PARANÃ• BRAZILIAN STATE IN THE GLOBAL VALUE CHAIN: CARBON DIOXIDE EMISSIONS

Topic:
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The globalization of production and trade has reshaped the dynamics of the world's economic interactions, particularly influencing the discourse on air pollution. Discussions about air pollution now transcend national boundaries and extend to global levels, given that industrial activities are dispersed across diverse sectors and regions. This dispersion results in the generation of air pollutants throughout the supply chain, spanning various locations globally.
Economic literature increasingly emphasizes exploring the nexus between trade relations, carbon dioxide (CO2) emissions, and the global value chain (GVC). In this context, a focal point of interest is the state of ParanÃ¡, which exhibits substantial integration with the world economy, primarily driven by its commercial ties with other Brazilian states through agricultural and agro-industrial production in its interior and the transformation industries in the metropolitan region of Curitiba.
The input-output matrix (MIP) is a common analytical tool for scrutinizing productive structures' interconnections across different countries and regions. This study constructed a comprehensive MIP to elucidate the flow of goods and services between the 27 states of Brazil and 64 other countries, including a category representing the rest of the world. This involved integrating the Brazilian inter-regional input-output matrix (interregional MIP) with the global input-output matrix (OECD). Brazil's information in the global MIP was replaced with data from Brazilian states in the inter-regional MIP. The export and import values of the 27 Brazilian states were estimated concerning the 64 countries and the rest of the world.
The research aimed to ascertain the significance of the GVC in CO2 emissions resulting from fossil fuel combustion in ParanÃ¡, considering intra-national trade with other Brazilian states and international trade partnerships. Findings indicated that ParanÃ¡ emits a larger volume of CO2 in the sale of products to other Brazilian states than in exports to foreign partners. Notably, the state of SÃ£o Paulo played a pivotal role, causing the ParanÃ¡ economy to release approximately 3.28 million tons of CO2 into the atmosphere to meet its demand for intermediate products. This influence is attributed to SÃ£o Paulo's economic magnitude (largest Brazilian GDP) and geographical proximity, facilitated by robust transport infrastructure connecting the productive structures of the two states.
In the realm of international trade, China emerged as the primary contributor to CO2 emissions in ParanÃ¡, accounting for around 0.57 million tons incorporated into ParanÃ¡ exports. China is the foremost international partner trading with ParanÃ¡ with its highly integrated global production chains. Additionally, OECD countries exerted a substantial impact, generating approximately 0.80 million tons of CO2 in ParanÃ¡'s productive structure through their demands.
Lastly, within the context of final consumption, states in the Southeast and South of Brazil were identified as the major contributors to CO2 emissions within ParanÃ¡'s economy. SÃ£o Paulo, in particular, played a significant role, producing around 2,978 thousand tons of the pollutant within ParanÃ¡'s productive structure. OECD countries also featured prominently, contributing approximately 1,133 thousand tons of CO2 in producing goods and services destined for final consumption in ParanÃ¡. Regarding regions influencing the CO2 consumption for final demand in ParanÃ¡, SÃ£o Paulo, and China were highlighted as the principal contributors, producing around 3,267 and 1,805 thousand tons of CO2 to meet ParanÃ¡'s final consumption requirements.

Keywords: international trade, input-output model, CO2 emissions

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