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Disaggregated Economic Accounts

Based on BFI Working Paper 2022-152, "Disaggregated Economic Accounts," by Asger Andersen, University of Copenhagen; Kilian Huber, Chicago Booth; Niels Johannesen, University of Copenhagen; Ludwig Straub, Harvard University; and Emil Toft Vestergaard, University of Copenhagen;

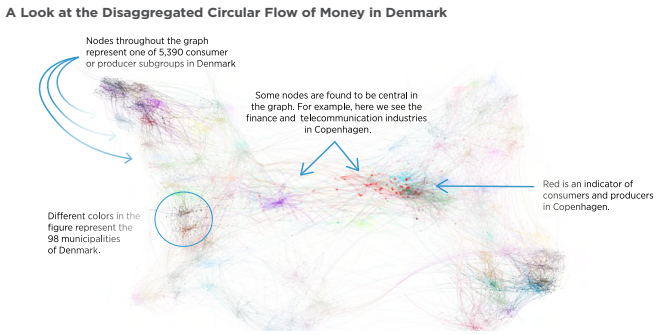
This novel research improves upon current aggregate economic tracking measures to include disaggregated economic accounts that enrich our understanding of economic shocks and their effects.

When researchers measure or track national economies, they do so by relying on a system of accounts that records how production is distributed among consumers, businesses, governments, and foreign nations. Pioneered nearly a century ago, these measures are formalized in the System of National Accounts (SNA), which incorporates a set of internationally agreed concepts, definitions, classifications, and accounting rules.

While useful for tracking broad measures like national consumption, income, and output, the SNA offers no system to comprehensively document bilateral consumption and income flows between disaggregated consumer and producer groups, only between producer groups. Put another way, the SNA contains little data measuring flows between smaller subgroups of the economy, like which consumers purchase goods from which producers, which producers pay income to which consumers, and how consumers and producers transact with the government and the rest of the world.

No mere technocratic issue, this absence of comprehensive disaggregated economic accounts has direct and important implications for policymakers. With an incomplete understanding of how shocks propagate across the economy, and of how they heterogeneously affect aggregate and distributional outcomes, policymakers are limited in their ability to set focused policies. Instead, policymakers must rely on broader policies that may miss the mark or otherwise result in unintended consequences.

Figure 1 • A Look at the Disaggregated Circular Flow of Money in Denmark



Note: The disaggregated circular flow in this figure contains 5,390 nodes, one for each region-by-industry consumer and producer cell in Denmark. Nodes lying in the same region share the same color. Node size on the plot is proportional to the cell's economic size, measured as the square root of all inflows into the cell. Nodes are all consumer and producer cells in Denmark. The authors draw a link between two cells if the cell-to-cell flow is among the top five outflows per cell or the top inflow per cell. (Please see the working paper for more details.)

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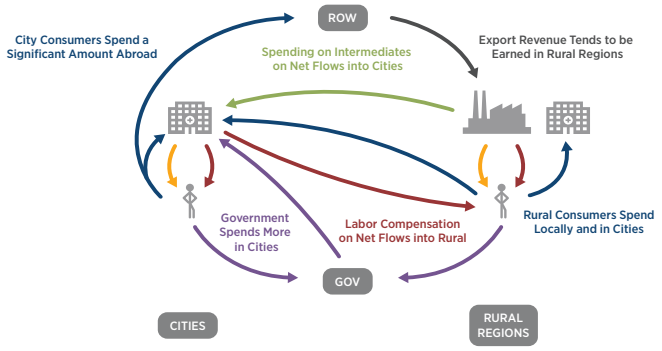
Figure 2 • Stylized Overview of the Circular Flow



Note: This figure provides a stylized overview of the facts documented in the working paper. Export revenue is largest in rural regions where it contributes to rural consumers' income. On net, consumer spending leaves rural regions toward cities where it contributes to the income of urban consumers working in service industries. Similarly, spending on intermediate goods on net flows toward cities. In turn, urban consumers spend a relatively large share of income abroad. The government transfers income to rural consumers, but spends on urban industries, so that, on net, resources flow into cities.

This new research addresses this gap. The authors develop "disaggregated economic accounts" for Denmark using various transactional and governmental microdata, including region- by-industry cells of consumers and producers, capturing rich heterogeneity in flows and shock incidence across regions and industries (see disaggregatedaccounts.com), to present facts on the circular flow of money across cells, including the following:

- Distance has a strong effect on consumer spending, labor compensation, and intermediates trade. Distance matters most for regular, in-person consumer spending (e.g., fuel, groceries) and less for travel-related spending (e.g., hotels) and remote services (e.g., insurance and telecommunication).
- Consumer spending flows toward cities—the population size of a consumer cell's home region is almost always lower than the average size of regions receiving its spending. Similarly, net spending on intermediate goods by producers flows toward urban regions, which is mostly driven by the prevalence of service producers in cities.
- Spending abroad accounts for 12% of city consumers' spending and 8% of rural consumers' spending.
- Net exports make up a larger share of rural producers' output (mostly manufacturers), while domestic sales are more important for city producers (mostly services).
- Net transfers by the government to consumers (transfers minus taxes) are larger in rural regions, but the government employs and purchases more in cities. On net, the government transfers resources into cities.

The authors also develop a model that allows them to study how shocks propagate across region-industry cells, improving on empirical analysis that typically cannot disentangle all general equilibrium[1] propagation channels. Their model reveals that the structure of disaggregated economic accounts shapes the distributional and aggregate consequences of economic shocks in the following ways:

- The effects of fiscal policy on aggregate welfare are very heterogeneous depending on which cells are targeted. Changes tend to be amplified more for consumer cells whose spending remains in the country for longer, which concretely means cells in rural regions, per the patterns described above.
- A uniform reduction in export tariffs has stronger direct incidence on rural consumers, but nonetheless improves the welfare of urban consumers by more once indirect spillovers are included.

The authors use their model to predict the effects of targeted fiscal policy on aggregate welfare. Specifically, for each consumer cell, they compute the welfare change experienced by the aggregate economy if that consumer cell receives a transfer from the government, and find the following:

- The aggregate welfare multiplier is very heterogeneous across consumer cells, varying with a cell's position in the disaggregated circular flow: the longer a transfer to a cell circulates in the domestic economy before leaving the country, the larger the cell's aggregate welfare multiplier. Intuitively, a transfer that circulates longer domestically generates more income for Danish consumers, raising Danish welfare along the way.
- In line with the trade patterns described above, rural regions are associated with longer domestic circulation and therefore greater welfare multipliers.

In a second set of applications of their model, the authors consider revisit the gains from trade through the lens of their disaggregated economic accounts.

[1] General equilibrium analysis is concerned with the simultaneous determination of prices and quantities in multiple inter-connected markets, as opposed to partial equilibrium analysis, which considers a single sector or market.

Specifically, they study how a uniform reduction in export tariffs affects the distribution of welfare across consumer cells, and find the following:

- Since rural producers export more, the direct incidence of tariff reductions falls mainly on rural producers and consumers. They benefit from higher export revenue and, as a result, higher incomes.
- However, the general equilibrium benefits accrue mostly to urban consumers, at odds with the direct incidence. The discrepancy between direct and general equilibrium incidence is driven by the structure of disaggregated economic accounts. The urban bias of consumer spending and domestic trade implies that urban consumers indirectly receive much of the additional export revenue. Moreover, the higher foreign spending of urban consumers implies that urban consumers are less affected by the rise in domestic prices due to the additional export revenue.

Bottom line: This analysis of disaggregated economic accounts substantially enriches our understanding of shock propagation and may aid in the design of policy interventions. While much of the raw data required to construct disaggregated economic accounts are already collected in many advanced economies, further data processing is required. However, the social benefits of constructing disaggregated economic accounts may outweigh the costs.

READ THE WORKING PAPER

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bfi.uchicago.edu/working-paper/2022-152

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