When Wassily met RaÃºl: The IO approach in structural analysis

Topic: Industrial policies
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RaÃºl Prebischâ€™s proposals regarding strengthening regional integration are more relevant than ever in the Latin American region considering the reprimarization of the export basket and the accompanying de-industrialization. In addition, the international context calls for more resilience in some key sectors where the region has either a comparative advantage or the potential to further advance in global and regional value chains. This paper will analyze how an input-output analysis can help us identify key and driving sectors that have the potential to reinforce regional integration and sustainable development utilizing ECLACâ€™s Latin American and Caribbean RIOT. In addition, this aims at enlightening policy makers on how to increase interdependence within the region.

Sectoral identification was carried out using an algorithm that combines three complementary criteria: Identification of the degree of forward and backward linkages; export capacity, and the presence of production sharing in intra-regional trade. Formally, Leontief and Gosh multipliers are calculated simultaneously as measures of cluster existence; the propensity to export, as evidence of the existence of domestic supply available for intra-regional destinations; and a production share coefficient, defined as the intraregional value-added included in net exports. The results of these three indicators made it possible to obtain a ranking of the sectors with the largest value chains in the intraregional market circuit. With the sectors identified, the direct and indirect employment associated with intraregional exports was calculated.

As part of the ranking of identified sectors, the mapping of the interrelationships between the main linked sectors is carried out, mainly considering the three main ones and the entire interregional chain of their productive network for each of the selected sectors by country. The results and graphs are presented in an annex. The algorithm used for the selection of sectors was carried out in Python and was automated in an iterative dashboard complemented in Power BI.

Based on the ECLAC multiregional input-output matrix of Latin America and the Caribbean, the analysis and selection of clusters was carried out for 20 countries in Latin America and the Caribbean, mainly identifying the clusters of manufacturing sectors, classifying key sectors from the independent ones using the Rasmussen-Hirschman indexes. The three sectors with the highest presence of clusters identified were: automotive, agroindustry, and chemical and petrochemical. The Automotive and auto parts sector ranked first, with 20% of the regionÂ´s manufacturing total exports, and the agroindustry sector came in third, with 13%, and chemical and petrochemical, added another 7.6% to total exports. Taken together, the three sectors represented 40% of total exports and generated 28% of direct and indirect export employment linked to the region's exports (nearly 11 million jobs). At the country level, the intensity of employment associated with exports was higher in Argentina (56%); Colombia (37%); Brazil (31%), and Mexico (27%). The feasibility of increasing exports of these sectors will depend on the requirements of upgrading of skills and of additional investment.

Main references:
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