Accounting for productivity heterogeneity in subnational interregional input-output accounting

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Abstract. The accuracy of subnational input-output (IO) accounts tends to suffer from data scarcity. Literature on how to construct subnational IO accounts proposes several ways to estimate the magnitudes of intersectoral linkages within regions as well as for interregional trade flows. In some cases, data scarcity is so severe that information on industry productivity levels across regions of a nation is totally absent.

Subnational data in certain countries/regions (e.g., the European Union, the United States, and Japan) are increasingly accessible, yet their integration into subnational IO account estimates often does not use all information available from statistical agencies. Introducing such superior data comes with trade-offs, e.g., it consumes more time and requires more funding. In this paper, we assess how much more accurate and meaningful interregional accounts might be after introducing subnational information on value-added by industry when using an interregional IO account. To do so, we propose a simple experiment that uses four sets of alternative accounts.

We start by aggregating a subset of an accepted global input-output (GRIO) account to produce an EU-wide account. We try to replicate the EU's true interregional accounts (the first of the four sets of accounts) via three (3) preferred approaches for estimating subnational accounts: (1) an integrated gravity model, (2) Flegg´s location quotient, and (3) a set of econometrically derived regional purchase coefficients. In the two latter approaches, we allocate excess supply and demand for each region using a gravity model. We ensure final coherence of the interregional accounts via biproportional balancing. For each approach, we evaluate three different scenarios to estimate regional supply and demand: (a) spatially invariant value-added/output by industry, thus using regional employment as a proxy to share out "nationwide" data (b) knowledge of only more-aggregated level regional value-added (i.e., for 11 sectors rather than for 63 industries) and (c) full knowledge of value-added including by component for each industry (in which case, we assume compensation/output only is industry-wise spatially invariant). We then assess the relative accuracy of the different approaches and scenarios.