Structural decomposition analysis with disaggregate factors within the Leontief inverse

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Research

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Abstract

A trivial case in input-output structural decomposition analysis is a decomposition of a product of variables, or factors, where one factor is an inverse – typically Leontief inverse – of a sum of other factors. There may be dozens and hundreds of such factors that describe the changes in subsets of technical coefficients. The existing literature offers ambiguous guidance in this case. The solution that is consistent with the index number theory may be virtually infeasible. The simplified ad hoc solutions require the researcher to make arbitrary choices, lead to biased estimates and do not ensure the consistency-in-aggregation of factors. This paper reviews the ad hoc solutions to the said problem and describes a numerical test to identify the best-performing solution. It is found that calculating the average of the two polar decomposition forms for each factor is superior to other approximations in terms of minimising the errors.

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