

## **Environmental Kuznets Curve and Effects of Emission Outsourcing**

Topic: Environmental input-output modeling X

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The 'Environmental Kuznets Curve' (EKC) refers to an inverted-U-shaped relationship between some pollutant level and per capita income. Since the early 1990s, a considerable number of empirical studies have been conducted on the EKC. However, only the production-based emissions were considered. Due to the increase of globalization in the past decade, there are more and more emissions embodied in trade, which leads to a considerable gap between consumption-based and production-based emissions. More importantly, the gaps differ considerably across countries. Although trade factors are employed as controls in many previous studies, a consumption-based study is more capable to rule out the direct effect of trade completely, and its results are more relevant for the purpose of global emission control and reduction. This study compares the estimated EKC with consumption-based and production-based emissions during the period 1990-2010. For production-based emissions, evidence for EKC is found. However, we could not find strong evidence with regard to the consumption-based emissions. The curve turns flat and does not drop after a certain income level has been reached. To explain such difference, we test the relationship between income and emission leakage and find a positive relationship between them. Results show that developed countries tend to trade away their emissions to such an extent that leads to reductions of production-based emissions.

Keywords: Environmental Kuznets Curve, consumption-based emissions, emission outsourcing, emission leakage