Technical Note

Gross Domestic Product, Fourth Quarter and Year 2021 (Advance Estimate)

January 27, 2022

This technical note provides background information about the source data and estimating methods used to produce the estimates presented in the GDP news release; a brief summary of "highlights" is available on BEA's website at www.bea.gov.

COVID-19 Impact on Fourth-Quarter 2021 GDP

Real GDP increased 6.9 percent at an annual rate (1.7 percent at a quarterly rate[1]) in the fourth quarter of 2021, following an increase of 2.3 percent at an annual rate (0.6 percent at a quarterly rate) in the third quarter. In the fourth quarter, COVID-19 cases resulted in continued restrictions and disruptions in the operations of establishments in some parts of the country. Government assistance payments in the form of forgivable loans to businesses, grants to state and local governments, and social benefits to households all decreased as provisions of several federal programs expired or tapered off.

Real GDP for the fourth quarter of 2021 is 3.1 percent above the level of real GDP for the fourth quarter of 2019[2]. The full economic effects of the COVID-19 pandemic cannot be quantified in the GDP estimate for the fourth quarter of 2021 because the impacts are generally embedded in source data and cannot be separately identified.

Key Source Data and Assumptions for the Advance Estimate

The advance estimate of GDP for the fourth quarter is based on source data that are incomplete and subject to updates. Three months of source data were available for consumer spending on goods; shipments of capital equipment; motor vehicle sales and inventories; manufacturing, wholesale, and retail trade inventories; exports and imports of goods; federal government outlays; and consumer, producer, and international prices. For major source data series for which only two months of data were available, or for which data for the fourth quarter are not yet available, BEA's assumptions were based on a variety of sources, most notably: private high-frequency payment card transactions data; industry and trade association reports that include volume data, such as health care patient visits and traveler throughput, as well as recreation services revenues and event attendance; and news reports providing

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[1] Percent changes in quarterly seasonally adjusted series are displayed at annual rates, unless otherwise specified. For more information, refer to the FAQ Why does BEA publish percent changes in quarterly series at annual rates?.

[2] The fourth quarter of 2019 was the most recent quarter prior to the onset of the COVID-19 pandemic. Calculated as the percent change from the fourth quarter of 2019 to the fourth quarter of 2021 in news release table 3, line 1.

information on the operating status of businesses. More information on the source data and BEA assumptions that underlie the fourth-quarter estimate is shown in the Key Source Data and Assumptions table.

Real GDP and Related Aggregates

Real GDP increased 6.9 percent (annual rate) in the fourth quarter, following an increase of 2.3 percent in the third quarter. The increase in real GDP primarily reflected increases in private inventory investment, exports, consumer spending, and nonresidential fixed investment that were partly offset by decreases in both federal and state and local government spending. Imports, which are a subtraction in the calculation of GDP, increased.

- The increase in private inventory investment was led by retail and wholesale trade industries, primarily reflecting Census Bureau book values for all three months of the quarter. Within retail, the leading contributor was motor vehicle dealers, based on monthly inventory data from Census and Wards Intelligence.

- The increases in both exports and imports primarily reflected Census-BEA U.S. International Trade in Goods and Services data and the Census Advance Economic Indicators Report for December.

    - For exports, both goods and services increased. Within goods, the increase was widespread; the leading contributors were non-food and non-automotive consumer goods and nondurable industrial supplies and materials. Within services, the increase was led by travel.

    - The increase in imports primarily reflected an increase in goods, led by non-food and non-automotive consumer goods, as well as capital goods.

- The increase in consumer spending reflected increases in both services and goods. Within services, the leading contributors to the increase were health care, recreation, transportation, and financial services and insurance. Within goods, increases in recreational goods and vehicles and “other” durable goods were partly offset by a decrease in motor vehicles and parts.

    - Within health care, the increase was led by outpatient services (notably paramedical services) and hospitals (notably, nonprofit hospitals), based on Bureau of Labor Statistics (BLS) Current Employment Statistics (CES) data as well as data from trade sources.

    - For recreation, the leading contributor to the increase was membership clubs, sports centers, parks, theaters and museums, based primarily on trade source data on motion pictures box office revenues as well as payment card transactions data on live entertainment and spectator sports.

    - For transportation, the leading contributors to the increase were motor vehicle maintenance and repair, based primarily on payment card transactions data, and air transportation, based on data from the Transportation Security Administration and airline companies' earnings reports.

- For financial services and insurance, the leading contributor to the increase was financial service charges, fees, and commissions (notably, portfolio and investment advice services), based primarily on BLS CES data.

- The increase in recreational goods and vehicles was led by sport and recreational vehicles, and the increase in "other" durable goods was led by jewelry. The estimates were based primarily on Census monthly retail sales (MRTS) data.

- The decrease in motor vehicles and parts was led by decreases in used motor vehicles, based on Census MRTS data as well as BLS consumer price data.

- Within nonresidential fixed investment, increases in intellectual property products and equipment were partly offset by a decrease in structures.

  - The increase in intellectual property products reflected increases in software (notably, prepackaged software) and research and development, based primarily on trends in Census Quarterly Services Survey revenue data as well as BLS CES data.

  - The increase in equipment primarily reflected an increase in information processing equipment (led by computers and peripheral equipment) that was partly offset by a decrease in transportation equipment (notably aircraft and light trucks). For computers and aircraft, the estimates were based primarily on Census-BEA U.S. International Trade in Goods and Services imports data and the Census Advance Economic Indicators Report for December. For light trucks, the estimates primarily reflected registrations data from IHS Markit-Polk.

  - The decrease in structures was led by commercial and health care structures, based primarily on October and November Census Value of Construction Put in Place (VPIP) data, as well as BLS producer price indexes for offices, warehouses, and health care building construction.

- The decrease in federal government spending primarily reflected a decrease in defense spending on intermediate goods and services, notably services, based primarily on Treasury Department data.

- The decrease in state and local government spending primarily reflected declines in compensation of state and local government employees (notably, education), based on BLS employment data, as well as investment in structures (notably, education), based on Census VPIP data as well as the BLS producer price index for new school building construction.

Real final sales to private domestic purchasers, which measures private demand in the domestic economy and is derived as the sum of consumer spending and private fixed investment, increased 2.8 percent in the fourth quarter after increasing 1.4 percent in the third quarter.

The acceleration in real GDP in the fourth quarter (that is, the increase in real GDP in the fourth quarter compared to the increase in the third quarter) primarily reflected an upturn in exports, accelerations in private inventory investment and consumer spending, and a smaller decrease in residential fixed investment that were partly offset by a downturn in state and local government spending. Imports accelerated.

Prices

BEA's featured measure of inflation in the U.S. economy, the price index for gross domestic purchases, increased 6.9 percent in the fourth quarter, following a 5.6 percent increase in the third. Excluding food and energy, gross domestic purchases prices increased 5.9 percent, after increasing 5.1 percent.

The price index for personal consumption expenditures (PCE) increased 6.5 percent in the fourth quarter, after increasing 5.3 percent in the third. Excluding food and energy, the "core" PCE price index increased 4.9 percent, after increasing 4.6 percent. The fourth quarter increase in "core" PCE prices was widespread; the leading contributors were motor vehicles and parts (for both new and used motor vehicles), housing, and food services and accommodations (for meals), based primarily on BLS consumer price indexes.

Disposable Personal Income

Real disposable personal income (DPI) decreased 5.8 percent (at an annual rate) in the fourth quarter, compared with a 4.3 percent decrease in the third. Current-dollar DPI increased 0.3 percent (annual rate) in the fourth quarter, after increasing 0.8 percent in the third.

The increase in fourth quarter current-dollar DPI primarily reflected an increase in compensation that was partly offset by a decrease in personal current transfer receipts (notably, government social benefits) and an increase in personal current taxes.

- Within compensation, the leading contributor to the increase was private wages and salaries, based primarily on BLS CES data.

- Within government social benefits, the leading contributor to the decrease was unemployment insurance, following the expiration of pandemic-related unemployment programs, based on data from the Department of Labor.

- Within personal current taxes, the leading contributor to the increase was federal taxes, primarily reflecting BLS CES wage data as well as Treasury Department collections data.

The personal saving rate was 7.4 percent in the fourth quarter, compared with 9.5 percent in the third. Additional information on factors impacting quarterly personal income and saving can be found in Effects of Selected Federal Pandemic Response Programs on Personal Income.

Federal Government Economic Response to the COVID-19 Pandemic

Since the onset of the COVID-19 pandemic, several legislative acts, including the Coronavirus Aid, Relief, and Economic Security (CARES) Act; the Coronavirus Response and Relief Supplemental Appropriations (CRRSA) Act; and the American Rescue Plan (ARP) Act, were signed into law. The Acts established several temporary programs and provided additional funding for existing federal programs to support individuals, communities, and businesses impacted by the pandemic. Because the effects of the Acts were in the form of transfers to individuals, subsidies to businesses, and grants to state and local governments, their effects on GDP show up indirectly through the components of GDP, such as consumer spending, business investment, and government spending. Thus, BEA cannot separately identify the total effect of the Acts on changes in GDP.

It is possible, however, to identify the impacts of select recovery programs on aggregate federal government spending. Further information on these and other pandemic response programs, including estimates of the effects of these programs on federal government spending is available in Effects of Selected Federal Pandemic Response Programs on Federal Government Receipts, Expenditures, and Saving.

GDP for 2021

Real GDP increased 5.7 percent in 2021 (from the 2020 annual level to the 2021 annual level), in contrast to a decrease of 3.4 percent in 2020. The increase in real GDP primarily reflected increases in consumer spending, nonresidential fixed investment, exports, residential fixed investment, and private inventory investment. Imports increased.

Measured from the fourth quarter of 2020 to the fourth quarter of 2021, real GDP increased 5.5 percent during the period, in contrast to a decrease of 2.3 percent from the fourth quarter of 2019 to the fourth quarter of 2020.

Looking Ahead: 2022 Annual Update of the National Economic Accounts

BEA will release results from the 2022 annual update of the National Economic Accounts, which includes the National Income and Product Accounts as well as the Industry Economic Accounts, on September 29, 2022. The update will present revised statistics for GDP, GDP by Industry, and gross domestic income that cover the first quarter of 2017 through the first quarter of 2022.

Information on the 2022 annual update, as well as a more detailed analysis of the fourth quarter estimates, will be presented in "GDP and the Economy" in the *Survey of Current Business*, BEA's online monthly journal. The complete set of statistics for the fourth quarter is available on BEA's website.

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