Measuring regional Global Value Chain integration in the UK: A bottom-up approach for better regional statistics

Topic: Input-Output Modelling: Trade and Global Value Chains Policies - II
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Openness to trade has long been a crucial driver of economic prosperity. The advent of modern communication technologies and declining trade costs has transformed its nature in recent decades and led to the increasing fragmentation of production processes and a higher degree of economic connectivity at the global level. This dynamic, where production processes are spread over multiple countries and firms, gives rise to global value chains (GVCs) (Los, Timmer and de Vries, 2015). Significant progress has been made in measuring regional integration in GVCs at the national level with the development of Multi-Regional Input-Output tables (MRIOs) such as OECD's Inter-Country Input-Output tables (ICIO) underpinning the OECD's Trade in Value Added (TiVA), thereby enabling an extensive GVC-related analysis of economic structures since the early 2010s. On the sub-national front, the most prominent efforts utilise a top-down approach to regionalise ICIOs, such as by Ivanova, Kancs and Thissen (2019), who regionalising input-output data from the World Input-Output Database (WIOD) for EU economies. Despite their usefulness, top-down approaches typically require more extensive model-based assumptions while offering lower accuracy in adequately quantifying regional economic activities than bottom-up approaches. Notwithstanding the strong evidence of the critical regional impacts of globalisation, the use of bottom-up approaches to shed light on the complex nature of economic integration has been limited to a selected group of countries and initiatives because of the extensive data requirement of this approach.

In this paper, we address the issue of regionalisation by introducing a novel framework to create regional Supply-Use and Input-Output tables for the UK following a bottom-up approach. The level of regional disaggregation follows the TL2 classification, which allows us to measure economic activity based on UK microdata for 12 separate UK regions.

Our work expands on the current literature by providing the first implementation of a bottom-up approach to creating regional Supply and Use tables for the UK at a level of disaggregation not addressed by earlier works, as we capture interregional trade between the nine English TL2 regions and the devolved nations of Northern Ireland, Scotland, and Wales by employing novel interregional trade data. Building on granular microdata for the year 2019, our research provides new measures and analysis of regional GVC participation in the UK economy consistent with National Account statistics.

In the analytical work of the paper, we propose a set of regional indicators to identify the economic performance of UK regions along multiple lines, including the degree of regional integration in regional, national, and global production chains of goods and services, as well as regional forward and backward linkages which we contrast with their national counterparts.

Lastly, we provide a general technical description and guidance on how to derive regional statistics beyond the case of the UK. We do so by elaborating on typical data constraints and potential solutions to remedy these issues when creating bottom-up Supply and Use tables that remain relevant in a general country context. The methodological discussion in our paper also covers practical applications of regional Supply and Use tables and their integration into the ICIO framework and the creation of the sub-national TiVA indicators.

References

Ivanova, Olga, D'Artis Kancs, and Mark Thissen. Regional Trade Flows and Input Output Data for Europe. No. 06/2019. EERI Research Paper Series, 2019.

Los, Bart, Marcel Timmer, and Gaaitzen de Vries. "Global value chains: â€˜Factory Worldâ€™ is emerging." The age of global value chains: Maps and policy issues (2015): 36-47.