Relative Advantage Production Position in Global Value Chain and its Applications

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This paper defines a new indicator named â€œrelative advantage production positionâ€• (also referred to as RAPP) to clarify the heterogeneity in global value chain between economies. Also, it puts forward an approximation algorithm to calculate RAPP on the basis of Input-Output model and Layer Lemma. Furthermore, this paper provides some properties of RAPP: there is a positive correlation between the sectorâ€™s RAPP and its upstreamness; and the non-uniqueness of RAPP is rooted in the characteristics of certain sectors, etc.
In empirical parts, this paper calculates the RAPPs of each sector based on Chinaâ€™s non-competitive Input-Output Table of years 2007 and 2012, and 2012 US non-competitive Input-Output Table. The results verify the positive correlation between the sectorâ€™s RAPP and its upstreamness, and also reveal some direct upstream relationship between sectors, especially between the sectors with single-purposed products. Meanwhile, this paper uses the 2007 and 2014 WIOD world Input-Output Table to measure each sectorâ€™s RAPP in different economies. The statistic results confirm that the non-uniqueness of RAPP is rooted in the characteristic of the certain sectors. Furthermore, the comparisons of RAPPs both in economy dimension and time dimension help us to find out the positional differences and positional changes in global value chain.
Compared with other indicators which embody a certain sectorâ€™s or economyâ€™s role in the international labor-division, the RAPP contains the certain positional information in global value chain like Antrasâ€™s measurement of industry upstreamness. But when it comes to the positional differences in global value chain between countries/regions, the RAPP is able to reveal more notable heterogeneity in terms of the positions in global value chain across different economy. Meanwhile, the non-uniqueness of RAPP can indicate the multiple characters a sector play in the chain of production.