

Bureau of Labor Statistics
Division of Major Sector Productivity
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OVERVIEW OF OUTPUT MEASURES USED BY BLS TO CONSTRUCT PRODUCTIVITY STATISTICS FOR MAJOR SECTORS OF THE US ECONOMY

Real output measures used by the BLS to construct major sector productivity statistics are produced by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. The most widely known measure of aggregate output for the U.S. economy is gross domestic product (GDP). GDP is the sum of personal consumption expenditures, gross private domestic investment, government consumption expenditures and gross investment, and exports of goods and services less imports of goods and services. The BEA constructs nominal output for detailed components of GDP from various data sources, converts them to real measures and then aggregates them to calculate real GDP.

Ideally, productivity statistics measure productivity for the U.S. economy at the most aggregate level of domestic output—that is, GDP. However, the BLS must exclude several activities from aggregate output in order to remove potential sources of bias specific to productivity measurement. The real gross products of general government, of private households, and of nonprofit institutions are estimated primarily using data on labor compensation. The trends in such output measures will, by definition, move with measures of input data and will tend to imply little or no labor productivity growth. Although these measures are the best available estimates of non-market components of GDP, including them in measures of aggregate productivity for the economy would bias labor productivity trends toward zero. The BLS business sector also excludes the gross product of owner-occupied housing and the rental value of buildings and equipment owned and used by nonprofit institutions serving individuals.¹ These components are excluded because no adequate corresponding labor input measures can be developed.

As a fundamental part of the national accounts, the BEA distinguishes three primary sectors of GDP: business, household, and government.² The BEA calculates the measure of business sector output by removing from GDP the gross product of general government, private households and nonprofit institutions.³ Thus the BEA measure of business sector output is appropriate for productivity measurement. In 2012, the U.S. business sector accounted for approximately 75 percent of the value of GDP. This measure, and the measure of nonfarm business sector output, which also excludes farm output, are the real output series used to calculate BLS measures of labor productivity—defined as real output per hour worked—in the U.S. business and nonfarm business sectors. The BLS labor productivity statistics for the business and nonfarm business sectors are constructed using quarterly and annual BEA output data.

¹ This value is measured as the sum of consumption of fixed capital, taxes on production and imports less subsidies, and interest paid.

² See “A Guide to the National Income and Product Accounts of the United States” <http://www.bea.gov/national/pdf/nipaguid.pdf>

³ The gross product of general government is the sum of government expenditures on compensation of general government employees and the general government consumption of fixed capital, which measures the services of general government fixed assets. Government expenditures on goods and services purchased from the private sector are not excluded from private business sector output. The gross product of private households is the compensation of paid employees of private households; the gross product of nonprofit institutions serving individuals is the compensation paid to employees of these institutions.

To measure multifactor productivity, BLS further restricts output to the U.S. private business sector, excluding the output of government enterprises. Appropriate weights for labor and capital in government enterprises are not estimated because subsidies account for a substantial portion of capital income; therefore there is no adequate measure of government enterprise capital income in GDP. In 2012, the U.S. private business sector output accounted for approximately 74 percent of the value of GDP. The BLS multifactor productivity statistics for the private business and private nonfarm business sectors are constructed using annual BEA output data.

For the manufacturing sector, the BLS uses an output concept that is different from what is used to construct productivity statistics for the business sector. Output for the manufacturing sector and for NAICS 3-digit and 4-digit manufacturing industries is constructed using the deflated value of industry shipments from the U.S. Census Bureau. These data are then adjusted to remove transactions that occur between establishments within the sector or industry, creating a measure of sectoral output. Sectoral output represents the total value of goods and services leaving the sector or industry, including shipments to final users and establishments outside the sector or industry. The manufacturing productivity indexes are based on sectoral output in an effort to avoid the problem of double-counting that occurs when one establishment provides materials used by other establishments in the same sector or industry. Labor productivity and multifactor productivity measures for the manufacturing sector are based on the same annual sectoral output indexes. Quarterly indexes of manufacturing output underlying the quarterly labor productivity data are estimated by combining the annual benchmark series with monthly data on real output from the Federal Reserve Board, the Indexes of Industrial Production. Due to a lag in the availability of the annual benchmark data, recent quarterly and annual manufacturing output measures also are extrapolated based on the changes in the Indexes of Industrial Production.