Disaggregating Input-Output Tables in Time: The Temporal Input-Output Framework
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Introduction

The traditional input-output (I-O) tables convey a summary of the monetary flows between sectors in the economy for a given year and are the core of the I-O framework. Nonetheless, the information loss that such temporal aggregation imposes on the technical coefficients by suppressing the distinct economic structure in each period and only considering the aggregated flows at the end of the year (hence condensing any fluctuations in production capacity, seasonality and temporal shocks), bias the technical coefficient matrix and consequently impact estimates. This issue is particularly deleterious in evaluating transient phenomena or within-year events.

This paper develops a novel methodology to disaggregate the annual I-O table in its time dimension in order to estimate intra-year I-O matrices for a particular year (T-EURO Method). Its main advantages are to allow seasonal effects to be studied in conjunction to the I-O framework, to better understand the process of coefficient change and to offer a more complete dynamic view of production.

Results

Estimated 2004 Quarterly Brazilian I-O Tables:
• Manufacturing and Services tend to maintain a more stable linkage structure throughout the year;
• But, Agriculture is significantly affected by seasonality in production, inducing large biases in multipliers. Consistent with the crop cycle of the main agricultural products in Brazil, backward linkages are stronger in the second semester (planting period), while forward linkages are stronger in the first semester (harvesting period) (Fig. 2);
• Thus, using annual coefficients for this sector creates important biases since they cannot properly reflect the intra-year dynamics (Fig. 3).

Conclusions

The T-EURO method fulfills a gap in the I-O literature by disaggregating the annual tables into intra-year tables. Based on the EURO method, it has the virtues of requiring only official macroeconomic forecasts, adjusting the full I-O system, avoiding arbitrary changes in flows, maintaining supply-demand and temporal consistencies. This paper aims at instigating the debate on the temporal dimension of I-O tables by offering an initial method in the temporal disaggregation helm and highlighting its advantages, calling for a new wave of developments in this direction.