

GDP and the Economy

Advance Estimates for the Third Quarter of 2010

REAL GROSS domestic product (GDP) increased 2.0 percent in the third quarter of 2010, according to the advance estimates of the national income and product accounts (NIPAs) (chart 1 and table 1).¹ In the second quarter, real GDP increased 1.7 percent.

The small acceleration in real GDP in the third quarter primarily reflected a sharp deceleration in imports and accelerations in inventory investment and in consumer spending that were partly offset by a downturn in residential fixed investment and by decelerations in nonresidential fixed investment and in exports.²

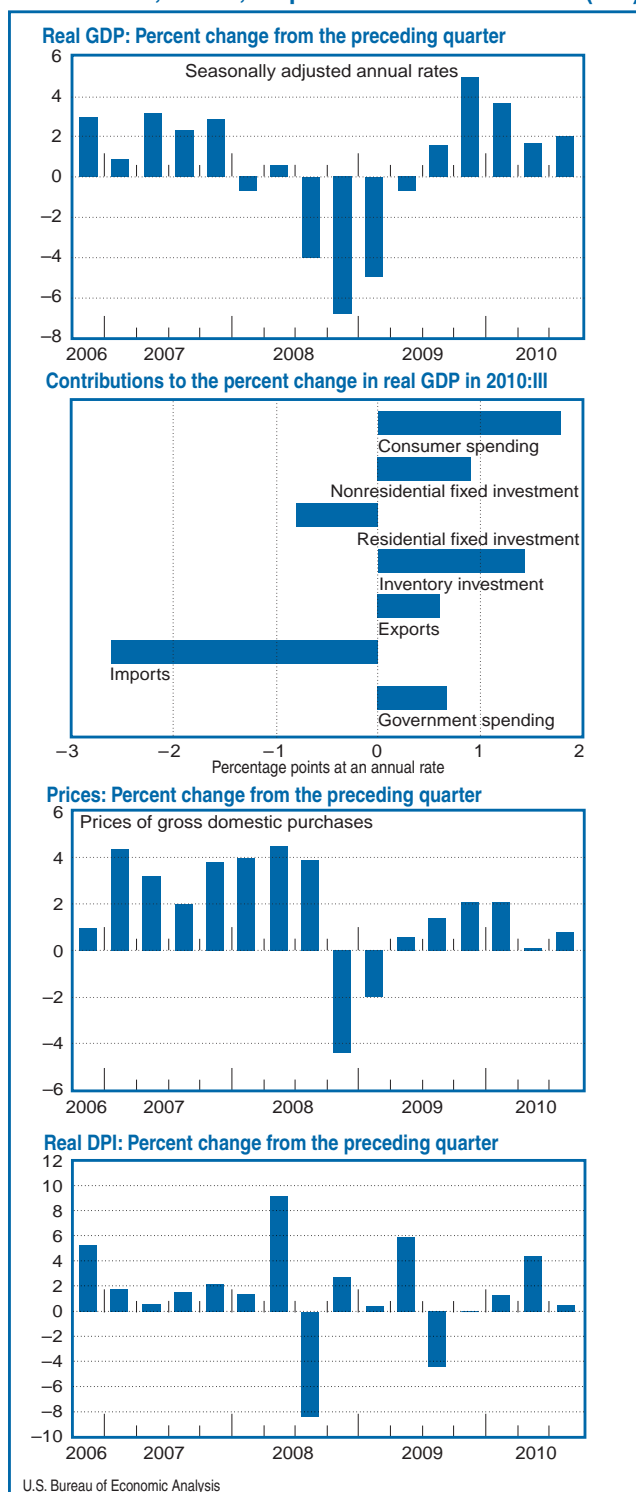
- Prices of goods and services purchased by U.S. residents increased 0.8 percent in the third quarter after increasing 0.1 percent in the second quarter. Energy prices turned up in the third quarter, and food prices decelerated. Excluding food and energy, gross domestic purchases prices increased 0.6 percent after increasing 0.8 percent.
- Real disposable personal income (DPI) increased 0.5 percent in the third quarter after increasing 4.4 percent in the second quarter. Current-dollar DPI increased 1.5 percent in the third quarter after increasing 4.4 percent in the second quarter. The sharp deceleration in real DPI in the third quarter reflected a deceleration in personal income, an acceleration in personal current taxes, and an acceleration in the personal consumption expenditures implicit price deflator, which is used to deflate current-dollar DPI.
- The personal saving rate, personal saving as a percentage of current-dollar DPI, was 5.5 percent in the third quarter; in the second quarter, it was 5.9 percent.

1. "Real" estimates are in chained (2005) dollars, and price indexes are chain-type measures. Each GDP estimate for a quarter (advance, second, and third) incorporates increasingly comprehensive and improved source data. More information can be found at www.bea.gov/about/infoqual.htm and www.bea.gov/faq/national/gdp_accuracy.htm. Quarterly estimates are expressed at seasonally adjusted annual rates, which assumes that a rate of activity for a quarter is maintained for a year.

2. In this article, "consumer spending" refers to "personal consumption expenditures," "inventory investment" refers to "change in private inventories," and "government spending" refers to "government consumption expenditures and gross investment."

Christopher Swann prepared this article.

Chart 1. GDP, Prices, Disposable Personal Income (DPI)



Real GDP Overview

Table 1. Real Gross Domestic Product and Components

[Seasonally adjusted at annual rates]

	Share of current-dollar GDP (percent)		Change from preceding period (percent)					Contribution to percent change in real GDP (percentage points)		
	2010	2009	2010			2009	2010			
	III	IV	I	II	III	IV	I	II	III	
Gross domestic product ¹	100.0	5.0	3.7	1.7	2.0	5.0	3.7	1.7	2.0	
Personal consumption expenditures	70.4	0.9	1.9	2.2	2.6	0.69	1.33	1.54	1.79	
Goods.....	23.1	1.7	5.7	3.4	2.8	0.42	1.29	0.79	0.64	
Durable goods.....	7.4	-1.1	8.8	6.8	6.1	-0.07	0.62	0.49	0.44	
Nondurable goods.....	15.8	3.1	4.2	1.9	1.3	0.49	0.67	0.31	0.20	
Services.....	47.3	0.5	0.1	1.6	2.5	0.27	0.03	0.75	1.15	
Gross private domestic investment	12.9	26.7	29.1	26.2	12.8	2.70	3.04	2.88	1.54	
Fixed investment.....	12.0	-1.3	3.3	18.9	0.8	-0.12	0.39	2.06	0.10	
Nonresidential.....	9.8	-1.4	7.8	17.2	9.7	-0.10	0.71	1.51	0.91	
Structures.....	2.6	-29.2	-17.8	-0.5	3.9	-1.01	-0.53	-0.01	0.10	
Equipment and software.....	7.1	14.6	20.4	24.8	12.0	0.91	1.24	1.52	0.80	
Residential.....	2.2	-0.8	-12.3	25.7	-29.1	-0.02	-0.32	0.55	-0.80	
Change in private inventories.....	0.9	.....	.....	.....	.....	2.83	2.64	0.82	1.44
Net exports of goods and services	-3.8	.....	.....	.....	.....	1.90	-0.31	-3.50	-2.01
Exports.....	12.5	24.4	11.4	9.1	5.0	2.56	1.30	1.08	0.61	
Goods.....	8.7	31.7	14.0	11.5	3.4	2.19	1.09	0.93	0.29	
Services.....	3.9	10.2	5.8	3.9	8.6	0.37	0.21	0.15	0.32	
Imports.....	16.3	4.9	11.2	33.5	17.4	-0.66	-1.61	-4.58	-2.61	
Goods.....	13.5	6.2	12.0	40.5	18.1	-0.68	-1.41	-4.46	-2.25	
Services.....	2.8	-0.5	7.8	4.3	14.1	0.02	-0.20	-0.12	-0.37	
Government consumption expenditures and gross investment	20.5	-1.4	-1.6	3.9	3.4	-0.28	-0.32	0.80	0.68	
Federal.....	8.4	0.0	1.8	9.1	8.8	0.01	0.15	0.72	0.71	
National defense.....	5.6	-2.5	0.4	7.4	8.5	-0.13	0.02	0.40	0.46	
Nondefense.....	2.7	5.6	5.0	12.8	9.6	0.14	0.13	0.32	0.25	
State and local.....	12.1	-2.3	-3.8	0.6	-0.2	-0.29	-0.48	0.08	-0.03	

1. The estimates under the contribution columns are percent changes.

NOTE: Percent changes are from NIPA table 1.1.1, contributions are from NIPA table 1.1.2, and shares are from NIPA table 1.1.10.

Table 2. Real Gross Domestic Product (GDP) by Type of Product

[Seasonally adjusted at annual rates]

	Share of current-dollar GDP (percent)		Change from preceding period (percent)					Contribution to percent change in real GDP (percentage points)		
	2010	2009	2010			2009	2010			
	III	IV	I	II	III	IV	I	II	III	
Gross domestic product ¹	100.0	5.0	3.7	1.7	2.0	5.0	3.7	1.7	2.0	
Final sales of domestic product.....	99.1	2.1	1.1	0.9	0.6	2.19	1.09	0.90	0.57	
Change in private inventories.....	0.9	.....	.....	.....	.....	2.83	2.64	0.82	1.44
Goods.....	27.7	23.9	19.5	-0.8	3.6	5.74	4.90	-0.20	0.98	
Services.....	65.4	0.8	0.0	1.9	2.4	0.57	0.02	1.21	1.55	
Structures.....	6.9	-15.9	-15.2	10.6	-7.2	-1.30	-1.18	0.71	-0.53	
Addenda:										
Motor vehicle output.....	2.2	13.7	42.3	-2.7	21.2	0.25	0.74	-0.06	0.42	
GDP excluding motor vehicle output.....	97.8	4.8	3.0	1.8	1.6	4.76	2.99	1.78	1.59	
Final sales of computers.....	0.6	17.3	19.2	5.3	55.4	0.09	0.10	0.03	0.25	
GDP excluding final sales of computers.....	99.4	5.0	3.7	1.7	1.8	4.92	3.63	1.69	1.76	

1. The estimates under the contribution columns are percent changes.

NOTE: Percent changes are from NIPA table 1.2.1, contributions are from NIPA table 1.2.2, and shares are calculated from NIPA table 1.2.5.

Consumer spending picked up somewhat in the third quarter. Spending for services accelerated, mainly reflecting a pick up in housing and utilities and an upturn in “other” services. Spending for both non-durable goods and durable goods slowed.

Nonresidential fixed investment decelerated, reflecting a deceleration in equipment and software. The main contributors to the deceleration were slowdowns in information processing equipment and software, in industrial equipment, and in transportation equipment. In contrast, spending for structures turned up.

Residential fixed investment turned down, mainly reflecting downturns in “other” structures (especially in brokers’ commissions and improvements) and in single-family structures.

Inventory investment accelerated, mainly reflecting an upturn in manufacturing industries. It added 1.44 percentage points to real GDP growth.

Exports slowed, reflecting a slowdown in goods exports that was partly offset by a pickup in services exports. The largest contributor to the slowdown in goods exports was a downturn in industrial supplies and materials. The pickup in services exports mainly reflected a pickup in travel services.

Imports slowed, reflecting a slowdown in goods imports that was partly offset by a pickup in services imports. All the major components except “other” imports contributed to the slowdown in goods imports; “other” imports turned up. The pickup in services imports was mainly due to upturns in travel and in passenger fares.

Federal government spending slowed somewhat, reflecting a slowdown in nondefense spending that was partly offset by a pickup in defense spending.

State and local government spending turned down, reflecting a larger decrease in consumption expenditures, specifically compensation, and a slowdown in gross investment.

Real final sales of domestic product, real GDP less inventory investment, increased 0.6 percent after increasing 0.9 percent.

Motor vehicle output turned up, increasing 21.2 percent after decreasing 2.7 percent.

Final sales of computers accelerated sharply, increasing 55.4 percent after increasing 5.3 percent.

Prices

Table 3. Prices for Gross Domestic Purchases

[Percent change at annual rates; based on seasonally adjusted index numbers (2005=100)]

	Change from preceding period (percent)				Contribution to percent change in gross domestic purchases prices (percentage points)			
	2009		2010		2009		2010	
	IV	I	II	III	IV	I	II	III
Gross domestic purchases ¹	2.1	2.1	0.1	0.8	2.1	2.1	0.1	0.8
Personal consumption expenditures	2.7	2.1	0.0	1.0	1.82	1.43	-0.03	0.68
Goods	2.8	2.6	-3.6	1.0	0.61	0.57	-0.83	0.21
Durable goods	0.7	-2.0	-1.6	-2.2	0.04	-0.15	-0.11	-0.16
Nondurable goods	3.8	4.7	-4.6	2.5	0.56	0.72	-0.72	0.37
Services	2.7	1.8	1.8	1.0	1.21	0.85	0.80	0.47
Gross private domestic investment	-0.7	-2.0	-0.7	0.4	-0.05	-0.22	-0.09	0.05
Fixed investment	-1.0	-1.4	-0.7	0.2	-0.13	-0.16	-0.08	0.02
Nonresidential	-2.4	-1.9	0.0	0.4	-0.23	-0.18	0.00	0.03
Structures	-2.1	0.9	2.0	2.6	-0.07	0.02	0.05	0.07
Equipment and software	-2.5	-3.1	-0.8	-0.5	-0.16	-0.20	-0.05	-0.03
Residential	4.3	0.6	-3.2	-0.5	0.10	0.01	-0.08	-0.01
Change in private inventories .....	.....	.....	.....	.....	0.07	-0.06	-0.01	0.03
Government consumption expenditures and gross investment	1.5	4.6	0.9	0.4	0.30	0.89	0.17	0.09
Federal	1.5	4.5	0.9	0.4	0.13	0.35	0.07	0.03
National defense	1.6	5.3	1.2	0.4	0.09	0.28	0.06	0.02
Nondefense	1.5	2.8	0.2	0.3	0.04	0.07	0.01	0.01
State and local	1.5	4.6	0.9	0.5	0.18	0.54	0.10	0.06
Addenda:								
Gross domestic purchases:								
Food	0.0	1.3	1.3	0.7	0.00	0.07	0.07	0.04
Energy goods and services	20.2	15.2	-17.4	5.3	0.74	0.58	-0.73	0.20
Excluding food and energy	1.5	1.6	0.8	0.6	1.32	1.45	0.72	0.59
Personal consumption expenditures (PCE):								
Food	-0.1	1.8	1.6	0.3	.....	.....	.....	.....
Energy goods and services	18.0	16.4	-17.5	5.3	.....	.....	.....	.....
Excluding food and energy	2.1	1.2	1.0	0.8	.....	.....	.....	.....
"Market-based" PCE	2.2	1.7	-0.2	1.3	.....	.....	.....	.....
Excluding food and energy	1.4	0.7	1.0	1.1	.....	.....	.....	.....
Gross domestic product	-0.2	1.0	1.9	2.3	.....	.....	.....	.....

1. The estimates under the contribution columns are percent changes

NOTE: Most percent changes are from NIPA table 1.6.7; percent changes for PCE for food and energy goods and services and for PCE excluding food and energy are calculated from index numbers in NIPA table 2.3.4. Contributions are from NIPA table 1.6.8.

Prices paid by U.S. residents, as measured by the gross domestic purchases price index, accelerated in the third quarter. Excluding food and energy, prices slowed slightly, increasing 0.6 percent after increasing 0.8 percent.

Consumer prices picked up, mainly reflecting an upturn in prices paid for goods that was partly offset by a deceleration in prices paid for services. The largest contributor to the upturn in goods prices was an upturn in prices paid for gasoline and other energy goods.

Prices paid for nonresidential fixed investment picked up slightly, reflecting a pickup in prices paid for structures and a smaller decrease in prices paid for equipment and software.

Prices paid for residential fixed investment decreased less in the third quarter than in the second quarter.

Prices paid by government decelerated somewhat, reflecting decelerations in prices paid by the federal government and by state and local governments.

The "market-based" PCE price index turned up, mainly because of the upturn in energy prices. Excluding food and energy, the index increased about the same as in the second quarter.

The GDP price index increased 2.3 percent, 1.5 percentage points more than the increase in the price index for gross domestic purchases, reflecting a decrease in import prices relative to a slight increase in export prices.

Note on Prices

BEA's gross domestic purchases price index is the most comprehensive index of prices paid by U.S. residents for all goods and services. It is derived from the prices of personal consumption expenditures (PCE), private investment, and government consumption expenditures and investment.

BEA also produces price indexes for all components of GDP. The PCE price index is a measure of the total cost of consumer goods and services, including durable goods, nondurable goods, and services. PCE prices for food, energy goods and services, and for all items except food and energy are also estimated and reported. Because prices for food and energy can be volatile, the price measure that

excludes food and energy is often used as a measure of underlying, or "core," inflation. (The core PCE price index includes purchased meals and beverages, such as restaurant meals, and pet food. See [FAQ 518](#) on BEA's Web site.)

BEA also prepares a supplemental PCE price index, the "market-based" PCE price index, that is based on market transactions for which there are corresponding price measures. This index excludes many imputed expenditures, such as financial services furnished without payment, that are included in PCE and the PCE price index. BEA also prepares a market-based measure that excludes food and energy.

Personal Income

Table 4. Personal Income and Its Disposition

(Billions of dollars; quarterly estimates are seasonally adjusted at annual rates)

	Level		Change from preceding period		
	2010	2009	2010		
	III	IV	I	II	III
Personal income	12,539.5	75.0	111.3	123.5	65.7
Compensation of employees, received	7,968.9	32.7	26.7	62.2	48.6
Wage and salary disbursements	6,380.9	21.0	6.5	51.1	38.4
Private industries	5,196.0	21.7	-4.1	43.5	46.6
Goods-producing industries	1,050.2	-0.6	-13.9	9.4	8.6
Manufacturing	665.0	8.5	-5.7	7.4	5.0
Services-producing industries	4,145.9	22.4	9.7	34.1	38.1
Trade, transportation, and utilities	1,004.2	1.3	-0.2	8.8	7.4
Other services-producing industries	3,141.7	21.0	10.1	25.2	30.7
Government	1,184.8	-0.7	10.6	7.6	-8.3
Supplements to wages and salaries	1,588.1	11.7	20.2	11.1	10.3
Proprietors' income with IVA and CCAadj	1,058.8	15.7	8.6	19.0	9.1
Farm	49.8	8.2	0.6	2.1	10.9
Nonfarm	1,009.0	7.5	8.1	16.8	-1.8
Rental income of persons with CCAadj	305.4	3.7	9.9	6.1	6.6
Personal income receipts on assets	1,898.4	-1.9	21.9	3.3	-16.0
Personal interest income	1,183.2	-7.5	2.9	-3.4	-22.1
Personal dividend income	715.2	5.6	19.0	6.8	6.0
Personal current transfer receipts	2,309.8	28.9	57.3	40.6	23.7
Less: Contributions for government social insurance	1,001.9	4.2	13.0	7.8	6.3
Less: Personal current taxes	1,159.6	0.2	17.5	2.6	22.3
Equals: Disposable personal income	11,379.9	74.7	93.9	120.9	43.4
Less: Personal outlays	10,748.9	82.1	98.2	59.8	85.2
Equals: Personal saving	631.0	-7.4	-4.2	61.0	-41.8
Addenda: Special factors in personal income					
In government wages and salaries:					
Federal pay raise	7.3	0.0	0.0	7.2	0.1
Reservists' pay	9.0	0.3	-0.4	0.2	-0.7
In supplements to wages and salaries:					
Employer contributions for social insurance	8.3	0.0	8.3	8.0	0.0
In personal current transfer receipts:					
Cost-of-living adjustments	0.0	0.0	0.0	0.0	0.0
Social security retroactive payments	0.0	2.8	-2.8	0.3	-0.3
Emergency unemployment compensation	53.9	12.6	20.6	-11.9	-13.8
One-time ARRA payments	0.1	-1.2	0.0	0.0	0.0
Refundable ARRA tax credits	16.1	0.0	32.6	0.0	0.0
Other ARRA-related social benefit payments	43.6	0.3	12.2	-9.0	-4.1
In contributions for government social insurance:					
Increase in taxable wage base	8.6	0.0	8.6	0.0	0.0
Changes in premiums for supplementary medical insurance	2.2	0.0	0.0	2.2	0.0
In personal current taxes:					
Federal tax law changes ("Making Work Pay")	-38.6	0.0	9.6	0.0	0.0
Refunds, settlements, and other	4.8	0.0	0.0	4.8	0.0

NOTE: Dollar levels are from NIPA tables 2.1 and 2.2B.
IVA Inventory valuation adjustment

CCAadj Capital consumption adjustment

Personal income, which is measured in current dollars, decelerated in the third quarter, increasing \$65.7 billion after increasing \$123.5 billion. The deceleration primarily reflected a larger decrease in personal interest income, a downturn in nonfarm proprietors' income, and decelerations in personal current transfer receipts and in wage and salary disbursements that were partly offset by a pickup in farm proprietors' income.

The deceleration in wage and salary disbursements primarily reflected monthly employment, average weekly hours, and average hourly earnings.

The pickup in farm proprietors' income primarily reflected an upturn in farm prices.

The downturn in nonfarm proprietors' income mainly reflected a deceleration in mining and downturns in finance and insurance and in real estate and rental and leasing.

The larger decrease in personal interest income reflected a larger third-quarter decrease in interest rates.

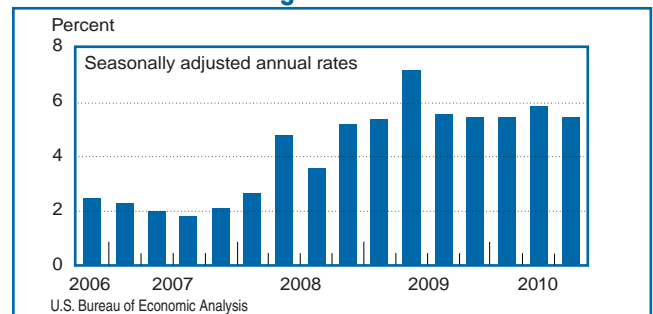
The deceleration in personal current transfer receipts primarily reflected a slowdown in government social benefits to persons. The largest contributor to the slowdown was "other" government social benefits, mainly a deceleration in Medicaid expenditures.

Personal saving decreased \$41.8 billion after increasing \$61.0 billion, reflecting a slowdown in disposable personal income and a pickup in personal outlays.

Saving

The personal saving rate was 5.5 percent in the third quarter. Since the first quarter of 2008—the first quarter of the recent recession that ended in the second quarter of 2009 (as determined by the National Bureau of Economic Research)—the saving rate has averaged 5.2 percent on a quarterly basis, the highest rate since the third quarter of 1998. For a broader view underlying trends in the saving rate, see ["Alternative Measures of Personal Saving"](#) in the October 2010 SURVEY.

Chart 2. Personal Saving Rate



Source Data for the Advance Estimates

Table 5. Source Data and Key Assumptions for the Advance Estimates of GDP for the Second Quarter of 2010

[Billions of dollars, seasonally adjusted at annual rates]

	2010					
	April	May	June	July	August	Sept. ¹
Private fixed investment:						
Nonresidential structures:						
Value of new nonresidential construction put in place	274.1	267.3	263.0	263.5	259.7	261.6
Equipment and software:						
Manufacturers' shipments of complete aircraft	33.2	28.4	32.1	47.9	40.0	29.5
Residential structures:						
Value of new residential construction put in place:						
Single family	120.1	119.5	117.7	114.3	109.5	106.9
Multifamily	13.9	13.2	13.3	13.4	11.8	11.6
Change in private inventories:						
Change in inventories for nondurable manufacturing	3.0	-55.8	-33.0	38.4	-8.9	24.0
Change in inventories for merchant wholesale and retail industries other than motor vehicles and equipment	37.6	36.9	4.2	66.1	51.6	92.2
Net exports: ²						
Exports of goods:						
U.S. exports of goods, international-transactions-accounts basis	1,249.4	1,285.3	1,258.7	1,291.9	1,292.4	1,275.4
Excluding gold	1,232.6	1,271.6	1,245.1	1,274.7	1,267.0	1,257.4
Imports of goods:						
U.S. imports of goods, international-transactions-accounts basis	1,882.4	1,940.9	2,005.4	1,952.9	2,000.3	1,981.9
Excluding gold	1,869.6	1,929.5	1,994.4	1,942.8	1,990.8	1,972.0
Net exports of goods	-633.0	-655.7	-746.7	-661.0	-707.9	-706.6
Excluding gold	-637.0	-657.9	-749.3	-668.1	-723.8	-714.6
State and local government structures:						
Value of new construction put in place	273.9	270.8	276.7	276.0	283.5	279.7

1. Assumption.

2. Nonmonetary gold is included in balance-of-payments exports and imports,

but it is not used directly in estimating exports and imports in the national income and product accounts.

Source Data and Key Assumptions for the Advance Estimates of GDP

While the advance estimates of many components of GDP are based on 3 months of source data, some estimates are based on only 2 months of data. For the following items, the number of months for which data are available is shown in parentheses.

Personal consumption expenditures: sales of retail stores (3), unit auto and truck sales (3), and consumers' shares of auto and truck sales (2);

Nonresidential fixed investment: unit auto and truck sales (3), construction spending (value put in place) (2), manufacturers' shipments of machinery and equipment excluding aircraft (3), shipments of civilian aircraft (2), and exports and imports of machinery and equipment (2);

Residential investment: construction spending (value put in place) (2), single-family housing starts (3), sales of new homes (3), and sales of existing houses (3);

Change in private inventories: trade and nondurable-goods manufacturing inventories (2), durable-goods manufacturing inventories (3), and unit auto and truck inventories (3);

Net exports of goods and services: exports and imports of goods (2);

Government consumption expenditures and gross investment: federal outlays (3), state and local government con-

struction spending (value put in place) (2), and state and local government employment (3);

Compensation: employment, average hourly earnings, and average weekly hours (3); and

GDP prices: consumer price indexes (3), producer price indexes (3), and values and quantities of petroleum imports (2).

Unavailable source data

When source data were unavailable, BEA made various assumptions for September, including the following (table 5):

- An increase in nonresidential structures,
- A decrease in aircraft shipments,
- Decreases in single-family and multifamily residential structures,
- Increases in the change in inventories of nondurable-goods manufacturing industries and of nonmotor vehicle merchant wholesale and retail trade industries,
- A decrease in exports of goods (excluding gold) and a larger decrease in imports of goods (excluding gold), and
- A decrease in state and local government structures.

A more comprehensive list is available on BEA's Web site at www.bea.gov.

Seasonal Adjustment and the Price Index for Imports of Petroleum

Seasonal adjustment is undertaken to remove recurring seasonal variations from economic time series that occur in the same time period and with about the same magnitude each year. It is a statistical procedure that is used to distinguish seasonal fluctuations from changes in trend growth so that the remaining movements in the series better reflect cyclical patterns in economic activity. For example, consumer spending for electronics decreases in January after the holiday season ends, and new home construction increases in the spring as weather conditions improve. Therefore, after seasonal adjustment, the strength in electronics spending (or in new home construction) is measured relative to whether it decreases (or increases) from month to month or quarter to quarter more or less than “normal.” If a time series is not seasonally adjusted, it is often more appropriate to compare values for the same period year over year.

Most quarterly and monthly BEA estimates are seasonally adjusted. The quarterly (and monthly) estimates in the national income and product accounts (NIPAs) are seasonally adjusted at the detailed series level when the series—usually current-dollar values or prices—demonstrate statistically significant seasonal patterns. For most data series that are seasonally adjusted by the source agency, BEA incorporates the seasonally adjusted series. To seasonally adjust a time series, BEA applies factors that are derived from present and past observations of the series to the not seasonally adjusted data.¹

Revisions to the seasonal factors primarily reflect the incorporation of newly available data, which in turn may reflect changes in underlying economic conditions that

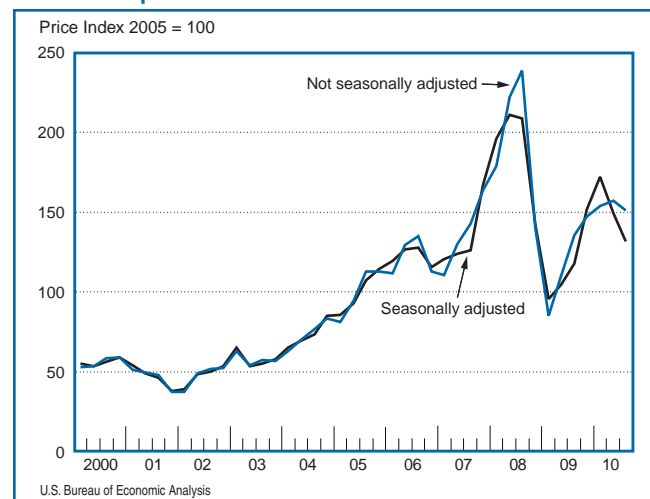
1. In most cases, seasonal factors for a year average to 1.00. For quarterly data, a seasonal factor of less than 1.00 means that for the period, the seasonally adjusted value is higher than the not seasonally adjusted value. Similarly, a seasonal factor greater than 1.00 means that the seasonally adjusted value is lower than the not seasonally adjusted value.

govern the seasonal pattern. For example, in the 2009 comprehensive revision of the NIPAs, BEA began seasonally adjusting petroleum import prices, beginning with 1991, because prices (measured as dollars per barrel) tended to be higher in the second and third quarters than in the first and fourth quarters.² The extreme volatility in petroleum prices over the 2008–2009 time period substantially affected the estimated seasonal factors for recent time periods. Large seasonal factors were predicted for the quarters of 2010 because the seasonal factors were most strongly influenced by the data from those recent years even though the not seasonally adjusted prices in 2010 have not displayed the same magnitude of volatility as in previous years.

Chart A compares the not seasonally adjusted quarterly price for imports of petroleum and products with the published seasonally adjusted quarterly price. The

2. See Clinton P. McCully and Steven Payson, “Preview of 2009 Comprehensive Revision of the NIPAs,” *SURVEY OF CURRENT BUSINESS* 89 (May 2009): 7.

Chart A. Imports of Petroleum and Products



Seasonal Adjustment and the Price Index for Imports of Petroleum

not seasonally adjusted price decreased 88 percent in the fourth quarter of 2008 and decreased 86 percent in the first quarter of 2009—the largest price drops since the crude oil price collapse of 1986. After the declines in 2008 and 2009, the not seasonally adjusted petroleum price began to rebound in the second quarter of 2009 and continued to increase through the second quarter of 2010, not following the “normal” seasonal pattern. As a result, the seasonally adjusted price increased more in the fourth quarter of 2009 and in the first quarter of 2010 than the “normal” seasonal pattern.

For many series, BEA updates seasonal adjustment factors during each annual revision (or comprehensive revision). The estimated factors are derived using the Census Bureau’s X–12 ARIMA program and data through the end of the most recent complete year. The X–12 ARIMA program also produces forecasted seasonal factors into the next calendar year. For example, during the 2010 annual revision, the seasonal factors of the price index for imports of petroleum and products were updated by applying the X–12 ARIMA program to data through 2009, and forecasted seasonal factors were derived for 2010.

Chart B compares the revised seasonal factors of the price index for imports of petroleum and products from the 2010 annual revision with the seasonal factors from the 2009 comprehensive revision. As the chart shows, updating the seasonal factors through 2009 had the most impact on the seasonal factors for the first and third quarters of the years shown. The revisions to the seasonal factors reflect the tradeoff between employing a flexible seasonal adjustment method that allows for changes in the underlying seasonal factors and the risk that the estimated seasonal factors may be overly sensitive to the volatility of the series.

Many forecasters of GDP use information from the Census Bureau’s “U.S. International Trade in Goods and Services” on monthly real exports and imports to project

the impact of the trade data on GDP. However, caution is needed when comparing the growth rates based on the Census Bureau data for real imports of petroleum with the corresponding NIPA estimates because of differences in seasonal adjustment.³ In the NIPAs, BEA deflates imports of petroleum and products using a seasonally adjusted price index, while the Census Bureau uses a not seasonally adjusted price index. In general, BEA and the Census Bureau attempt to use consistent price indexes where possible, and currently, the two agencies are investigating the most appropriate seasonal adjustment for both the price index and real imports of petroleum and products.

3. The NIPA estimates are derived from BEA’s international transactions accounts, which include adjustments to the Census Bureau data for purchases of fuel by U.S. ocean and air carriers in foreign ports and for purchases of fuel abroad by the U.S. military. For more information on balance of payments adjustments to Census trade data go to BEA’s Web site at www.bea.gov. Under “International,” click on “Balance of Payments,” and next to “Interactive Tables,” click on “Detailed estimates,” and then on “Table 2a. U.S. Trade in Goods,” which presents the balance of payments adjustments at the top of the table in section A.

Chart B. Seasonal Factors for the Price Index for Imports of Petroleum and Products

