ENCOUNTERING ENVIRONMENTAL KUZNETS CURVE HYPOTHESIS IN INDIAN CONTEXT: SOME METHODOLOGICAL CONCERNS

BY

AVIK SINHA

A THESIS
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
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ABSTRACT

Considering economic policy decisions in a sustainable development framework has always been a challenge for policy makers, and one of the major predicaments in this framework has been environmental sustainability. In the literature of ecological economics, Environmental Kuznets Curve (EKC) hypothesis is one of the mostly used and debated theoretical foundations, which encompasses these two aspects of sustainability. However, over the years, researchers have questioned the applicability of this hypothesis many times due to several issues, and we have identified and addressed three such issues, namely absence of social aspects, absence of appropriate feedback link, and lack of a consistent range of turnaround points. Based on the theoretical foundation built upon the review of relevant literature, this dissertation addresses these three issues in Indian context, and thereby, estimating EKC for India. The study has been carried out for 139 Indian cities during 2001-2013.

For the case of an emerging economy, establishing the EKC association entails various policy level decisions regarding sustenance of environmental quality. Considering the level of emission in Indian cities, this issue can prove to be a crucial decision making objective for policymakers. During 2001 and 2013, India has experienced the rise in sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) emissions by nearly 71 percent, and this enormous growth in ambient air pollution has been attributed to majorly fossil fuel based energy consumption, and vehicular pollution. This has been experienced in several Indian cities. As according to EKC hypothesis, rise in income beyond a certain point results in decline in environmental degradation, it is required to observe the emission pattern in Indian cities, especially in growing income scenario. For that purpose, we have analyzed the EKC hypothesis for SO_2 and NO_2 emissions in

139 Indian cities, for the duration of 2001-2013. In the first chapter of the thesis, we have investigated about the existence of EKC for Indian cities for the aforementioned pollutants, and have found out several forms of EKCs for both of these pollutants.

For analyzing the feedback effect of environmental degradation on economic growth, three pollutants have been used, and those are CO_2, SO_2, and NO_2. For CO_2 emission, the feedback analysis has been carried out based on the time series data for India, and for the latter two, the same has been carried out based on the panel data for Indian cities. The feedback analysis using CO_2 emission is bifurcated into two parts. The first one looks into the quadrilateral causal association between CO_2 emission, economic growth, gross capital formation, and urbanization. The study has been carried out for 1960-2010. For the second part, trilateral causal association between CO_2 emission, economic growth, and fossil fuel consumption has been analyzed using interventions based on economic liberalization. The study has been carried out for 1971-2010. For SO_2 and NO_2 emissions, the feedback analysis has been carried out based on the panel data of Indian cities, and it focuses on the estimation of the three way linkages between SO_2 / NO_2 emission, economic growth, and inequality in energy intensity.

In an emerging economy, like India, social parameters play an important role in determining environmental quality. Generation of environmental awareness among citizens is not a voluntary process, and it is possibly the combined effect of whole range of social aspects, which plays a crucial role in explaining the turnaround point(s) of EKC. Therefore, in the final section, we have analyzed how environmental quality gets influenced by the structural inequalities and their interactions with social indicators.

Keywords: Environmental Kuznets curve, emission, social sustainability, feedback, India

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