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ENVIRONMENTAL KUZNETS CURVE FOR CO2 EMISSION: A CASE STUDY IN IRAN

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The increasing threat of global warming and climate change has been the major ongoing concerns of humans in the last two decades. The greenhouse gas (GHG) emissions as pollution are one of the most important contributor factors on global warming and CO2 is held responsible for 58.8 % of the GHG, [17]. In order to prevent global warming, several countries have signed the Kyoto Protocol and committed to decrease CO2e emission levels. The refusal of some developing countries to sign the Kyoto Protocol is based on the argument that the industrialization and development process should be subject to no constraints, particularly for energy production and consumption. One possible rationale for this position is the presumption that, while pollution increases with GDP growth, there comes a point after which pollution goes down. This tenet calls for a careful analysis of the relationship between economic growth and pollution, and has been formulated by the so called environmental Kuznets curve (EKC) hypothesis. The Environmental Kuznets Curve (EKC) hypothesis claims that an inverted U-shaped relation exists between income and environmental pollution or the usage of natural resources such as forests. While income increase causes environmental pollution and degradation of natural resources at an earlier stage of economic growth, they are ameliorated at a later stage after a certain income level. This implies that economic growth will eventually undo the environmental impact of the early stages, [9].

This paper focuses on testing the existence of the long-run relationship between CO2 emissions, energy consumption and real GDP in Iran by employing time series data of 1972-2007. In particular, this study aims at testing whether environmental Kuznets curve (EKC) relationship between CO2 emissions and per capita real GDP holds in the long run or not. Since status of Iran become critical recently, so that Iran's share of CO2 emission in the world has been 27th place in 1965 and it moved to 10th place in 2008(In this year, the Iran's share of the total world CO2 emissions was 1.61%), [1]. Auto regressive distributed lag (ARDL) methodology is employed for the empirical analysis and included following key steps: (1) testing for stationary to avoid any spurious relationship, (2) selection of the optimal order of lags, (3) establishment of a long-run relationship among the variable through F-tests, (4) estimation of long-run and short-run coefficients, and (5) testing the stability of the model through CUSUM and CUSUMSQ techniques. According the empirical results a quadratic relationship between income and CO2 emission has been found for the sample period, but it's coefficient is in the neighborhood of zero. Therefore, the EKC hypothesis isn't supported in Iran. Moreover, the empirical results suggest that energy consumption is the most significant variable to explain the CO2 emissions per capita in Iran which is followed by GDP per capita. The results also provide important policy recommendations.

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