

Documentation of Data Used to Produce CBO's Estimate of Historical Potential Output

This document provides a brief description of the data used as inputs and produced as output in the CBO's estimate of historical potential output, also referred to as potential gross domestic product (GDP) or potential gross value added. A fuller description of the estimation process can be found in CBO Working Paper 2018-03: "[Estimating and Projecting Potential Output Using CBO's Forecasting Growth Model](#)."

The input data series described below are used to estimate potential output in six sectors of the economy:

- 1) Nonfarm business,
- 2) Farm business,
- 3) Households,
- 4) Nonprofit institutions serving households,
- 5) Federal government, and
- 6) State and local government.

Potential output is estimated on the basis of inputs of labor hours, capital services, and their productivity. The following conventions are used in naming data series:

- Names of real (inflation-adjusted) series begin with "Q" (for "quantity").
- Names of price indices begin with "P" (for "price").
- Names of employment series begin with "E" (for "employment").
- Names of hours series begin with "MH" (for "man-hours").
- Names of potential series end with "FE" (for "full employment").

Input Data Series

Output (value added), capital consumption, and compensation. The following quarterly series for sectoral real gross value added and compensation of employees are taken from Table 1.3.6 of the [National Income and Product Accounts](#) of the Bureau of Economic Analysis. Values are expressed in billions of seasonally adjusted chain-weighted 2009 dollars.

QGDPAF	Real Gross Value Added: Farm Business
QGDPSVHHH	Real Gross Value Added: Households
QGDPSVHNP	Real Gross Value Added: Nonprofit Institutions Serving Households
QGFMLWSS	Real Compensation of Government Employees: National Defense
QGFOWSS	Real Compensation of Government Employees: Federal Nondefense
QGSLWSS	Real Compensation of State and Local Government Employees

The following annual series for real and nominal components of gross domestic product, as well as related price indices, are taken from various tables of the [National Income and Product Accounts](#). All

nominal series are expressed in billions of dollars and all real series are expressed in billions of chain-weighted 2009 dollars unless elsewhere specified. The base year for the price indices is 2009.

Real series:

QGDP	Real Gross Domestic Product
QGDPNFB	Real Gross Value Added: Nonfarm Business
QGDPAF	Real Gross Value Added: Farm Business
QGDPSVH	Real Gross Value Added: Households and Nonprofit Institutions
QGDPSVHHH	Real Gross Value Added: Households
QGDPSVHNP	Real Gross Value Added: Nonprofit Institutes Serving Households
QGDPG	Real Gross Value Added: Government
QGDPGF	Real Gross Value Added: Government: Federal
QGDPGSL	Real Gross Value Added: Government: State and Local
QGFWSS	Real Compensation of Federal Government Employees
QGSLWSS	Real Compensation of State and Local Government Employees
QGFMLCCA	Real Consumption of Government Fixed Capital: National Defense
QGFOCCA	Real Consumption of Government Fixed Capital: Federal Nondefense
QGSLCCA	Real State and Local Government Consumption of Fixed Capital

Nominal series:

GDP	Gross Domestic Product
GDPNFB	Gross Value Added: Nonfarm Business
GDPAF	Gross Value Added: Farm Business
GDPSVH	Gross Value Added: Households and Nonprofit Institutions
GDPSVHHH	Gross Value Added: Households
GDPSVHNP	Gross Value Added: Nonprofit Institutions Serving Households
GDPG	Gross Value Added: Government
GDPGF	Gross Value Added: Government: Federal
GDPGSL	Gross Value Added: Government: State and Local
GFWSS	Compensation of Federal Government Employees
GSLWSS	Compensation of State and Local Government Employees
CCANFB	Consumption of Fixed Capital: Nonfarm Business
CCAFIXR	Consumption of Fixed Capital: Residential Structures
GFOCCA	Consumption of Government Fixed Capital: Federal Nondefense
GFMLCCA	Consumption of Government Fixed Capital: National Defense
GSLCCA	Consumption of State and Local Government Fixed Capital
STAT	Statistical Discrepancy
WSSNFB	Nonfarm Business Wages and Salaries
YENTNFBADJ	Nonfarm Proprietors' Income with Inventory Valuation Adjustment and Capital Consumption Adjustment
IBTNFB	Indirect Business Taxes, Nonfarm Business

Price series:

PGDP	Price Index, Gross Domestic Product
PGDPNFB	Price Index, Gross Domestic Product, Nonfarm Business Sector
PGDPAF	Price Index, Gross Domestic Product, Farm Sector
PGDPSVH	Price Index, Gross Domestic Product, Household and Nonprofit Sectors
PGDPSVHHH	Price Index, Gross Domestic Product, Household Sector
PGDPSVHNP	Price Index, Gross Domestic Product, Nonprofit Sector
PGDPG	Price Index, Gross Domestic Product, Government
PGDPGF	Price Index, Gross Domestic Product, Federal Government
PGDPSGL	Price Index, Gross Domestic Product, State and Local Government
PGFWSS	Price Index, Compensation, Federal Government
PGFOWSS	Price Index, Compensation, Government Employees: Federal Non-Defense
PGFMLWSS	Price Index, Compensation, Government Employees: Federal Defense
PGSLWSS	Price Index, Compensation, State and Local Government
PGFMLCCA	Price Index, Capital Consumption, Federal Defense
PGFOCCA	Price Index, Capital Consumption, Federal Non-Defense
PGSLCCA	Price Index, Capital Consumption, State and Local

Labor force, employment and hours. Quarterly estimates of the potential labor force and the potential unemployment rate are CBO estimates; the agency’s methodology for development those estimates is described in CBO Working Paper 2018-04: “[CBO’s Projection of Labor Force Participation Rates](#).” The potential labor force is expressed in millions of persons; the potential unemployment rate is expressed as a percentage. Both are seasonally adjusted.

LCFE	Potential Civilian Labor Force: 16 Years and Over
RUCFE	Underlying Long-Term Rate of Unemployment: 16 Years and Over (NSA, Percent)

Civilian (or household) employment and the civilian unemployment rate are taken from [labor force statistics](#) published by the Bureau of Labor Statistics. Employment is expressed in millions of persons and the unemployment rate is expressed as a percentage. Both are seasonally adjusted.

EHHC	Civilian Employment: 16 Years and Over
RUC	Civilian Unemployment Rate: 16 Years and Over

The following quarterly series for sectoral establishment employment for are taken directly from [data](#) made available by the Multifactor Productivity group at the Bureau of Labor Statistics. All employment series are seasonally adjusted and expressed in millions of jobs; hours series are seasonally adjusted and expressed in billions of hours.

ENFB	Employment, Nonfarm Business Sector
ENFB_EMP	Employment, Nonfarm Business Sector, Employees

ENFB_PROPUP	Employment, Nonfarm Business Sector, Proprietors and Unpaid Family Members
EFARM	Employment, Farm
ESVHHH	Employment, Household Sector
ESVNHP	Employment, Non-Profit Sector
EGFC	Employment, Federal Government, Civilian
EGFM_A	Employment, Federal Government, Active-Duty Military
EGSL	Employment, State and Local Government
MHNFB	Hours, Nonfarm Business
MHNFB_EMP	Hours, Nonfarm Business, Employees
MHNFB_PROPUP	Hours, Nonfarm Business, Proprietors and Unpaid Family Members
MHFARM	Hours, Farm
MHSVHHH	Hours, Household Sector
MHSVHNP	Hours, Non-Profit Sector
MHGFC	Hours, Federal Government, Civilian
MHGFM_A	Hours, Federal Government, Active-Duty Military
MHGSL	Hours, State and Local Government

For employment in the defense sector for the federal government, total quarterly employment is interpolated from the annual series in Table 6.4 of the [National Income and Product Accounts](#), and employment in the reserve forces is calculated as the difference between the total and the BLS estimate for active-duty members of the forces. Hours worked in the reserve forces are estimated from published service requirements. Total military hours, as well as total economy-wide employment and hours combine the BLS data described above with those estimates for the military.

EGFM	Full-Time and Part-Time Employees: Federal Government, Military
EGFM_R	Employment, Federal Government, Reserve Military
ETOTAL	Total Employment
MHGFM	Hours, Federal Government, Military
MHGFM_R	Hours, Federal Government, Reserve Military
MHTOTAL	Total Hours

Capital share. Although the income share of capital (used in the Cobb-Douglas production function for nonfarm business output) is derived from data from the National Income and Product Accounts, the series is smoothed using a Hodrick–Prescott filter. As a consequence, the latest values of the smoothed historical series are partly dependent on values that are projected for years beyond the historical period and that are not provided here. Instead, the accompanying code includes the equation used in the model, but the values (expressed as decimals) that are actually estimated are provided separately.

KSHARE_INPUT	Capital Income Share in the Nonfarm Business Production
KSHARE	Smoothed Capital Share in the Nonfarm Business Production Function

Capital Stocks. The following annual series for real and nominal net capital stocks, as well as real capital consumption, are taken from the [fixed assets tables](#) of the Bureau of Economic Analysis, except for land, which is taken from [data](#) published by the Multifactor Productivity group at the Bureau of Labor Statistics. Values are for the end of the year. Nominal values are all expressed as current replacement cost in billions of dollars; real values are expressed as replacement cost (or capital consumption) in billions of chain-weighted 2009 dollars.

Real series:

QKNIPDENRNFEQC	Net Capital Stock, Nonfarm Business Computer Equipment
QKNIPDENRNFCOMM	Net Capital Stock, Nonfarm Business Communications Equipment
QKNIPDENRNFOTH	Net Capital Stock, Nonfarm Business Other Equipment
QKNIIPPNRNFST	Net Capital Stock, Nonfarm Business Software
QKNIIPPNRNFRA	Net Capital Stock, Nonfarm Business Research and Development
QKNIIPPNRNFELA	Net Capital Stock, Nonfarm Business Entertainment, Literary and Artistic
QKNICNRNF	Net Capital Stock, Nonfarm Business Nonresidential Structures
QKNIFXR	Net Capital Stock, Residential Structures
QKNILAND	Net Capital Stock, Nonfarm Business Land
QINVNF	Nonfarm Private Inventories
QCCAPDENRNFEQC	Consumption of Fixed Capital: Nonfarm Business Computer Equipment
QCCAPDENRNFCOMM	Consumption of Fixed Capital: Nonfarm Business Communications Equipment
QCCAPDENRNFOTH	Consumption of Fixed Capital: Nonfarm Business Other Equipment
QCCAIPPNRNFST	Consumption of Fixed Capital: Nonfarm Business Software
QCCAIPPNRNFRA	Consumption of Fixed Capital: Nonfarm Business Research and Development
QCCAIPPNRNFELA	Consumption of Fixed Capital: Nonfarm Business Entertainment, Literary and Artistic
QCCACNRNF	Consumption of Fixed Capital: Nonfarm Business Nonresidential Structures
QCCAFXR	Consumption of Fixed Capital: Residential Structures

Nominal series:

KNIPDENRNFEQC	Net Capital Stock, Nonfarm Business Computer Equipment
KNIPDENRNFCOMM	Net Capital Stock, Nonfarm Business Communications Equipment
KNIPDENRNFOTH	Net Capital Stock, Nonfarm Business Other Equipment
KNIIPPNRNFST	Net Capital Stock, Nonfarm Business Software
KNIIPPNRNFRA	Net Capital Stock, Nonfarm Business Research and Development
KNIIPPNRNFELA	Net Capital Stock, Nonfarm Business Entertainment, Literary and Artistic
KNICNRNF	Net Capital Stock, Nonfarm Business Nonresidential Structures
KNIFXR	Net Capital Stock, Residential Structures
KNIFIXRO	Net Capital Stock, Owner-Occupied Residential Structures
KNIFIXRR	Net Capital Stock, Renter-Occupied Residential Structures

KNILAND	Net Capital Stock, Nonfarm Business Land
INVNF	Nonfarm Private Inventories (End of period, SAQT \$Billions)

Tax terms for estimates of capital income (rental) shares. For the period from 1948 to 1994, the model uses annual estimates of the statutory tax rate on corporate income as well as the annual values of investment tax credits and depreciation allowances on different types of capital from Jane G. Gravelle, *The Economic Effects of Taxing Capital Income* (MIT Press, 1994). CBO extends those values using a variety of sources for the period after 1994. The corporate tax rate and investment tax credits are expressed as decimals; depreciation allowances are dollars per dollar of investment.

RTCORP	Tax Rate: Combined Federal and State and Local Rate on Corporate Income
ITCEQC	Investment Tax Credit, Computers
ITCCOMM	Investment Tax Credit, Communications Equipment
ITCEQO	Investment Tax Credit, Other Equipment
ITCSFT	Investment Tax Credit, Software
ITCRAD	Investment Tax Credit, Research and Development
ITCELA	Investment Tax Credit, Entertainment, Literary, and Artistic Originals
ITCSTR	Investment Tax Credit, Structures
PDVCCAEQC	Present Discounted Value of Depreciation Allowances, Computers
PDVCCACOMM	Present Discounted Value of Depreciation Allowances, Communications Equipment
PDVCCAEQO	Present Discounted Value of Depreciation Allowances, Other Equipment
PDVCCASFT	Present Discounted Value of Depreciation Allowances, Software
PDVCCARAD	Present Discounted Value of Depreciation Allowances, Research and Development
PDVCCAELA	Present Discounted Value of Depreciation Allowances, Entertainment, Literary, and Artistic Originals
PDVCCASTR	Present Discounted Value of Depreciation Allowances, Structures

Productivity. Labor productivity is taken from quarterly [data](#) published by BLS, and is indexed to 2009.

LXNFA	Real Output per Hour of All Persons, Nonfarm Business
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Trend variables. Quarterly trend variables used to estimate trends in potential values correspond to one or more business cycles. Each trend takes a value of 0.0 until a particular business-cycle peak, as determined by the National Bureau of Economic Research, and takes incrementally larger values (0.25 per quarter) thereafter until the next business-cycle peak, after which it takes the same value that it did at that last peak. Two trend variables correspond to the period since the 2001 and 2007 business-cycle peaks, respectively. A final trend variable, used in estimating trends in potential total factor productivity in the nonfarm business sector, covers the period during which, in CBO's estimation, developments related to information technology contributed to particularly strong productivity growth.

TREND_1948_1953	Linear Time Trend, 1948Q4 to 1953Q1
TREND_1953_1957	Linear Time Trend, 1953Q2 to 1957Q2
TREND_1957_1960	Linear Time Trend, 1957Q3 to 1960Q1
TREND_1960_1969	Linear Time Trend, 1960Q2 to 1969Q3
TREND_1969_1973	Linear Time Trend, 1969Q4 to 1973Q3
TREND_1973_1980	Linear Time Trend, 1973Q4 to 1979Q4
TREND_1980_1981	Linear Time Trend, 1980Q1 to 1981Q2
TREND_1980_1990	Linear Time Trend, 1980Q1 to 1990Q2
TREND_1981_1990	Linear Time Trend, 1981Q3 to 1990Q2
TREND_1990_2001	Linear Time Trend, 1990Q3 to 2000Q4
TREND_2001_2007	Linear Time Trend, 2001Q1 to 2007Q3
TREND_2001	Linear Time Trend, 2001Q1 Onward
TREND_2007	Linear Time Trend, 2007Q4 Onward
TREND_1997_2005	Linear Time Trend, 1997Q1 to 2005Q4

Output Data Series

The code builds an estimate of aggregate potential output from estimates of the potential output in several different sectors of the overall economy. Those estimates, in turn, depend on estimates of potential inputs to sectoral production processes as well as their potential productivity. All series beginning with “LN_” are log values. (For example, LN_IPROD is the log of IPROD.) Where values are estimated by regression, series ending with “_HAT” are predicted series from the relevant regressions. (For example, IPROD_HAT is the predicted (log) value of IPROD.)

Output (value added), capital consumption, and compensation. The code produces annual estimates of real and nominal components of potential gross domestic product, as well as related price indices. All nominal series are expressed in billions of dollars; all real series are expressed in billions of chain-weighted 2009 dollars, and price indices are based in 2009. In the process of producing those estimates the code calculates annual values for actual gross domestic product excluding the nonfarm business sector:

QGDPTH	Real Gross Value Added: Other
GDPTH	Gross Value Added: Other
PGDPOTH	Price Index, Gross Domestic Product, Other

Real series:

QGDPFE	Real Potential Gross Domestic Product
QGDPNFBFE	Real Potential Gross Value Added: Nonfarm Business
QGDPAFFE	Real Potential Gross Value Added: Farm Business
QGDPTHFE	Real Potential Gross Value Added: Other
QGDPSVHFE	Real Potential Gross Value Added: Households and Nonprofit Institutions
QGDPSVHHHFE	Real Potential Gross Value Added: Households
QGDPSVHNPF	Real Potential Gross Value Added: Nonprofit Sector

QGDPGFE	Real Potential Gross Value Added: Government
QGDPGFFE	Real Potential Gross Value Added: Federal Government
QGFWSSFE	Real Potential Compensation of Federal Employees
QGFWLWSSFE	Real Potential Compensation: National Defense
QGFOWSSFE	Real Potential Compensation: Federal Nondefense
QGDPGSLFE	Real Potential Gross Value Added: State and Local Government
QGSWSSFE	Real Potential Compensation: State and Local Government

Nominal series:

GDPFE	Potential Gross Domestic Product
GDPNFBFE	Potential Gross Value Added: Nonfarm Business
GDPAFFE	Potential Gross Value Added: Farm Business
GDPSVHFE	Potential Gross Value Added: Households and Nonprofit Institutions
GDPSVHHHFE	Potential Gross Value Added: Households
GDPSVHNPF	Potential Gross Value Added: Nonprofit Institutions
GDPGFE	Potential Gross Value Added: Government
GDPGFFE	Potential Gross Value Added: Federal Government
GDPGSLFE	Potential Gross Value Added: State and Local Government
GDPOTHFE	Potential Gross Value Added: Other
GFMLWSSFE	Potential Compensation: Natl Defense
GFWSSFE	Potential Compensation: Federal Nondefense
GFWSSFE	Potential Compensation, Federal Government Employees
GSLWSSFE	Potential Compensation: State and Local Government

Price series:

PGDPFE	Price Index, Potential Gross Domestic Product
PGDPOTHFE	Price Index, Potential Gross Domestic Product, Other
PGDPGFE	Price Index, Potential Gross Domestic Product, Government
PGFWSSFE	Potential Price Index, Compensation, Federal Government
PGFMLWSSFE	Potential Price Index, Compensation: Federal Defense
PGFOWSSFE	Potential Price Index, Compensation: Federal Nondefense

Employment and Hours. The code estimates employment and hours at a quarterly frequency. It calculates potential household employment as the product of the potential labor force multiplied by one minus the natural rate of unemployment, expressed as a decimal. To estimate potential total establishment employment, the code calculates the difference (E_DIF) and percent difference (RE_DIF) between the household and establishment measures of employment, estimates a potential value for the percent difference, and uses that value to calculate a potential difference and a potential value for total establishment employment. For all estimations, the data series that serves as a proxy for business-cycle effects is the household employment gap—the difference in percentage points between actual and potential household employment. To adjust for employment shifts during Census quarters, the

estimations also include a dummy variable (DUMMY_CENSUS) that takes a value of 1.0 in the second quarter of Census years and 0.0 in all other quarters.

E_DIF	Difference, Establishment and Household Survey Employment Totals
RE_DIF	Ratio of Employment Difference to Total Household Employment
EMPGAP	Household Employment Gap
EHHCFE	Potential Household Employment
E_DIFFE	Potential Difference, BLS and H.H. Survey Employment
RE_DIFFE	Ratio of Potential Employment Difference to Potential Total Household Employment
ETOTALFE	Potential BLS Employment

The code calculates a variety of employment shares in the six sectors, and estimates potential values for those shares. Two sets of potential shares are estimated, one imposing a log-linear trend from 2001Q1 onward and the second imposing two trends, one from 2001Q1 to 2007Q3 and another from 2007Q4 onward. (For example, the two potential estimates for RENFB_EMP are named RENFB_EMP1FE and RENFB_EMP2FE.) The two estimates are averaged together to calculate potential shares.

Actual employment shares (decimals):

RENFB_EMP	Proprietors and Unpaid Family Share of Establishment Employment
RENFB_PROPUPF	Proprietors and Unpaid Family Share of Establishment Employment
REFARM	Farm Employment Share of Establishment Employment
RESVHHH	Household Employment Share of Establishment Employment
RESVHNP	Non-profit Employment Share of Establishment Employment
REGFC	Federal Government Civilian Share of Establishment Employment
REGFM_A	Federal Government Armed Forces Share of Establishment Employment
REGFM_R	Federal Government Military Reserve Share of Establishment Employment
REGSL	State and Local Government Share of Establishment Employment

Potential employment shares (decimals):

RENFB_EMPFE	Potential Employment Share, Nonfarm Business Employees
RENFB_PROPUFFE	Potential Employment Share, Nonfarm Business Proprietors and Unpaid Family
REFARMFE	Potential Employment Share, Farm Sector
RESVHHHFE	Potential Employment Share, Household Sector
RESVHNPFE	Potential Employment Share, Non-profit Sector
REGFCFE	Potential Employment Share, Federal Government Civilians
REGFM_AFE	Potential Employment Share, Federal Government Armed Forces
REGFM_RFE	Potential Employment Share, Federal Government A.F. Reserve
REGSLFE	Potential Employment Share, State and Local Government

Potential employment (millions of jobs):

ENFBFE	Potential Employment, Nonfarm Business
ENFB_EMPFE	Potential Employment, Nonfarm Business Employees
ENFB_PROPUFFE	Potential Employment, Nonfarm Business Proprietors and Unpaid Family
EFARMFE	Potential Employment, Farm Sector
ESVHFE	Potential Employment, Households and Nonprofit Sectors
ESVHHHFE	Potential Employment, Household Sector
ESVHNPF	Potential Employment, Nonprofit Sector
EGFE	Potential Employment, Government Sectors
EGFFE	Potential Employment, Federal Government
EGFCFE	Potential Employment, Federal Government, Civilian
EGFMFE	Potential Employment, Federal Government, Military
EGFM_AFE	Potential Employment, Federal Government, Armed Forces
EGFM_RFE	Potential Employment, Federal Government, A.F. Reserve
EGSLFE	Potential Employment, State and Local Government

The code calculates average weekly hours for a variety of groups from their values for total employment and total hours, estimates values for potential average weekly hours, and calculates potential total hours as the product of potential employment and potential average weekly hours.

Average weekly hours worked:

MHENFB_EMP	Average Weekly Hours Worked, Nonfarm Business Employees
MHENFB_PROPUF	Average Weekly Hours Worked, Nonfarm Business Proprietors and Unpaid Family
MHEFARM	Average Weekly Hours Worked, Farm Sector
MHESVHHH	Average Weekly Hours Worked, Household Sector
MHESVHNPF	Average Weekly Hours Worked, Nonprofit Sector
MHEGFC	Average Weekly Hours Worked, Federal Government, Civilian
MHEGFM_A	Average Weekly Hours Worked, Federal Government, Armed Forces
MHEGFM_R	Average Weekly Hours Worked, Federal Government, Reserve
MHEGSL	Average Weekly Hours Worked, State and Local Government

Potential average weekly hours:

MHENFBFE	Potential Average Weekly Hours, Nonfarm Business
MHENFB_EMPFE	Potential Average Weekly Hours, Nonfarm Business employees
MHENFB_PROPUFFE	Potential Average Weekly Hours, Nonfarm Business Proprietors and Unpaid Family
MHEFARMFE	Potential Average Weekly Hours, Farm Sector
MHESVHHHFE	Potential Average Weekly Hours, Household Sector
MHESVHNPF	Potential Average Weekly Hours, Nonprofit Sector
MHEGFCFE	Potential Average Weekly Hours, Federal Government, Civilian

MHEGFM_AFE	Potential Average Weekly Hours, Federal Government Armed Forces
MHEGSLFE	Potential Average Weekly Hours, State and Local Government

Potential hours (billions):

MHTOTALFE	Potential Total Hours
MHNFBFE	Potential Hours, Nonfarm Business
MHNFB_EMPFE	Potential Hours, Nonfarm Business Employees
MHNFB_PROPUFFE	Potential Hours, Nonfarm Business Proprietors and Unpaid Family
MHFARMFE	Potential Hours, Farm Sector
MHSVHFE	Potential Hours, Household and Nonprofit Sectors
MHSVHHFE	Potential Hours, Household Sector
MHSVHNPFE	Potential Hours, Nonprofit Sector
MHGFE	Potential Hours, Government
MHGFFE	Potential Hours, Federal Government
MHGFCFE	Potential Hours, Federal Government, Civilian
MHGFMFE	Potential Hours, Federal Government, Military
MHGFM_AFE	Potential Hours, Federal Government, Active-Duty Military
MHGFM_RFE	Potential Hours, Federal Government, Reserve Military
MHGSLFE	Potential Hours, State and Local Government

Capital share in nonfarm business. The following annual series are used to calculate the capital share of income in nonfarm business. The share serves as a parameter in the production function estimated for the nonfarm business sector. Values are expressed in billions of dollars

WSSOTH	Wages and Salaries, excluding Nonfarm Business
YKNFB	Annual Net Capital Income, Nonfarm Business
YNDOMNFB	Annual Net Domestic Nonfarm Business Income

Calculation of index of capital services. To calculate an annual index of capital services in nonfarm business (ICAP, indexed to 2009), the code estimates shares (referred to as rental shares) of capital income generated by different types of capital assets. Those estimates include calculations of depreciation rates, tax terms, expected price appreciation (also referred to as expected capital gains), and an implicit internal rate of return. The rate of return, in turn, is backed out of the rental share equations under the assumption that that all nominal capital income reported in the National Income and Product Accounts is attributable to the services of the estimate stocks of capital assets.

Because nonfarm business income includes income from rental residential housing, the code calculates the portion of the stock that is rented. Values are expressed as decimals.

RENTPROP	Tenant-Occupied Portion of Total Real Housing Stock
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Depreciation rates (decimals):

DIPDENREQC	Depreciation Rate, Nonfarm Business Computer Equipment
DIPDENRCOMM	Depreciation Rate, Nonfarm Business Communications Equipment
DIPDENROTH	Depreciation Rate, Nonfarm Business Other Equipment
DIIPPNRSFT	Depreciation Rate, Nonfarm Business Software
DIIPPNRAD	Depreciation Rate, Nonfarm Business Research and Development
DIIPPNRELA	Depreciation Rate, Nonfarm Business Entertainment, Literary and Artistic
DICNR	Depreciation Rate, Nonfarm Business Nonresidential Structures
DIFXR	Depreciation Rate, Nonfarm Business Residential Structures

Tax terms (decimals):

TAXEQC	Tax Term, Nonfarm Business Computer Equipment
TAXCOMM	Tax Term, Nonfarm Business Communications Equipment
TAXOTH	Tax Term, Nonfarm Business Other Equipment
TAXSFT	Tax Term, Nonfarm Business Software
TAXRAD	Tax Term, Nonfarm Business Research and Development
TAXELA	Tax Term, Nonfarm Business Entertainment, Literary and Artistic
TAXSTR	Tax Term, Nonfarm Business Nonresidential Structures
TAXFIXR	Tax Term, Nonfarm Business Rental Residential Structures
TAXLAND	Tax Term, Nonfarm Business Land
TAXINV	Tax Term, Nonfarm Business Inventories

Expected price appreciation (decimals):

EXPPDENRNFEQC	Expected Price Appreciation Term, Nonfarm Business Computer Equipment
EXPPDENRNF COMM	Expected Price Appreciation Term, Nonfarm Business Communications Equipment
EXPPDENRNFOTH	Expected Price Appreciation Term, Nonfarm Business Other Equipment
EXPIPPNRNFSFT	Expected Price Appreciation Term, Nonfarm Business Software
EXPIPPNRNFRAD	Expected Price Appreciation Term, Nonfarm Business Research and Development
EXPIPPNRNFE LA	Expected Price Appreciation Term, Nonfarm Business Entertainment, Literary and Artistic
EXPPCNRNF	Expected Price Appreciation Term, Nonfarm Business Nonresidential Structures
EXPPFIXR	Expected Price Appreciation Term, Nonfarm Business Residential Structures
EXPPINV	Expected Price Appreciation Term, Nonfarm Business Inventories

Annual rate of return (decimals):

RROR	Implicit Internal Rate of Return, Nonfarm Business
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Terms in the rate-of-return calculation (billions of dollars):

NUM_TOTAL	Numerator, Implicit Internal Rate-of-Return Calculation
NUM_EQC	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Computer Equipment
NUM_COMM	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Communications Equipment
NUM_OTH	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Other Equipment
NUM_SFT	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Software
NUM_RAD	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Research and Development
NUM_ELA	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Entertainment, Literary and Artistic
NUM_STR	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Nonresidential Structures
NUM_TOR	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Rental Residential Structures
NUM_LND	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Land
NUM_INV	Partial Numerator Term, Rate-of-Return Calculation, Nonfarm Business Inventories
DENOM_TOTAL	Denominator, Implicit Internal Rate-of-Return Calculation
DENOM_EQC	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Computer Equipment
DENOM_COMM	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Communications Equipment
DENOM_OTH	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Other Equipment
DENOM_SFT	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Software
DENOM_RAD	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Research and Development
DENOM_ELA	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Entertainment, Literary and Artistic
DENOM_STR	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Nonresidential Structures
DENOM_TOR	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Rental Residential Structures
DENOM_LND	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Land

DENOM_INV	Partial Denominator Term, Rate-of-Return Calculation, Nonfarm Business Inventories
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Asset shares of nonfarm business capital income (billions of dollars):

RSPDENRNFEQC	Share of Nonfarm Business Capital Income, Computer Equipment
RSPDENRNFCOMM	Share of Nonfarm Business Capital Income, Communications Equipment
RSPDENRNFOTH	Share of Nonfarm Business Capital Income, Other Equipment
RSIPPNRNFST	Share of Nonfarm Business Capital Income, Software
RSIPPNRNFAD	Share of Nonfarm Business Capital Income, Research and Development
RSIPPNRNFELA	Share of Nonfarm Business Capital Income, Entertainment, Literary and Artistic
RSCNRNF	Share of Nonfarm Business Capital Income, Nonresidential Structures
RSFIXR	Share of Nonfarm Business Capital Income, Rental Residential Structures
RSLAND	Share of Nonfarm Business Capital Income, Land
RSINV	Share of Nonfarm Business Capital Income, Inventories

Asset shares of nonfarm business capital income (decimals):

SHAREEQC	Share of Nonfarm Business Capital Income, Computer Equipment
SHARECOMM	Share of Nonfarm Business Capital Income, Communications Equipment
SHAREOTH	Share of Nonfarm Business Capital Income, Other Equipment
SHARESFT	Share of Nonfarm Business Capital Income, Software
SHARERAD	Share of Nonfarm Business Capital Income, Research and Development
SHAREELA	Share of Nonfarm Business Capital Income, Entertainment, Literary and Artistic
SHARESTR	Share of Nonfarm Business Capital Income, Nonresidential Structures
SHARETOR	Share of Nonfarm Business Capital Income, Rental Residential Structures
SHARELND	Share of Nonfarm Business Capital Income, Land
SHAREINV	Share of Nonfarm Business Capital Income, Inventories
SHARETOTAL	Gross Nonfarm Business Capital Income

Two-year average asset shares of nonfarm business capital income (decimals):

SHAREBAREQC	Two-year Average Rental Share, Computer Equipment
SHAREBARCOMM	Two-year Average Rental Share, Communications Equipment
SHAREBAROTH	Two-year Average Rental Share, Other Equipment
SHAREBARSFT	Two-year Average Rental Share, Software
SHAREBARRAD	Two-year Average Rental Share, Research and Development
SHAREBARELA	Two-year Average Rental Share, Entertainment, Literary and Artistic
SHAREBARSTR	Two-year Average Rental Share, Nonresidential Structures
SHAREBARTOR	Two-year Average Rental Share, Rental Residential Structures
SHAREBARLND	Two-year Average Rental Share, Land
SHAREBARINV	Two-year Average Rental Share, Inventories

Productivity and returns to owner-occupied housing. For the nonfarm business sector, the code calculates an annual index of total factor productivity as the residual in a Cobb-Douglas equation relating sectoral output to sectoral hours and capital services. A quarterly value is interpolated using labor productivity in nonfarm business (LXNFA, output per hour) as a pattern, and a potential value is estimated for the quarterly series. Quarterly values of IPROD for the most recent, incomplete year are extended using a regression of growth rates of IPROD (PCT_IPROD) on growth rates of LXNFA (PCT_LXNFA). For other sectors except the household sector, the code calculates quarterly labor productivity as dollars of sectoral output per labor-hour (in 2009 dollars) and estimates potential values for each series. For the household sector, the code calculates an annual return as household sector value added divided by the value of the owner-occupied housing stock; a potential series is derived by smoothing the historical series using a Hodrick–Prescott filter. All series except those for the household sector are calculated at a quarterly frequency and converted to annual values.

Actual values:

IPROD	Index of Total Factor Productivity (2009=1.00)
JAF	Labor Productivity, Farm Sector
JSVHNP	Labor Productivity, Non-profit Farm Sector
JGFC	Labor Productivity, Federal Government, Civilian
JGFM	Labor Productivity, Federal Government, Military
JGSL	Labor Productivity, State and Local Government
JSVHHH	Rate of Return to Owner-Occupied Residential Housing (decimal)

Potential values:

IPRODFE	Index of Potential Total Factor Productivity (2009=1.00)
JAFFE	Potential Labor Productivity, Farm Sector
JSVHNPFE	Potential Labor Productivity, Non-profit Farm Sector
JGFCFE	Potential Labor Productivity, Federal Government, Civilian
JGFMFE	Potential Labor Productivity, Federal Government, Military
JGSLFE	Potential Labor Productivity, State and Local Government
JSVHHHFE	Potential Rate of Return to Owner-Occupied Residential Housing (decimal)

The calculation of the index of total factor productivity in nonfarm business involves the calculation of an index of labor input (ILAB), a constant related to labor hours (MHNFBCONST), and a constant related to output (GDPCONST). The calculation of potential output in nonfarm business further requires of potential value of the index of labor input (ILBAFE).

Output Residuals. In a few instances, the Fisher aggregations of components of annual real output yield small discrepancies, or residuals, compared with the aggregate values reported by BEA. CBO therefore calculates “potential” values for those residuals by applying a Hodrick-Prescott filter to them, and adds the potential values to the Fisher aggregated potential values. Values are expressed in billions of 2009 dollars.

Actual values:

QGDG_RES	Fisher Residual, Real Gross Domestic Product
QGDG_RES	Fisher Residual, Real Gross Value Added: Government
QGDG_RES	Fisher Residual, Real Gross Value Added: Government: Federal
QGDG_RES	Fisher Residual, Gross Value Added: Government: State and Local
QGDG_RES	Fisher Residual, Real Gross Value Added: Households and Nonprofit Institutions

Potential values:

QGDG_RESFE	Potential Fisher Residual, Real Gross Domestic Product
QGDG_RESFE	Potential Fisher Residual, Real Gross Value Added: Government
QGDG_RESFE	Potential Fisher Residual, Real Gross Value Added: Government: Federal
QGDG_RESFE	Potential Fisher Residual, Gross Value Added: Government: State and Local
QGDG_RESFE	Potential Fisher Residual, Real Gross Value Added: Households and Nonprofit Institutions