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Practical recommendations for using generalized IO models to estimate eco-efficiency

Recently the issue of increasing eco-efficiency, which may be broadly defined as a management philosophy that aims at minimizing ecological damage while maximizing efficiency of the firm's production processes, has become one of the most important topics of interest for researchers and politicians. This particular type of performance assessment is usually modelled within the framework of data envelopment analysis (DEA). In this paper we propose an alternative approach to measuring eco-efficiency in generalized input-output (gIO) models which may be used as a supplementary method to the mainstream approach. The approach proposed in this paper looks at economic processes from a different perspective than the DEA-based models as it builds upon a theory of intersectoral linkages.

In order to illustrate possible applications of the new approach we conduct an empirical analysis aimed at identifying the eco-efficient sectors based on the 1995 and 2009 national input-output tables and environmental accounts for Poland which are provided by the WIOD database. We focus on cases of traditional and sectorsize-adjusted measures of interindustry linkages in gIO models and in each case we calculate respective indices of eco-efficiency and discuss their usefulness in policymaking.

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