



**Journal of Social Sciences  
and  
Management Research**



**A STUDY ON INDIA'S OIL IMPORTS AND ITS IMPACT ON  
GREEN ECONOMIC GROWTH**

**\* S. John Sundar**

**Abstract:**

This study examines whether energy fuels economic growth or vice versa in the Indian context. Also the study suggests that it is the economic growth that fuels more demand for both crude oil and electricity consumption and it is the only growth of coal consumption that causes economic growth. When influence of different components of energy on major two components of economic growth is tried with same causality test, none of the components of energy found to be significantly influencing the components of economic growth viz. private consumption and private investment. However, on the basis of application of statistical tools, the study with little more conviction could suggest for reducing oil and natural gas consumption for achieving higher rate of economic growth in the economy.

**Keywords:** *Energy Consumption, Economic Growth, Economic Development*

---

**\*S. John Sundar,**  
*Assistant Professor,  
Department of Economics,  
Sacred Heart College (Autonomous), Tirupattur.*

### **Introduction:**

Oil is a fossil fuel. Most of the oil extracted today has been formed from prehistoric organisms whose remains settled at the bottoms of oceans and lakes millions of years ago. As layers of sediment covered them, the pressure on them increased which in turn increased the temperature. This process changed their chemical composition, eventually transforming them into oil.

Generating electricity by burning oil is costly and releases a high level of greenhouse gases. Consequently, oil fired power stations are currently used only to provide backup power, when there is a chance that demand for electricity might not be met by less costly and carbon intensive energy sources.

### **Oil and the Economy: A Global Perspective Global Economic Growth**

The impact of commodity prices on the macro economy has been the subject of a weighty body of academic research. In general terms, there are two key channels that are often discussed when assessing the

impact of commodity price inflation on economic growth.

➤ The first is that an increase in commodity prices can lead to higher inflation and therefore result in tighter monetary policy than would otherwise have been the case. This tighter policy would, in turn, reduce the pace of economic growth.

➤ The second is that higher commodity prices can act as a “tax” on consumers and business, lowering profits and reducing consumption and investment. From a global point of view movements in commodity prices are in normal times a zero sum game, with some countries (companies) benefiting from higher revenues, while others face a deterioration in their terms of trade. Although there will be frictional issues consumers will feel the impact of higher prices more quickly than the companies and countries that benefit can spend the increased income the ultimate impact would normally be more one of distribution rather than being negative or positive at a global level.

However, although this is generally the case, in the current macroeconomic climate, as the global economy continues to recover from

the “Great Recession,” the distributional issues related to rapid increases in commodity prices are likely to be more pronounced than normal.

➤ In simple terms, many of the countries that benefit most from increased commodity prices are in the emerging world (Saudi Arabia, Brazil, etc., although Canada and Australia are notable exceptions) and have rebounded strongly following the “Great Recession.” Given that these economies have little spare capacity, increased income from higher commodity prices contributed to the need to tighten policy in early 2011, as there was little scope for output to expand further.

➤ In contrast, many of the countries where economies remain fragile, primarily Japan and the mature North Atlantic, are those that have experienced a marked deterioration in their terms of trade from increasing commodity prices.

Given that the North Atlantic developed economies generally experienced large recessions and have big output gaps and weak

and fragile growth, increased commodity prices (particularly oil) have had a significant effect on consumer behavior over the past year, with consumers remaining vulnerable to further price spikes.

In contrast, in emerging economies the main challenge from increasing commodity prices has been in ensuring that higher prices don’t flow through to generalized inflation and inflation expectations. This is because these economies are now operating with little economic slack, and many may experience a boost to their terms of trade as natural resource prices increase. In simple terms, the current imbalance between growth in the emerging and developed economies has increased the impact of higher commodity prices on global growth, with the move higher a tax on the economies trying to stimulate growth (acting to depress growth) and a stimulus to economies that are already trying to slow growth. Consequently the positive effect has been limited by policy, while the negative effect has been exacerbated in the developed world by the lack of traditional policy firepower (interest

rates are already low and fiscal policy is stretched).

**Relation between Oil Price and Economic Activity:**

Recent developments in oil markets and the global economy have, once again, triggered concerns about the impact of oil price shocks around the world. This column wonders whether the fuss is really necessary. It presents evidence of relatively small negative effects of oil price increases.

Increases in international oil prices over the past couple years, explained partly by strong growth in large emerging and developing economies, have raised concerns that high oil prices could endanger the shaky recovery in advanced economies and small oil-importing countries.

The notion that oil prices can have a macroeconomic impact is well accepted; the debate has centered mainly on magnitude and transmission channels. Most studies have focused on the US and other OECD

economies. And much of the discussion has related to the role of monetary policy, labor markets, and the intensity of oil in production (Hamilton 1983, Barsky and Kilian 2004, Bernanke et al 1997, Blanchard and Gali 2007).

The manner in which oil prices affect emerging and developing economies has received surprisingly little attention compared with the large body of evidence for advanced economies. In an attempt to provide a broader and more encompassing view on the impact of oil price shocks, we document in recent research (Rasmussen and Roitman 2011) key stylized facts that characterize the relationship between oil prices and macroeconomic aggregates across the world.

**Objective:**

Growth is the basic for economic development, which is one of the main objectives of any society and also energy consumption is fundamental for economic

growth and development as well. Main objectives can be summarized as:

1. To analyze the connection between energy imports and economic growth,
2. To study the correlation between oil imports and its impact on economic activity and,
3. To analyze the growth rate of Petroleum, Crude and Products imports and its impact on economic growth,

Currently, energy is one of the most critical international issues; it affects political and economical relations of countries, and plays significant role in the real growth of the economy and development. It is considered as one of the most important factors of production, too.

#### **Data Description & Methodology:**

The study considers the annual data from 1990-91 to 2010-14. The source of these data is [www.indiastat.com](http://www.indiastat.com) and Central Statistical Organisation (CSO). The study considers growth of various forms of energy

consumption such as coal, natural gas, crude petroleum and Products.

The growth of energy variables in the empirical analysis has been related to the simple growth rates of GDP as well as different major components of growth rates of GDP such as private consumption and private investment. Growth rate of GDP is defined as the change in the GDP in two consecutive periods divided by its initial period value.

The percent change from one period to another is calculated from the formula:

$$PR = \frac{(V_{Present} - V_{Past})}{V_{Past}} \times 100$$

Where:

PR = Percent Rate

$V_{Present}$  = Present or Future Value

$V_{Past}$  = Past or Present Value

The annual percentage growth rate is simply the percent growth divided by N, the number of years.

The same formula is also followed for computing growth rates of rest of the variables. Private investment refers to the gross private capital formation and private

consumption refers to gross private final consumption as reported by CSO.

The data considered for the study is from 1991 to 2011 of imports of petroleum, crude and product in India. In the below table is shows the year wise imports of petroleum, crude and products.

**Table: 1 - India's Petroleum, Crude and Products (Rs in Cores)**

Year/Petrol	Petroleum, Crude and Products ( Rs in Cores)
1990-91	10816.1
1991-92	13126.7
1992-93	17141.7
1993-94	18046.2
1994-95	18612.6
1995-96	25173.6
1996-97	35628.5
1997-98	30341.2
1998-99	26919.3
1999-00	54648.6
2000-01	71496.5
2001-02	66769.9
2002-03	85367.0
2003-04	94520.0
2004-05	134094.0
2005-06	194640.0
2006-07	258571.8
2007-08	320654.5
2008-09	419967.6
2009-10	411649.1
2010-11	482714.3

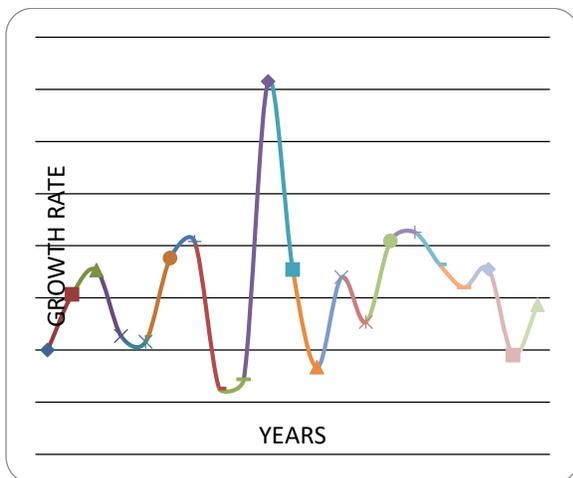
In the below table 2 shows that, the growth rate of imports of petroleum, crude and products in India. This result shows that change in growth rates and imports rates do not affect the growth of Indian oil imports.

**Table: 2 – Growth rate of India's Petroleum, Crude and Products (Rs in Cores)**

Year/Petrol	Petroleum, Crude and Products ( Rs in Cores)	Growth Rate (P2-P1/P1)
1990-91	10816.1	--
1991-92	13126.7	0.21
1992-93	17141.7	0.31
1993-94	18046.2	0.05
1994-95	18612.6	0.03
1995-96	25173.6	0.35
1996-97	35628.5	0.42
1997-98	30341.2	-0.15
1998-99	26919.3	-0.11
1999-00	54648.6	1.03
2000-01	71496.5	0.31
2001-02	66769.9	-0.07
2002-03	85367.0	0.28
2003-04	94520.0	0.11
2004-05	134094.0	0.42
2005-06	194640.0	0.45
2006-07	258571.8	0.33
2007-08	320654.5	0.24
2008-09	419967.6	0.31
2009-10	411649.1	-0.02
2010-11	482714.3	0.17

The decomposition of growth rate of oil consumption reported in Table 2 shows that the variation in electricity growth rate is initially being explained by its own shock but from 3rd horizon onwards, growth rate of GDP to a certain significant degree explains the variation in the growth rate of electricity consumption demand. This implies that with the growth of oil imports, there is an increasing demand for energy consumption in the economy.

**Figure: 1 - India's Petroleum, Crude and Products Growth Rate (1990-2011)**



In the above figure 1 shows that, the year wise growth rate of imports of petroleum, crude and products. From the above decomposition analysis, it could be

noticed that there is no causal relationship of growth of crude oil and growth of natural gas with GDP growth rate. However, there exists a bi-directional causal relationship between electricity consumption and economic growth rate and a unidirectional causal relationship from coal consumption to economic growth.

### Conclusion

The paper examined the linkage between various forms of growth of energy consumption and economic growth in India. Besides direct impact of energy consumption on economic growth, it also examined the influence of various forms of energy consumption growth on private consumption and private investment growth as different components of GDP growth. Hence, the study provides mixed and contradictory evidence on the relationship between energy consumption and GDP growth rate as compared to the previous studies carried out in the Indian context.

However, with little more conviction from application of both the statistical tools,

the study could suggest for reducing oil and natural gas consumption for achieving higher economic growth as these sources are not contributory to economic growth rather the consumption of these are growth driven, which may have adverse impact on the balance of payment position of the economy in the future.

**References:**

1. Abosedra, S., Baghestani, H., 1989. New Evidence on the Causal Relationship between U.S. Energy Consumption and Gross National Product. *Journal of Energy and Development*, 14, Pp. 285-92.
2. David, S. I. & Citler, J. Cleveland, 2004. Energy and Economic Growth, Rensselaer Working Papers in Economics.
3. Dickey, D., Fuller, W., 1979. Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association*, 74, Pp. 427-31.
4. Ebohon, O. J., 1996. Energy, Economic Growth and Causality in Developing Countries: A Case Study of Tanzania and Nigeria, *Energy Policy*, Vol.24, No.5, Pp.447-53.
5. Ediger, V. S., 2004. Energy Productivity and Development in Turkey. *Energy and Cogeneration World*, 25, Pp.74–78.
6. Ediger, V. S. Huvaz, O., 2006. Examining the Sectoral Energy Use in Turkish Economy (1980–2000) with the Help of Decomposition Analysis. *Energy Conversion and Management* , 47, Pp.732–45.
7. Ghosh, S., 2006. Future Demand of Petroleum Products in India, *Energy Policy*, 34, 2032-37.
8. Kaufmann, R. K., 1994. The Relation between Marginal Product and Price in U.S. Energy Markets. *Energy Economics*, 16, Pp.145-158.
9. Kraft, J., Kraft, A., 1978. On the Relationship between Energy and GNP. *Journal of*

- Energy and Development, 3,  
Pp.401-03.
10. Mozumder, P. and Achla, Marathe, 2005. Causality Relationship between Electricity Consumption and GDP in Bangladesh, Energy Policy, Pp.1-8.
11. Pesaran, M. H., Pesaran, B., 1997. Working with Microfit 4.0, Cambridge, England.
12. Pesaran, M. H., Shin, Y., 1998. Generalized Impulse Response Analysis in Linear Multivariate Models. Economics Letters, 58, 17–29.
13. Sari, R and Ugur, Soytas, 2004. Disaggregate Energy Consumption, Employment and Income in Turkey, Energy Economics, 26, Pp.335-44.
14. Lee, Chien-Chiang, 2006. The Causality Relationship between Energy Consumption and GDP in G-11 Countries Revisited, Energy Policy, 34, Pp.1086-93.
15. Paul, Shyamal & Rabindra N. Bhattacharya, 2004. Causality between Energy Consumption and Economic Growth in India: A Note on Conflicting Results, Energy Economics, 26, Pp. 977-83.
- Wolde-Rufael, Y., 2005. Energy Demand and Economic Growth: The African Experience, Journal of Policy Modeli