TFP Accounting with Secondary Production

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Abstract

When establishments engage in secondary production, measured total factor productivity (TFP) growth at the industry level reflects the joint production process of the primary and secondary products and reallocation between these products within an industry. If secondary products are substantively different from primary products (often with very different price indexes), confounding reallocation and TFP and has the potential to obscure analysis of the underlying reasons for changes in aggregate TFP.[1]

We reconsider the basic premise of (Raa & Wolff, 1991) that it is important to distinguish between primary and secondary production in analyzing the sources of aggregate productivity change. We construct a KLEMS production account where outputs and inputs have been moved from their primary to their secondary industry to assess productivity growth for products instead of industries. Using unpublished detail from BEA and the BEA-BLS integrated industry level production account, we are able to move nominal and real inputs for two types of workers (those with a college degree and those without) and five types of capital (IT equipment, software, R&D, entertainment originals, and other capital) from primary to secondary industries. Coupled with information on the deflators for secondary outputs, we construct a measure of TFP growth for products that reflects the input structure and costs of the industry in which these products were produced.

Disentangling TFP growth in industries and products 1) helps shed light on the origins of changes in aggregate TFP, 2) provides useful information in analyzing international competitiveness where trade is driven by product competitiveness, 3) allows for consistent aggregation of TFP growth from commodities to broad components of final demand (e.g. investment and consumption) when primary and secondary industry production span expenditure categories (Basu, Fernald, Fisher, & Kimball, 2013).

Bibliography

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Raa, T., & Wolff, E. N. (1991). Secondary Products and the Measurement of Productivity Growth. *Regional Science and Urban Economics, 21*(4), 581-615.

[1] The views expressed in this paper are those of the authors and do not necessarily represent the U.S. Bureau of Economic Analysis or the U.S. Department of Commerce.

[1] Presumably, if production was rebalanced enough toward a secondary product, an establishment's industry classification would change and its primary product would become secondary, so the basic issue would still exist.