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Analysis of International Interdependence between China and Japan from the Perspective of Interregional Economic and Environmental Interactions

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Abstract

There is a growing call for greening the present unsustainable pattern of consumption and production. To this end, holistic views on economic causalities between demand and supply in various spatial dimensions are required to clearly articulate its overall environmental consequences. Due to the rapid expansion and intensification of economic activities in Asia through globalization, interdependence among economies in the region has strengthened. To an increasing extent, the environmental burden caused by the production and consumption in a country are also directly and indirectly related to the activities in another country.

Intensive consumption and production are taking place in cities. With urban development, generally the economic characteristic of a city shifts from a production oriented structure to being consumption-oriented. This dynamics brings an increase in the external dependency of a city on an outside economy, which leads to an increase in the induced environmental burden on the outside economy. Economic and environmental interdependent relations between nations through international trade or domestic regions are often analyzed, but interregional relations beyond the bounds of the country are not highlighted. It is interesting to know what these interregional relations would be and what the environmental implications can be drawn, particularly from the case of cities in different development stages.

This study aims to empirically measure the changes in economic interdependence and mutual induced CO₂ emissions between Beijing and Tokyo from early to mid- 1990s using multidimensional input-output tables. The study found that although the trade amount from Beijing to Tokyo was just two or three times larger than the reverse flow, the induced CO₂ emission in Beijing was approximately 90 times larger than that in Tokyo. This is partly explained by a larger demand in Tokyo, larger induced production coefficient and higher carbon intensity in Beijing, and a larger portion of energy-intensive goods exported from Beijing. Export from Tokyo to Beijing is growing because of the increase in demand from Beijing. As a result, although the imbalance of induced environmental burdens between two cities is scaling down, it still remains considerably large. The study shows that a wide environmental imbalance might transpire between cities in different development stages.