative Decoupling, Economic growth, Global Pollutants, Environmental Regulation

Introduction

Environment is our life support system, it is truly impossible to estimate its value. However, the economists and the environmentalists have estimated it in Dollars, what it would cost us to accomplish these services that nature provides. Using multiple data base, the economists and the environmentalists have come out with an estimated cost of US $ 33 trillion worth of services nature provides which is twice the annual Gross National Product (GNP) put together of all the countries in a year.

Society's sole concern seems to achieve prosperity and faster economic growth at any cost. It is the main and universal objective of the world. Society wants it by all means and mechanism, by even keeping healthy environment aside.

The economic activity in this way, on one hand, propels to harm the natural environment while on the other hand it enables other drivers of well beings of economy towards improvement in health, education and overall quality of life. Here it is noted that, whole world be it developed, developing and even under developing poor economies, all of them estimate measure of economic growth in terms of the GDP. In the calculation of their GDP they exclude depreciation of capital which is used in the production but no one includes the depreciation of natural capital utilised and depletion of environment which they dispose in the form of waste and pollutants generated during the production process directly and indirectly into the environment.

It is an endless debate among economists in terms of growth and quality of environment. Which one is more important than the other one, we will probably never be going to find an answer because both are equally important for the society. However, there is a larger concern that if environmental depletion is not controlled in near future what will we leave for the next generation? Truly, this is a jostled question to which no one has a sure answer across the world. The reason of this mystery is very simple that they all know the answer but they cannot do anything to prevent the uncontrollable extraction and exploitation of natural environment. This is the reason of their innocent behaviour as once they are awaken with the environmental challenges ahead; they will be instrumental in bringing in policies and regulations to control depletion of precious environmental resources leading to greater reductions in greenhouse gases emissions. Halting the rate of biodiversity loss and shifting in consumption patterns towards

environmentally sustainable choices. It is quite clear that after such realisation there will be substantial improvement in environmental performance.

Rising consumption patterns and materialistic wealth across the world means absolute decoupling of production and consumption from environmental damage. Therefore, a shifting in consumption pattern which provides environmentally sustainable choices is essential if we are to move on a sustainable growth path.

Objectives of the study

The research which is based on selected OECD countries has three objectives i.e.

1. To examine the role of natural environment, in supporting & contributing in economic growth.
2. To explore, the role of environmental policy, in achieving improved environmental results.
3. To examine, the evidence of decoupling production from environmental damages in selected OECD countries.

The OECD take in to account the natural environment as natural capital and natural capital define as "natural assets in their role of providing natural resources inputs (direct and indirect) and the environmental services for economic production" (Choudhary and Janson, 2007). The direct inputs ranges from cleaner air, water and soil which we use to grow crops and mineral & ore extract from earth. And indirect inputs facilitate the process of production and act as a sink for the adverse environmental effects generated through economic activity that facilitates our Global life support system, pollution filtering, waste sink, soil retention, water regulation, nutrient cycling and waste decomposition. Important points to be noted here as well as we all know, earth is finite and both direct and indirect inputs are limited. Large scale economics actively moved forward to catch goods economic growth and always tried to cross the limitations of exploiting the natural capital. Once, the disposition of waste crosses the assimilation capacity of the environment, it increases the pollution (air & water) level in the environment. To overcome the issue of pollution problem it is necessary that we either improve the performance of natural capital or increase the threshold limit of environment not only through reduction in the

emission levels but also via shifting of the consumption pattern. The development of cleaner technology and efficient use of natural resources is the key to reducing the environment impacts of production and economic activity in general.

Evidence of decoupling of production from environmental impact

Ekins (2000) compares GDP growth with the emission of CO_2, SO_2 and NO_X in seven developed countries between 1970 & 1993 and finds that while GDP rose by 50 per cent and 150 per cent across the seven countries, emission rose by less than GDP in the majority of countries (relative decoupling) and fell in the others (absolute decoupling).

Here the term decoupling refers to breaking of the link between "environment bads" and "economic goods". Decoupling occurs when the growth rate of an environmental pressure is less than that of economic driving force (e.g. GDP) over a given period. Decoupling can be either absolute or relative. Absolute decoupling occurs when the relevant environmental pressure is stable or decreasing while the economic driving force is growing. Decoupling is relative when the growth rate of the environmentally relevant variable is positive, but less than the growth rate of the economic variable.

According to the OECD definition, decoupling can also be measured by a decoupling factor I here, I=1-D. The variable D=Qb/Qa shows the change of the emission intensity Q with time (a= starting point of the selected period, b=end point). The intensity Q=P/F is defined as the ratio of environmental pressure (P, e.g. CO2 emissions) and the driving force (F, e.g. economy measured in GDP or GVA). Positive values of the decoupling factor indicate that the ratio between environmental damage and the driving force is decreasing with time. Higher increase in emissions or a reduced economic growth leads to negative values. This study using OECD data from 1990 to 2010 indicate greater evidence of absolute decoupling in recent years in the selected eight OECD countries. The below mentioned table-1 presents the GDP and selected set of emission (index 1990=100).

Table-1 GDP and sets of emission (emission 1990=100) in selected OECD countries

Selected OECD countries	GDP 2010	CO_2 million tonnes 2010	Total SOx emissions	VOC	Total NOx emission	Parculate	Total CO emission
France	34 256	358	287.72	804.79	1073.38	283.72	4271.57
Germany	37 430	762	444.04	1055.07	1328.72	211.37	3494.89
Ireland	40 478	39	26.13	45.00	78.07	12.82	138.12
Japan	33 785	1143	755.54	1563.54	1477.10	N.A	2512.48
Portugal	25 444	48	70.40	184.33	196.15	64.61	399.80
Turkey	15 604	266	462.77	1555.08	1280.65	N.A	3475.24
United Kingdom	35 687	484	406.64	770.65	1101.95	116.41	2235.57
United States	46 588	5369	6811.51	12859.01	13264.06	18470.99	58080.08
OECD	33 971	12440	16269.12	27298.07	30179.02	N.A	101285.37

Source- Environment at a Glance 2013 - OECD 2013

Looking specifically at CO_2 emission only, Germany has been most successful in reducing the CO_2 emission. Not only in CO_2 emission, which it reduced by 20 per cent but also reduced SOx and NO_x by 92 per cent and 54 per cent respectively over 1990 levels but this happened against a backdrop of relatively low GDP growth i.e. 33 per cent (figure-1), which is very modest by its potential and its own expectations. Figure-1, overleaf, gives a clear picture of percentage changes in GDP and the selected emission levels from 1990.

On the other hand Ireland has posted an exceptional GDP growth rate of 146 per cent but while CO_2, SOx and NO_x intensity grew at 47 per cent, 94 per cent and 75 per cent of its GDP respectively.

In the same context UK's performance is good. After the great depression or crises in 2008, CO_2 emission levels had fallen by 12 per cent and in same connection GDP has increased

by 53 per cent, while CO_2, SO_x and NO_x intensity as a ratio of GDP has been reduced by 14 per cent, 95 per cent and 75 per cent respectively.

In this demonstrated data performance of Turkey is very disappointing. Turkey has achieved second highest economic growth rate among the selected countries i.e. 110 per cent, an unbelievable and incredible growth, but on the other side its CO_2 emission is 110 per cent, the same as it' GDP growth rate. The CO_2 intensity increased by 9 per cent, instead of it SO_x and NO_x intensity reduced by 74 percent, and 5 percent and respectively. The data shows a very serious corrective action plan and long term policies to improve the emission levels in case of Turkey.

Here if we take a very serious look than we find some important findings through this study, as the economic growth rate increases both in developed and developing countries but the CO_2 emission levels were reduced in only the developed countries e.q. Germany and UK but the same in the developing nations increased sharply. Why?

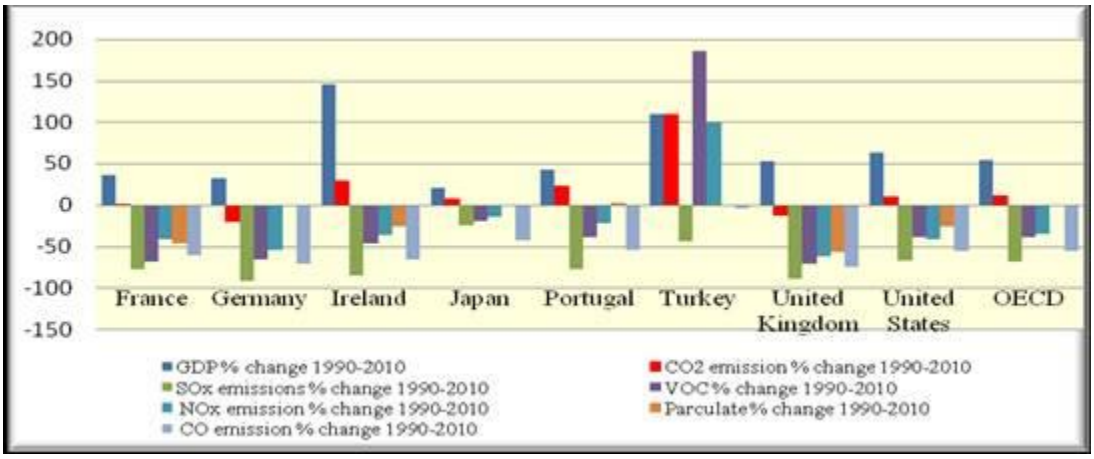

Figure 1: Percentage changes in GDP and the selected emission levels from 1990

Source- Environment at a Glance 2013 - OECD 2013

Since year 1990, in last 20 years rich and highly industrialized developed countries i.e. Germany, U.K have modest double digit economic growth rate whereas at the same time developing countries like Turkey and Ireland have recorded three digit rapid economic growth rate. It is very mystifying that developing nations have notched up incredible economic growth

as compare to developed nations but on the other side if we check the CO_2 emission level only both developed nations reduced the emission level but in case of Turkey and Ireland it has increased. Now the question is, has Germany and U.K adopted new policy to control the environment depletion or did they shift the burden of environment depletion on others?

Here in the globalised nature of the world economy, decoupling need to be discussed in the international context rather than in terms of individual countries.

The developed and advanced countries, for attaining higher economic growth have shifted manufacturing activities in developing nation for their cheap labour & raw material cost and lower production cost without reducing the current consumption pattern. And on the other side of the coin, with good export demand from the developed countries and shifting of manufacturing activities by developed nations the developing countries are able to achieve good economic growth. For that temptation of economic growth and prosperity they start the production and keep aside the environmental quality thus the emission levels get substantially increased. So, it is therefore not at all necessary that the overall environmental pollution level get reduced but in fact in many cases it is found to increase.

Does the overall environmental pollution level get reduced? To evaluate this issue correctly, we need to go a little bit in depth of the problem. For that we check the sectoral performance of these nations. In primary sector we take in to account agriculture and from secondary sector –industry. Figure -2 shows the percentage change in sectoral performance of selected OECD countries since 1990.

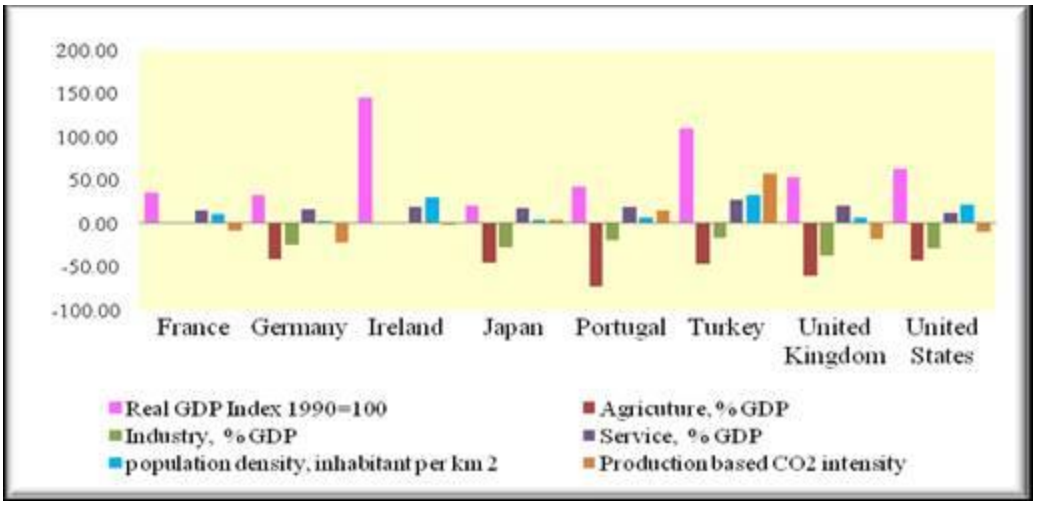

Figure 2: Percentage change in sectoral performance of selected OECD countries since 1990

Source- Environment at a Glance 2013 - OECD 2013

Whilst the shares of agriculture and industrial sector in GDP got reduced but the share of service sector has shown steady increase in all seven countries. In continuation to it, the compound annual rate of reduction is different.

We found the reasons of discrepancies, by comparing the declining share of agriculture & industry in comparison with GDP growth between that of Germany and U.K with Turkey and Ireland.

However, the decline in share of the secondary sector (i.e. manufacturing and construction) has occurred against a backdrop of increasing consumption. Germany and UK are, therefore, increasingly satisfying its demand for manufactured goods through imports. In other words, part of their success in reducing environmental damage within Germany and UK is, in fact, largely due to the export of production, and therefore pollution, to other countries.

For example, a recent study done at the Stockholm Environment Institute by Wiedmann (2008), found that while emissions from the production of goods and services (i.e. territorial emissions) fell by 5% between1992 and 2004, those from consumption (including emissions embedded in imports) actually rose by 18% over the same. This is because the UK is a net

exporter of lower CO_2-intensity services and a net importer of higher CO_2-intensity products, leading to a negative balance of CO_2 embedded in trade.

Another important finding is the growth of population and the density of population, both played a major role in environment depletion. Population density of inhabitant per 2 Kms as per OECD report was highest in Turkey i.e. 32.44 per cent and in Ireland it is 30 percent. To fulfill the domestic demand of consumption, income and employment they gave permits to rich nation for setting up the manufacturing activities. Therefore allowing rich nations to blindly exploit the natural capital and the production process increased the production based CO_2- intensity, i.e. 57 per cent increased in turkey over 1990 whereas in Germany it is reduced by 21 per cent and in U.K it is reduced by 18 per cent.

Conclusion and Discussion

In conclusion, study explores the complexity of the relationship between economic growth and environment, and the role of environmental regulations to control global pollutants in delivering environmental outcomes, such that the synergies with economic growth are maximized and that put the economy on an environmentally sustainable growth path taking in to account the selected OECD countries.

The results mentioned in table 1 and in Figure 1 and 2, clearly shown that the rich nations cleverly reduced their emission level without shifting the domestic consumption level and passed on the pollution burden on the developing nations. It is a bitter truth and not easy to digest. Developed nation's commitment that they have reduced the emission level as per the set target of Kyoto Protocol, but the reality is in front of us, what they actually did to the natural environment and developing nations.

If this continues, it will have serious consequences for present and future generation. So something must be done now. Therefore, to control the environmental pollution government's intervention is required. Through, environmental regulations government can impose the financial penalties, slap pollution taxes, set emission standards, levy effluent charges, and issue tradable permits to control the environmental pollution levels.

These aforesaid alternative policies can control the environmental pollution level. However, the stringent environmental regulations could effectively reduce the overall efficiency and growth benefits of trade and specialization services. Suppose, if producers in some countries do not have incentives to reduce CO_2 emissions, it means for that country the cost of production shall be higher in comparison of those who provide incentives to reduce CO_2 emissions. Moreover, to the extent that environmental damage is not priced into production decisions, it could lead to production shifting to countries that are more resource-intensive and where production techniques are actually more environmentally damaging, a reality more worrying.

Therefore, while domestic environmental regulation is intended to prevent the overuse of environmental resources and incentivize efficient patterns of production and consumption in the UK and Germany, meaningful decoupling requires taking into account the possibility that environmental damage may have been shifted overseas.

For global pollutants like CO_2, international action to restrict emissions is an important element of achieving global decoupling. For more local pollutants, environmental best practice, technology transfers and spill overs play a vital role in achieving global decoupling. Improving the environmental efficiency of production at the global level can occur through technology and knowledge transfer from developed economies – for example, in terms of more environmentally sustainable agricultural practices – or through technology spill overs that occur as a result of international investment and globalized supply chains. With demand increasingly being driven from outside the advanced economies, these transfers and spill overs have dual benefits – not just in reducing the extent of environmental damage exported from advance economies, but also helping developing economies shift to a more resource-efficient growth path.

The future of environment looks quite grim and unless each and every human being is made aware of the situation, the individual, corporate and governmental efforts will not succeed. It is equally important for both developed and developing countries to sit together and evolve a consensus on this most important environmental challenge ever faced by the humanity in modern times and continue on the path of sustainable economic growth with environmental implications and concerns also in mind.

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