Beyond Commodities and Industries: Accurate Measurement of Upstreamness in the Global Value Chain

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In two seminal papers, AntrÃ s and Chor (2013, AC) and AntrÃ s et al. (2012, ACFH) addressed the problem of measuring the degree to which industries are upstream or downstream in the global value chain. A growing number of publications have built upon their measurement formulation and accompanying computer code. Unfortunately, however, their implementation seems to be incorrect. The reason is that they work with data from supplyâ€“use tables (in a commodity-by-industry accounting framework) which are then processed as if the data were given by the interindustry flows from a standard input-output (IO) table. This paper takes the typical commodity-by-industry perspective into full account and derives two measures for upstreamness: a measure for the upstreamness of an industry and one for the upstreamness of a commodity. The difference between the standard Leontief-type IO table and the supply-use table developed by Stone is that the IO table assumes that each industry produces one and only one commodity. Stoneâ€™s framework recognizes that most industries produce more than one commodity, and most commodities are produced by more than one industry. This allows for taking secondary production into consideration. In this paper, we develop and implement properly formulated value chain metrics taking the Stone enhancements and their conceptual underpinnings into full account. We compare our results to the results from the incorrect formulations in AC and ACFH. We show that incorrect formulations have substantial empirical manifestations for some industries but not for other industries. We explain why this is the case.