Cross-Hauling and Regional Input-Output Tables: Can CHARM Make Adequate Adjustments for Cross-Hauling?

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This paper reviews the available empirical evidence on the performance of Kronenberg's CHARM (Cross-Hauling Adjusted Regionalization Method), a relatively new non-survey technique that takes explicit account of cross-hauling when constructing regional input-output tables. Our focus is on the evidence presented in Flegg and Tohmo (2013) and in Flegg et al. (2015). These papers employ survey-based data for two contrasting regions: Uusimaa, the largest Finnish province, and the central Chinese province of Hubei. In the case of Uusimaa, detailed data for 26 regional sectors in 2002 are examined. CHARM is found to perform relatively well in terms of its ability to generate adequate estimates of exports, imports, the volume and balance of trade, and supply multipliers. For instance, on average across the 26 sectors, the unweighted mean supply multiplier from CHARM is 1.542, which is not far above the target figure of 1.482. The results are particularly encouraging for manufacturing sectors, which typically produce heterogeneous commodities and where cross-hauling is rife. As regards Hubei, CHARM is used to construct a detailed regional input-output table with 42 sectors, including 17 different types of manufacturing. The analysis makes use of official published national and regional data for 2007. However, in this instance, CHARM does not generate reliable estimates of Hubei's sectoral exports, imports, volume of trade, and supply multipliers. This outcome is attributed to the difficulty of getting satisfactory estimates of regional technology, heterogeneity and final demand for this data set. This problem is, in turn, linked to the relatively small size of Hubei, which generates around 4% of China's GDP. By contrast, Uusimaa produced 34.6% of Finland's national output in 2002. These findings highlight the crucial importance, especially in relatively small regions, of adjusting for any known divergence between regional and national technology, heterogeneity and final demand. Various strategies are explored for implementing such adjustments. The paper also discusses the work of Toebben and Kronenberg (2015), who demonstrate how CHARM can be adapted for use in a multiregional context.