

# Effects of imported intermediate inputs on productivity

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## ABSTRACT

*A framework for estimating the effects of imported intermediate inputs on U.S. major-sector labor productivity is used together with the Solow multifactor productivity equation to show that private business sector multifactor productivity may have grown about 0.1 percent more slowly than what the BLS published series indicates.*

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## EXCERPT

Offshoring, or offshore outsourcing—the substitution of imported intermediate inputs for domestic labor or domestically produced intermediate inputs—affects U.S. economic performance. The existing framework for measuring productivity does not permit an analysis of offshoring; thus, the framework needs to be adjusted in order to assess the effects of imported intermediate inputs on the U.S. economy. The BLS Major Sector Productivity program develops measures of labor productivity for broad sectors of the economy: business, nonfarm business, manufacturing, and nonfinancial corporations. In addition, the program develops annual indexes of multifactor productivity for the private business sector, the manufacturing sector, and most manufacturing groups. This article focuses on BLS productivity measures for the private business sector and the manufacturing sector. Productivity measures for these two sectors are constructed under different methodologies: the private business sector productivity measures use a value-added output concept, while the manufacturing sector measures use a sectoral output approach. This difference in methodology influences the effects of imported intermediates on BLS measures of productivity.

In the sections that follow, the private business sector and the manufacturing sector are analyzed separately with an eye toward developing a framework for estimating the effects of imported intermediate inputs on U.S. major-sector labor productivity. First, the

production model used to calculate the BLS private business sector multifactor productivity measures is expanded to treat imported intermediate inputs as an input, rather than as a subtraction from output. Then, the BLS framework for constructing manufacturing multifactor productivity is decomposed in order to isolate imported intermediate inputs. For both sectors, the Solow multifactor productivity equation is used to estimate the effects on labor productivity of substitution between imported intermediate inputs and U.S. hours worked.<sup>1</sup> The data reveal that growth in imported intermediate inputs contributed 14 percent to the average annual growth in labor productivity for the private business sector, and 23 percent to the average annual growth in labor productivity in the manufacturing sector, from 1997 to 2006.<sup>2</sup>

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#### Footnotes

<sup>1</sup> Robert M. Solow, "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics*, August 1957, pp. 312-20.

<sup>2</sup> Annual input-output tables, as well as data on imported intermediate inputs, from the Bureau of Economic Analysis (BEA) are used in the analysis presented. (See Robert E. Yuskavage, Erich Strassner, and Gabriel W. Medeiros, "Domestic Outsourcing and Imported Inputs in the U.S. Economy: Insights from Integrated Economic Accounts," paper prepared for the World Congress on National Accounts and Economic Performance (Arlington, VA, Bureau of Economic Analysis, May 15, 2008).)

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