Outline

- State of the Industry Economic Accounts
  - Fully integrated accounts
- Satellite Accounts
- Integrated GDP & Productivity Account at the Industry level
- Quarterly GDP by Industry
- Future Directions
Integration of the National and Industry Economic Accounts

- 2014 comprehensive revision marks the first time that the Industry Economic Accounts (IEAs) and National Income and Product Accounts (NIPAs) are fully consistent with one another.

- Benchmark I-O accounts establish both levels and commodity composition of GDP final use categories:
  - Provide critical information for estimating GDP (by extrapolation) for periods after benchmark years.

- Fully consistent benchmark I-O accounts.
Private Fixed Investment in Communications Equipment
$106.2 Billion in 2007
Further Integration Possibilities

- Intellectual property products bridge
- A suite of GDP statistics by legal form of organization, and by industry group?
- Benchmark Gross Domestic Income?
Satellite Accounts
“The positive value of arts and culture on society has been understood on a human level for millennia. With this new effort, we are now able to quantify the impact of arts and culture on GDP for the very first time.”

Penny Pritzker
U.S. Secretary of Commerce
Uses BEA’s I-O framework to provide:

- Information on a select group of arts and cultural goods and services that are currently in the U.S. GDP accounts, but not clearly visible

- A detailed accounting of the economic contribution of the arts and cultural sector

- An estimate of arts and culture employment
Which industries within the ACPSA are the largest?

ACPSA Value-added by Industry, 2011
($Billions)

- Information
- Art support
- Design Services
- Performing Arts
Quarterly Growth in Real Tourism Spending

U.S. Bureau of Economic Analysis
Future Satellite Accounts?

- Health care
- Small business account
- Energy
- Factoryless goods producers
- Information and communications technology
Integrated GDP & Productivity Account at the Industry Level
Motivation

• Long-standing call for statistics on the sources of growth
  ▪ Solow (1957), Denison (1967), Griliches and Jorgenson (1967)
  ▪ Postwar Recovery, Big Slump, IT Boom, the Great Recession
  ▪ “… differences between the BEA and BLS estimates have led many researchers to construct their own measures …”

• The Advisory Committee on Measuring Innovation in the 21st Century: A Report to the Secretary of Commerce (January 2008)
  ▪ “Develop annual, industry-level measures of total factor productivity …”
GDP integrated with productivity statistics

- Allows for integrated analysis on the sources of growth in the economy
  - Jorgenson and Landefeld (2006) provided blueprint for United States
  - Fleck, Rosenthal, Russell, Strassner, and Usher (2013) integrated account for GDP at the industry level
    - www.bea.gov/industry/index.htm#integrated
Big picture questions

- What are the industry sources of GDP and multifactor productivity (MFP) growth?
  - For example, what is the role of Manufacturing?

- What is the contribution of:
  - Information-communications-technology to growth and productivity?
  - Intellectual property products to growth and productivity? Forthcoming ...
Sources of economic growth, 1998-2011

- Other
- FIRE
- Prof and business services
- Information
- Trade
- Manufacturing
- Labor Input
- MFP
- Capital Input

Real Value Added Contributions by Sector

Sources of Real Value Added Growth
Sources of multifactor productivity growth

- Manufacturing accounted for more than 75 percent of MFP growth!
Industry sources of growth analysis

- Requires an industry-level production account
- Consistent with GDP constructed within an Input-Output Framework
  \[ Y_Q Y_P = K_Q K_P + L_Q L_P + X_Q X_P = VA_Q VA_P + X_Q X_P \]
- Symmetric treatment of outputs, intermediate inputs, and value-added inputs
  - Gross output, Intermediate inputs, value added: BEA GDP by industry
  - Capital Input: BLS, based on BEA Fixed Assets
  - Labor Input: Hours based on BLS Survey data; Composition, based on work of Jorgenson, Ho, and Samuels (2013)
Contributions to aggregate MFP by industry
Sources of economic growth

- Capital input accounted for about 60 percent of growth
  - 60 percent due to IT-using industries

- MFP accounted for 25 percent
  - 65 percent due to IT-producing industries

- Labor input accounted for about 15 percent

<table>
<thead>
<tr>
<th></th>
<th>1998-2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GDP</strong></td>
<td>1.88</td>
</tr>
<tr>
<td>IT-producing industries</td>
<td>0.40</td>
</tr>
<tr>
<td>IT-using industries</td>
<td>1.16</td>
</tr>
<tr>
<td>Non-IT industries</td>
<td>0.31</td>
</tr>
<tr>
<td><strong>Capital Input</strong></td>
<td>1.09</td>
</tr>
<tr>
<td>IT-producing industries</td>
<td>0.07</td>
</tr>
<tr>
<td>IT-using industries</td>
<td>0.63</td>
</tr>
<tr>
<td>Non-IT industries</td>
<td>0.39</td>
</tr>
<tr>
<td><strong>Labor Input</strong></td>
<td>0.28</td>
</tr>
<tr>
<td>IT-producing industries</td>
<td>0.01</td>
</tr>
<tr>
<td>IT-using industries</td>
<td>0.36</td>
</tr>
<tr>
<td>Non-IT industries</td>
<td>-0.09</td>
</tr>
<tr>
<td><strong>Multifactor productivity</strong></td>
<td>0.50</td>
</tr>
<tr>
<td>IT-producing industries</td>
<td>0.32</td>
</tr>
<tr>
<td>IT-using industries</td>
<td>0.17</td>
</tr>
<tr>
<td>Non-IT industries</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Note: Contributions to GDP growth, avg annual
Future directions for integrated account

▪ Near term: Incorporate Intellectual Property Products and results of the comprehensive revision
  ▪ Rosenthal, Russell, Samuels, Strassner, Usher (2014) to be presented at 3rd World KLEMS (http://www.worldklems.net/)
  ▪ Begin regular updates, along with annual revisions

▪ Longer run?
  ▪ Extend historical accounts – would require historical Input-Output accounts on NAICS
  ▪ Integrated account by Legal form of organization
Quarterly GDP by Industry Statistics for the United States
Motivation

- Great Recession and subsequent recovery highlighted need for more “real-time” data

- Supplement existing quarterly/monthly indicators of industry performance—such as employment, sales & shipments, profits, prices

- Comprehensive and consistent picture of industries’ overall performance
  - Analyses of business cycle dynamics and the sources of U.S. economic growth
Quarterly GDP by Industry

- Launched April 25\textsuperscript{th}; 2005:I – 2013:IV

- Available within 30 days after “3\textsuperscript{rd}” release of GDP
  - Feature real value added by industry
  - Integrated statistics for gross output and intermediate inputs
  - 22 major industry sectors to begin ...

- Made possible with the expansion of source data, particularly for the services sector
  - Census Bureau Quarterly Services Survey
  - Bureau of Labor Statistics Producer Price Indexes
Methodology: balanced input-output framework and double deflation

```
<table>
<thead>
<tr>
<th>INDUSTRIES</th>
<th>FINAL USES</th>
<th>Total Commodity Output and Value Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining and Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade and Transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance, Insurance, and Real Estate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal Consumption Expenditure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Private Fixed Investment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in Private Inventories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Net Exports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Government Consumption and Investment</td>
<td></td>
</tr>
</tbody>
</table>

- Adjusts during balancing
- A function of Gross Domestic Income and Gross Output by Industry
- NIPA: final expenditures
- Make table: Total Industry Output and Final Uses
```

www.bea.gov
Comparisons of Real GDP
An Inside Look at U.S. Producers

- GDP decelerated in the 4th Quarter – increasing 2.6 percent after an increase of 4.1 percent in the 3rd
  - Slowdown in the services-producing sector—led by real estate rental and leasing, and retail trade

- Pickup in growth in the Goods sector—led by nondurable-goods manufacturing

- Government contracted for 5th consecutive quarter
Great Recession and Recovery—revisited
Gross output and value added for manufacturing
Future directions for quarterly statistics

- Expand industry detail from 22 to 69
- Accelerate release to coincide with 3rd estimate of U.S. GDP

Longer run:
  - “Advance” release of GDP by industry?
  - A 3rd, “production” measure of GDP?
Future directions for the Industry Accounts

- What’s the appropriate direction given tradeoffs among these initiatives? Why?
  - Integrated Industry Economic Accounts
    - Benchmarked GDI, statistics by LFO
  - Satellite Accounts
    - Health, SBA, Energy, FGP, ICT
  - Integrated GDP & Productivity Account
    - Historical accounts; statistics by LFO
  - Quarterly GDP by industry
    - Coincident “Advance” release
    - 3rd Measure of GDP via “production” approach