Value-added offshoring

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Author: Bernhard MICHEL
Co-Authors: Vesna Stavrevska

Estimations of the impact of offshoring on labour demand in industrialised economies are based on the assumption that value added created in the source economy replaces value added created in the sourcing economy. It is standard in such estimations to use offshoring intensities that are calculated as the share of foreign-sourced intermediaries in total non-energy intermediaries for each industry. Moreover, materials and business service offshoring intensities are generally distinguished and they are divided according to the region of origin of the intermediates. However, although they are widely used, these traditional offshoring measures are only imperfect proxies for the substitution of source economy value added for sourcing economy value added. They are indeed gross measures rather than value added measures given that along the value chain various countries and industries contribute to the production of the offshored intermediate.

In this paper, we tackle this issue by developing an original framework for calculating offshoring intensities in value added terms based on insights of the literature that has recently developed on value added embodied in trade (Johnson and Noguera, 2012; OECD, 2013; Timmer et al., 2013). In this literature, global multicountry input-output models and data have been used to correctly attribute value-added contents to export flows. The novelty of our work is that we adapt this final demand based approach to apply it to purchases of intermediates. Thereby, we take into account that not all value added embodied in foreign sourced intermediates is necessarily foreign value added, and, conversely, domestically sourced intermediates may contain at least some foreign value added. As a result, when considering offshoring in value added terms, the geographic and product distribution differs from what is observed for the traditional gross offshoring measures.

Based on the recently revised world input output tables (WIOTs) in previous year prices we compute both materials and business services offshoring intensities in traditional gross terms and in value added terms for a sample of 13 manufacturing industries in 18 industrialised economies (the 15 old EU member states plus Canada, Japan and the US) over the years 1995-2007. Moreover, we make a distinction between offshoring from high wage countries, Central and Eastern European countries (CEEC) and the rest of the world. On the one hand, this allows us to compare gross and value-added offshoring intensities, and, on the other hand, it enables us to estimate their respective impact on labour demand by skill category.
It turns out that value-added offshoring intensities are much less volatile than gross offshoring intensities. The intensity of materials offshoring is higher compared to business services in both gross and value-added terms. However, business services offshoring intensities stand at a much higher level in value added terms than in gross terms. This is consistent with the finding in the literature on value added in trade that there is a large amount of service value added embodied in manufacturing exports.
For the purpose of estimating the impact of offshoring on labour demand by skill category, we rely on the standard translog cost function approach to derive cost share equations for three skill categories. These cost share equations are then augmented with either gross or value-added offshoring indicators. Data on labour and wages by skill category come from the Social and Economic Accounts of the World Input Output Database. Our preliminary findings indicate that business services offshoring in value added terms has a strong impact on labour demand for medium-skilled workers, much stronger than offshoring in gross terms. The elasticity is particularly strong for value added business services offshoring to low-wage countries.