Comprehensive Revision

- Occurs about every five years (this is the 14\textsuperscript{th})
- Incorporates the results of the 5-year economic census and the benchmark input-output accounts
- Updates the reference year for prices, quantities (2009)
- Major changes in concepts, methods, and tables
- The entire time span (1929 to present) is open for revisions
Changes in Definitions and Presentations

- **Major conceptual changes:**
  - Capitalize research & development (R&D)
  - Capitalize entertainment, literary, and artistic originals
  - Expanded capitalization of ownership transfer costs of residential housing
  - Accrual treatment of defined benefit pension plans

- **Major table changes:**
  - Intellectual property products
  - New pension tables
Major Statistical Changes

- Benchmark input-output accounts for 2007
- Improved measures of implicit services of commercial banks
- State & local government defined-contribution pension plans
- Adjustment to proprietors’ income for corporate partners
- Regulated investment companies distributions
- Mortgage interest paid for housing
Reasons for Changes

- Changes in the economic environment
  - Growing importance of intellectual property products in business, productivity

- Financial crisis and recession
  - Exposed vulnerabilities in pension promises
  - Data gaps in financial services

- Updated international guidelines
  - *System of National Accounts 2008*
  - Maintain comparability of GDP across countries, while allowing accounts to remain up to date
New and Revised Source Data

- **Census Bureau surveys:**
  - Annual survey of manufactures
  - Annual retail trade survey
  - Annual wholesale trade survey
  - Services annual survey
  - Construction spending (value put in place)
  - Government finances

- **Bureau of Labor Statistics:**
  - Wage and salary data

- **Internal Revenue Service:**
  - Tax returns for corporations and for sole proprietorships and partnerships

- **Office of Management and Budget:**
  - Federal government budget data

- **BEA:**
  - International transactions accounts
Average annual rates of change of real GDP

<table>
<thead>
<tr>
<th>Period</th>
<th>Previously published</th>
<th>Revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>1929-2012</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td>1959-1992</td>
<td>3.4</td>
<td>3.4</td>
</tr>
<tr>
<td>1992-2007</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>2007-2012</td>
<td>0.6</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Real gross domestic product
[Percent change from preceding period]

Percent

Previously published
Revised
<table>
<thead>
<tr>
<th>Period</th>
<th>Previously Published</th>
<th>Revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990Q3-1991Q1</td>
<td>-2.7</td>
<td>-2.6</td>
</tr>
<tr>
<td>1991Q1-2001Q1</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>2001Q1-2001Q4</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>2001Q4-2007Q4</td>
<td>2.7</td>
<td>2.8</td>
</tr>
<tr>
<td>2007Q4-2009Q2</td>
<td>-3.2</td>
<td>-2.9</td>
</tr>
<tr>
<td>2009Q2-2013Q1</td>
<td>2.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>
Average annual rates of change of real GDP and its major components, 2002 to 2012

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>PCE</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Nonres Fixed</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Res Fixed</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Exports</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Imports</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>GOV</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
<tr>
<td>FSDP</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.4</td>
<td>2.6</td>
<td>5.3</td>
<td>5.2</td>
<td>5.3</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Previously published
Revised
Real gross domestic product
[Percent change from preceding period, SAAR]
Price index for gross domestic purchases

[Percent change from preceding period, SAAR]
Real gross domestic income

[Percent change from preceding period, SAAR]
Real GDI and Real GDP
[Billions of chained (2009) dollars]
Statistical discrepancy as % of GDP

Percentage

Previously published
Revised

07q1 08q1 09q1 10q1 11q1 12q1 13q1
Personal saving as a percentage of DPI

Revision in percentage points, 2007-2012

Previously published  Revised

Percent

0.6  -0.4  1.4  0.5  1.5  1.5

07q1  08q1  09q1  10q1  11q1  12q1  13q1

www.bea.gov
Expenditures on R&D have the characteristics of fixed assets and should be treated as investment:

- Ownership rights, long-lasting, used in production

Previous treatment:

- Business R&D expenditures were classified as intermediate inputs
- R&D expenditures of nonprofit institutions and governments were included in consumption expenditures

New treatment:

- R&D expenditures by businesses, NPISH, and governments are counted as fixed investment
- Depreciation of R&D added to consumption of fixed capital (CFC)
Impact of Capitalizing R&D

- Total R&D investment for 2012: $417.7 billion
  - 2.6% of (revised) GDP
  - Business R&D: $248.7 billion
    - Formerly treated as intermediate spending
  - Government & nonprofit R&D: $169.0 billion
    - Reclassified from consumption to investment

- Impact on GDP revision for 2012: $396.7 billion
  - 2.5% of (previously published) GDP
  - Business investment added to GDP: $248.7 billion
  - Government & nonprofit—add CFC for R&D: $148.0 billion
Entertainment, Literary, and Artistic Originals

- Original films, sound recordings, manuscripts, etc., that can be used for the production and sale of copies

- Estimates for several types, including:
  - Motion pictures
  - Long-lasting television programs
  - Books
  - Music compositions and recordings
  - Miscellaneous artwork

- Treatment as fixed investment similar to R&D, except entirely in private sector
Real private intellectual property products

[Percent change from preceding period, SAAR]

Private Investment in IPP

[Percent Change from Previous Quarter]
Accrual-Based Measures of Pensions

- New measures for defined-benefit (DB) plans

- Accrual-based accounting
  - Matches income earned with related production
  - Recognizes employer liabilities for promised pension benefits
  - Replaces cash-based accounting

- Compensation of employees
  - Deferred compensation
  - Benefits accrued on services rendered in current period

- Interest
  - Benefits accrued on services rendered in past periods
  - Includes interest on unfunded actuarial liabilities
Composition of revisions to compensation

[Revision in level]
Accrued interest for unfunded actuarial liabilities

Billions of dollars

-20 0 20 40 60 80 100 120 140 160 180 200 220


from private business
from federal
from state and local
Real gross domestic product
[Percent change from preceding period, SAAR]
Revisions to percent change in real GDP and to contributions to percent change - 2009

GDP was revised from -3.1 to -2.8.

2009

- GDP
- PCE
- Investment
- Exports
- Imports
- GOV
Revisions to percent change in real GDP and to contributions to percent change - 2010

GDP was revised from 2.4 to 2.5.
Revisions to percent change in real GDP and to contributions to percent change - 2011

GDP was unrevised at 1.8.
Revisions to percent change in real GDP and to contributions to percent change - 2012

GDP was revised from 2.2 to 2.8.
Revisions to percent change in real GDP and to contributions to percent change – 2010Q2

GDP was revised from 2.2 to 3.9.

2010Q2

<table>
<thead>
<tr>
<th>Percentage points</th>
<th>GDP</th>
<th>PCE</th>
<th>Investment</th>
<th>Exports</th>
<th>Imports</th>
<th>GOV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7</td>
<td>0.40</td>
<td>1.21</td>
<td>-0.04</td>
<td>0.08</td>
<td>0.02</td>
<td></td>
</tr>
</tbody>
</table>
Revisions to percent change in real GDP and to contributions to percent change – 2011Q1

GDP was revised from 0.1 to -1.3.

- GDP: -1.4
- PCE: -0.80
- Investment: -0.43
- Exports: -0.27
- Imports: 0.26
- GOV: -0.12

2011Q1
Revisions to percent change in real GDP and to contributions to percent change – 2012Q1

GDP was revised from 2.0 to 3.7.

Percentage points

2012Q1

- GDP
- PCE
- Investment
- Exports
- Imports
- GOV
Real personal consumption expenditures

[Percent change from preceding period, SAAR]
Real PCE for goods
[Percent change from preceding period, SAAR]

Revision in percent change, 2007-2012

Previously published
Revised
Real PCE for services
[Percent change from preceding period, SAAR]

Previously published
Revised
Real nonresidential fixed investment

[Percent change from preceding period, SAAR]
Real nonresidential structures

[Percent change from preceding period, SAAR]
Real nonresidential equipment

[Percent change from preceding period, SAAR]

*Values are unpublished calculations.

*Previously published*  Revised

Revision in percent change, 2007-2012

-2007: 0.6
-2008: -0.2
-2009: -1.0
-2010: 4.5
-2011: 0.2
-2012: 0.3
Real residential fixed investment

[Percent change from preceding period, SAAR]
Change in real private inventories
[Billions of chained dollars, SAAR]
Real exports of goods and services

[Percent change from preceding period, SAAR]
Real imports of goods and services

[Percent change from preceding period, SAAR]

-40 -30 -20 -10 0 10 20 30

07q1 08q1 09q1 10q1 11q1 12q1 13q1

Percent

Previously published  Revised

Revision in percent change, 2007-2012

-0.1 0.1 0.3 0.1 -0.2
Real federal government spending

[Percent change from preceding period, SAAR]
Real state and local government spending

[Percent change from preceding period, SAAR]
Price index for gross domestic purchases
[Percent change from preceding period, SAAR]
Price index for gross domestic purchases, excluding food and energy
[Percent change from preceding period, SAAR]
Price index for PCE
[Percent change from preceding period, SAAR]

Percent index for PCE

Previsously published
Revised

Revision in percent change, 2007-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision</td>
<td>-0.2</td>
<td>-0.2</td>
<td>-0.2</td>
<td>-0.2</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Price index for PCE, excluding food and energy

[Percent change from preceding period, SAAR]
Compensation of employees

[Percent change from preceding period, SAAR]

Revision in percent change, 2007-2012

Previously published
Revised
Compensation of employees
[billions of dollars]

### Levels

- **2007**: 7,200
- **2008**: 7,400
- **2009**: 7,600
- **2010**: 7,800
- **2011**: 8,000
- **2012**: 8,200
- **2013**: 8,400
- **2014**: 8,600
- **2015**: 8,800
- **2016**: 9,000

### Revision in level, 2007-2012

- **2007**: 43.2
- **2008**: 10.9
- **2009**: -11.6
- **2010**: -2.7
- **2011**: -16.7
- **2012**: 18.7

### Previous vs. Revised

- **Previously published**: Dashed line
- **Revised**: Solid line

www.bea.gov
Compensation of employees

[Revisions in level]

Billions of dollars

- Total compensation
- Wages and salaries
- Supplements

2009 2010 2011 2012
Corporate profits from current production
[Percent change from preceding period, quarterly rate]
Corporate profits from current production

[Revisions in level]

Billions of dollars

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Domestic financial</th>
<th>Domestic nonfinancial</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Personal income

[Percent change from preceding period, SAAR]
Personal income and its components

[Revisions in level]
Real disposable personal income (DPI)

[Percent change from preceding period, SAAR]

Percent change from preceding period, SAAR

<table>
<thead>
<tr>
<th>Period</th>
<th>07q1</th>
<th>08q1</th>
<th>09q1</th>
<th>10q1</th>
<th>11q1</th>
<th>12q1</th>
<th>13q1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent change</td>
<td>-10</td>
<td>-8</td>
<td>-6</td>
<td>-4</td>
<td>-2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Revision in percent change, 2007-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent change</td>
<td>-0.3</td>
<td>-0.9</td>
<td>2.3</td>
<td>-0.7</td>
<td>1.1</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Previously published
Revised
Personal saving as a percentage of DPI

Revision in percentage points, 2007-2012

Previously published
Revised

Percent

04q1 05q1 06q1 07q1 08q1 09q1 10q1 11q1 12q1 13q1

0.6 1.4 0.5 1.5 1.5

0.4

0.5

1.0

1.5

2.0

2007 2008 2009 2010 2011 2012
Gross (national) saving as a percentage of gross national income

Percent

Previously published

Revised
Selected components of national saving

[Revisions in level]

Billions of dollars

- Personal saving
- Undistributed profits
- Government saving