Theoretical relation between the Energy Consumption and Economic growth in context of Turkey

Noor Muhammad[2], Daud Bilal[1], Rohail Pasha[1]

ARTICLE DETAILS	ABSTRACT
History **Revised format:** Nov, 2018 **Available Online:** Dec, 2018 **Keywords** Energy Consumption, Trade Openness, Domestic Investment, Labor Force, Turkey	The main objective of the study is to investigate the theoretical relationship of the energy consumption and economic growth in the context of Turkey. The Results indicate that EC and TO are co-integrated in the long run. While other variables Gross Domestic Product (GDP) Energy Consumption (EC), GDP Domestic Investment (DI), GDP Trade Openness (TO), GDP Inflation (INF), GDP Labor Force (LF), EC DI, EC INF, EC LF, DI TO, DI INF, DI LF, TO INF, TO LF and INF LF are not co-integrated in the long run. In the previous studies the results of the Pairwise Granger Causality Test show TO does Granger Cause GDP. There is a unidirectional relationship between the TO and GDP. INF does Granger Cause GDP and INF has positive impact on GDP. Unidirectional relationship exists between the INF and GDP. GDP does Granger Cause LF, when GDP increased it became the cause to increase in the LF. It also has unidirectional association. TO does Granger Cause EC and EC does Granger Cause TO. Bidirectional relationship exists between TO and EC in the economy of the country. LF does Granger Cause EC. This result shows the unidirectional relationship between the LF and EC. Similarly, INF does Granger Cause DI and INF has positive impact on the DI of the country, also show the unidirectional relationship between the INF and DI. Moreover, DI does Granger Cause LF and DI has positive impact on the LF in the Turkey, also present the unidirectional existence.

[1]Lecturer, National College of Business Administration & Economics Multan.

[2]M. Phil scholar, National College of Business Administration & Economics Multan Campus

Introduction

Turkey is being looked upon as a growing market and considerable economic entity on the face of earth. Due to increasing population of Turkey and increasing development in cities has caused higher energy consumption. Turkey is surely being considered to have set benchmarks for last 30 years or so. Contrarily, the energy standards which were set by Turkey during 1990s are now being considered to be revamped as those methods are being considered as outdated. Paradoxically, once more in connection with growth rates of economy, Turkish energy

sector is setting standards with which other economic indicators are to be assessed. Domestically 37% energy is consumed in Turkey itself and during the span of 2000 and 2010, approximately $55 billion will be required for energy. 81% of this amount is thought of as an investment by the government. Most important resources for energy production include asphalt, hard coal, lignite, petrol, natural gas, hydroelectric energy and geothermal energy. Turkey has a variety of natural energy resources including but not limited to wood, solar energy resources, natural gas and oil. Turkey produces and consumes these energy resources. Non-sustainable resources such as fossil fuel reserves are not present in Turkey. It looks like quite a task to meet the expected future demand of oil, natural gas and coal. However, Turkey has renewable resources in the form of huge reserves. Turkey is buying gas from Azerbaijan through a pipeline (Baku-Tbilisi-Ceyhan) which connects Azerbaijan to Europe. The total length currently transmitting gas in Turkey is 1076 km and total BTC line is 1768 km.

In the first place, Turkey is an aspirant of European Union membership in the near future and putting together to achieving European Union membership can help somehow turkey in bringing stability in its economy. Secondly, Turkey holds the key position of transit country between Azerbaijan and Europe as oil and gas pipelines go through Turkey, giving it a strategic advantage. Thirdly and most importantly, Turkey economy has seen a booming structure for past few years and it is fascinating to investigate its economic development performance. According to survey conducted by OECD, a long run annual growth rate capacity of 7% can be achieved by Turkey (OECD, 2004).

A comprehensive policy review of Turkish energy condition and environmental issues related to energy upto 2025 was given by UNDP and WB (2003). In a clear contradiction to the general view, that lose governance of Turkey was responsible for Turkish economic crisis, it was strict policies of International Monetary Fund responsible for crisis because of too tight control by IMF, which didn't empower the central bank of Turkey. This step by international monetary fund of disempowering central bank made Turkish economy so much fragile that it was shocked with short term foreign capital in November 2000 and in February 2001. The existence of short term capital is considered as casino capital in Turkish economy which once drawn overnight can quickly destabilize the economy and bring devastating effects, as was the case of Turkish economic crisis in 2001.

Besides, important Turkish economic indicators have become weak due to Ponzi-schemes which are unsustainable. Moreover, the wave of growth in 2003/2004 is generated by an inflow of foreign capital to keep the Turkish lira strong. This short-term foreign capital is volatile, as the two crises in 2000 and 2001 have shown. In addition, unemployment is still high (10.6% in 2004 according to OECD data) and there has been no growth in wages. There is also room for optimism, because the hyperinflation in the 80s and 90s converged to a single digit rate since 2004.

2 Literature Review

Koondhar et al. (2018), examined the relationship between energy consumption, air pollution and economic growth in China and USA. The results show that energy consumption and air pollution are statistically significant. The results also show that energy consumption have positive impact on economic growth in china and air pollution increase due to increase in energy consumption. The findings of USA were exactly opposite the situation of China.

Nadeem and Munir (2016), interrogated the impact of energy consumption (oil, coal gas & electricity) on different sectors of economy and economic growth of Pakistan. The findings show that the long run relationship among

the independent variables (aggregate and disaggregate oil, coal, gas and electricity consumption in different sectors) and dependent variable economic growth can exist in Pakistan.

Destek and Ozsoy (2015), examined the Relationships between economic growth, energy consumption, globalization, urbanization and environmental degradation in Turkey using ARDL bound test approach and asymmetric causality tests. the economic growth. Study shows that energy consumption, urbanization level, globalization and CO2 variables are co-integrated. And in the asymmetric causality test results, it is seen that the energy consumption and economic growth led to environmental degradations, but on the other hand, economic globalization decreased the CO2

Nazlioglu et al. (2014), investigated the causality between electricity consumption and economic growth of Turkey over the span of 1967 to 2007 using non-linear Granger causality test as opposed to previous studies and found out that there is no causality relationship between these variables and it supports neutrality hypothesis. Hence energy conservation policies can be promulgated.

Ahmed et al. (2013), examined the relationship between electricity consumption per capita (ELEC) and real per capita income (y) over a period of 1975 to 2009 using Granger causality test to determine the causal relationship between the selected variables. Study shows bi-directional causality between the electricity consumption per capita and real per capita income.

Aktas and Yilmaz (2008), tried to explore the relationship between oil consumption and GNP of Turkey. The study concluded existence of a bi-directional relationship between the variables in the both short and long run and austerity measures in usage of oil may deter employment and income.

5 Conclusion

The core objective of the study is to investigate the theoretical relationship of the energy consumption and economic growth in the context of Turkey. The Results indicate that EC and TO are co-integrated in the long run. While other variables Gross Domestic Product (GDP) Energy Consumption (EC), GDP Domestic Investment (DI), GDP Trade Openness (TO), GDP Inflation (INF), GDP Labor Force (LF), EC DI, EC INF, EC LF, DI TO, DI INF, DI LF, TO INF, TO LF and INF LF are not co-integrated in the long run. In the previous studies the results of the Pairwise Granger Causality Test show TO does Granger Cause GDP. There is a unidirectional relationship between the TO and GDP. INF does Granger Cause GDP and INF has positive impact on GDP. Unidirectional relationship exists between the INF and GDP. GDP does Granger Cause LF, when GDP increased it became the cause to increase in the LF. It also has unidirectional association. TO does Granger Cause EC and EC does Granger Cause TO. Bidirectional relationship exists between TO and EC in the economy of the country. LF does Granger Cause EC. This result shows the unidirectional relationship between the LF and EC. Similarly, INF does Granger Cause DI and INF has positive impact on the DI of the country, also show the unidirectional relationship between the INF and DI. Moreover, DI does Granger Cause LF and DI has positive impact on the LF in the Turkey, also present the unidirectional existence. Study suggests that policy makers would adopt those policies in which exports of goods and services should increase and also give the boost to the domestic investment in the country.

REFERENCES

Ahmed, W., Zaman, K., Taj, S., Rustam, R., Waseem, M., & Shabir, M. (2013). Economic growth and energy consumption nexus in Pakistan. *South Asian Journal of Global Business Research*.

Destek, M. A., & Ozsoy, F. N. (2015). Relationships between economic growth, energy consumption, globalization, urbanization and environmental degradation in Turkey. *International Journal of Energy and Statistics*, *3*(04), 1550017.

https://data.worldbank.org/2003

https://stats.oecd.org/2004

https://www.undp.org/content/undp/en/2003

Koondhar, M. A., Qiu, L., Li, H., Liu, W., & He, G. (2018). A nexus between air pollution, energy consumption and growth of economy: A comparative study between the USA and China-based on the ARDL bound testing approach. *Agricultural Economics*, *64*(6), 265-276.

Nadeem, S., & Munir, K. (2016). Energy consumption and economic growth in Pakistan: A Sectoral analysis.

Nazlioglu, S., Kayhan, S., & Adiguzel, U. (2014). Electricity consumption and economic growth in Turkey: cointegration, linear and nonlinear granger causality. *Energy Sources, Part B: Economics, Planning, and Policy*, *9*(4), 315-324.