

## **Environmental Costs of European Union Membership: a Structural Decomposition Analysis**

Topic: Structural decomposition

Author: Inácio Fernandes de Araújo Jr

Co-Authors: Randall Jackson, Amir Borges Ferreira Neto, Fernando Salgueiro Perobelli

There is a major transformation underway in international trade flows that is intensified by multilateral trading system agreements. The consequence of this transformation in international trade is a greater production and commercial integration among countries, the insertion of certain economies into specialized markets in the world, the expansion of production scale, and the fragmentation of the production and distribution of intermediate and final goods. One instrument that fosters the increase of international trade, and is of particular importance to this paper, is the formation of monetary unions or free trade areas.

The interest in this paper lies in the environmental costs of EU. For the specific aim of this paper, we are interested in the wave that occurred in the 2000s. EU membership requires a series of economic and political changes that should impact the country's production and consumption structures and its trade relationships. These, in turn, should affect the CO<sub>2</sub> emissions sources and levels. This is especially true for countries that entered the EU recently since there is a clear distinction in levels of development, and perhaps more interestingly, because most of these countries were part of the Soviet Union (URSS).

To quantify the main causes of changes in emissions, we employ a structural decomposition analysis (SDA), which enables us to disentangle the different drivers of such changes, namely: emissions intensity, industrial structure and sourcing, consumer preferences, final demand sourcing and consumption level. We use the World Input-Output Database (WIOD) and the countries grouped into five clubs or regions: New European Union countries (NEU), Old European Union countries (OEU), the United States of America (USA), China (CHN), and the Rest of the World (ROW). By creating these groups, we are able to quantify emissions costs of the entrance of the new countries into the EU.