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Environment Degradation and Economic Growth in the Qatar Economy: Evidence from a Markov Switching Equilibrium Correction Model

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Air pollution, global greenhouse gases (GHG), water pollution and water resources degradation are among the most serious environmental concerns that encounter the Qatar country. In nowadays, it is commonly known that the effects of environment degradation exceed its direct negative impacts on climate changes to cover its impacts on Human health, nation livelihood and cultural integrity. So, we advocate that understanding and determining factors explaining environmental degradation remain an important question of research. Moreover, by determining factors that explain environment degradation, policymakers, researchers and international institutions can help on recommending the adequate economic policies that can improve the environment quality and the live standing of inhabitants. In the empirical literature, the Environmental Kuznets Curve (EKC) is the most powerful tool used to investigate the relationship between environment degradation and some macroeconomics and financial variables. Following the EKC hypothesis, the relationship between economic growth and environment degradation is inverted-U shaped. From the economic perspective, this means that initially economic growth increases environment degradation and then declines it after a threshold point of income per capita. More specifically, at initial level of economic growth, an increase in income is linked with an increase in energy consumption that raises environment degradation. After reaching a critical level of income, the spending on environment protection is increased, and hence environment degradation tend to decrease. From an econometrical or statistical perspectives, the EKC hypothesis have been firstly tested using the basic EKC equation which relies the environment degradation proxy to the real GDP and to a nonlinear term of the real GDP (the squared real GDP). If the EKC hypothesis holds then the real GDP and the squared real GDP have respectively a positive and negative signs. This EKC hypothesis has been firstly introduced by Kuznets (1955) when examining the relationship between economic growth and income inequality which shows that this relationship is inverted U-shaped. Grossman and Krueger (1995) are the first to examine this relationship between environment degradation and economic growth in their seminal paper published

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on the Quarterly Journal of Economics. They found that this relationship is inverted U-shaped which validates the EKC hypothesis. Empirically, until now no consensus has been reached about the true nature of the relation between real GDP and environment degradation. Evidence for the EKC hypothesis is very mixed. Overall, the results seem to depend in many factors including the specification, the pollutants and the econometrics technique used. First, empirical studies show that the results in term of positive and negative relationships as well as in term of magnitude differ significantly for the same country depend on the specification studied, linear, quadratic or cubic. Moreover, the inclusion of other factors in the right hand of the regression such as urbanization, trade openness, financial development and political stability have a significant impact on the magnitude of the income per capita variables coefficients. Second, the results differ significantly following the environment degradation proxy used. For instance, Horvath (1997) and Holtz-Eakin and Selden (1995) suggest that the use of global pollutants leads to continuously rise the levels of environment degradation or to a high levels of income per capita turning point, see also Esteve and Tamarit (2011). Third, the results also seem to depend in the econometric approach employed. In this paper, we investigate the case of the Qatar economy for several reasons. First, Qatar 2030 vision has given a high importance to questions related to air pollution, climate change and their impacts on economic sustainability. Second, the rapid increase of economic growth of the Qatar economy in the last two decades has been accompanied with an increase in energy consumption, urbanization and international trade. These factors are among the most important factors largely used in theoretical and empirical literature to explain environment degradation. Third, following the world health organization (WHO), local air pollution levels in Qatar has frequently exceeded recommended levels and are more time higher than the international standards. In fact, compared to the WHO's standards for PM10 for the 24-hour average and for the annual average concentration of 50 ug/m^3 and 20 ug/m^3 the Qatar's national air quality standards are far from these values. For instance, the values for PM10 is around 150 ug/m^3 for 24 hours average concentration and to 50 ug/m^3 for the annual average concentration. The data set used in this paper consists on macroeconomics and financial data, including CO_2 emissions, ecological foot print, real GDP per capita, energy use, urbanization, financial development and openness trade, to investigate the EKC hypothesis for the Qatar economy. All the dataset except the ecological foot print variable are collected from the world Bank's development indicators (WDI). The ecological footprint data is obtained from the National Footprint Accounts (NFAs) of the Global Footprint Network. This variable is employed as second proxy of environment quality measures. This data set used is a quarterly data and covers the period 1975Q1 to 2007Q4 for variables used for ecological footprint equation and covers the periods 1980Q1 to 2010Q4 for the CO_2 emissions equations variables. This paper contributes to the empirical literature of the EKC hypothesis in many ways. First, to our knowledge this paper is the first to consider the case of the Qatar economy as a single country to test the EKC hypothesis as well as the different directions of causality between variables. Second, in addition to the CO_2 emissions largely employed in the empirical literature, in this paper we employ also the ecological footprint as a new proxy of environmental degradation. Third, we use recent development of cointegration approach with structural breaks which is also rarely used for the case of EKC hypothesis. As tests of cointegration with shifts in the cointegration vector, we use the Gregory and Hansen (1996), Hatemi-J (2008) and to investigate the causal relationship between all variables using standard Granger causality tests. Fourth, to our knowledge this paper is the first study that uses Markov Switching Equilibrium Correction Model with shifts in both the intercept and the income per capita coefficient for the long run relationship between environment degradation and its key determinants. The empirical findings of this paper are useful for Qatari policymakers and especially for the ministry of environment of the Qatar government. Moreover, economic implications and economic policy are proposed and discussed. [1] P.O.Box: 2713-Doha-Qatar. Email: lcharfeddine@qu.edu.qa. Office: (+974) 4403-7764(+974) 4403-7764, Fax: (+974) 4403-5081. CallSend SMS Call from mobile Add to Skype You'll need Skype Credit Free via Skype