

Is family seasonal consumption good for the environment? Unraveling the monthly local and international trade using a MRIO

Topic: CGE and econometric input-output modeling IV

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Proximity and in-season consumption of fruits and vegetables has been suggested as a joint solution for consumers to lead the economy into a more sustainable development. Local consumption reduces food miles and consequent transport emissions. In-season consumption avoids or reduces the use of greenhouses, the demand for electricity to heat them, or the need for imports with their embodied virtual carbon. Nevertheless, when we import food products that are in-season in their country of origin, their reduced embodied emissions can compensate for emissions from transport and therefore, decrease the carbon footprint (CF) of these agricultural products. In this paper we develop a new seasonal input-output model to calculate and compare the CF of local in-season products and of imported fruits and vegetables.

Firstly, we identify monthly trade (by country of origin and transport mode) for different agricultural products to classify it in terms of seasonality. From those data we can derive the seasonal component of final demand and technical coefficients as a basis for a hybrid input-output model. Secondly, we calculate food miles and emissions from that trade. Depending on the season, each region exports some excess agricultural products and imports others both as inputs and final demand, according to its industry's requirements and consumers' preferences. Thirdly, we estimate a balance of avoided emissions of agricultural products that incorporates the seasonal component, to evaluate whether trade of out-of-season products reduces or increases the households' CF. In other words, we can analyze if a change towards seasonal consumption (for example, reducing imported oranges in August in exchange of an increased consumption of local melons in Spain) could contribute to reduce the families' CF or it would even increase it. We apply this idea to a multiregional model for Spain in 2009 with other six regions in the world, using the WIOD database together with information from the Spanish Customs Office.