Options for Integrating the Annual Industry Accounts

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I. Overview of the Accounts

II. Benefits of Integration

III. Steps to Integration

IV. Results of Integration: Timing and Products

V. Questions
The Accounts

- Benchmark I-O Accounts
- Annual I-O Accounts
- GDP-by-Industry Accounts
I-O Accounts:

✓ Prepared within a balanced framework

✓ Focus primarily on products

✓ Directly estimate gross output and intermediate inputs

✓ Residual: Value Added / Gross Output - Intermediate Inputs
GDP-by-Industry Accounts:

- Focus primarily on industries
- Directly estimate gross output and value added
- Value Added = Compensation of Employees + Property-Type Income + Indirect Business Taxes
- Residual: Intermediate Inputs / Gross Output - Value Added
- Also estimate real (inflation-adjusted) measures
## Value Added by Industry for 1992
(billions of dollars)

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>I-O Accounts</th>
<th>GDP-by-Industry Accounts</th>
<th>Percent Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing sector</td>
<td>1,171.4</td>
<td>1,082.0</td>
<td>-8.3</td>
</tr>
<tr>
<td>Trade sector</td>
<td>928.4</td>
<td>966.3</td>
<td>3.9</td>
</tr>
<tr>
<td>Services sector</td>
<td>1,206.0</td>
<td>1,209.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>
Which data are better? It depends…

- **I-O Accounts**
  - Value Added / Gross Output - Intermediate Inputs
  - Quality of gross-output data is high
  - Quality of intermediate-inputs data depends on time period and industries covered

- **GDP-by-Industry Accounts**
  - Value Added / Compensation of Employees + Property-Type Income + Indirect Business Taxes
  - Quality depends on consistency of source data
  - Quality of property-type income data depends on company-establishment adjustments to profits, net interest, and capital consumption allowances by industry
Benefits of Integration

- Improve the consistency of the industry accounts: A common set of estimates for gross output, intermediate inputs, and value added

- Use the best available source data

- Improve the reliability and accuracy of the estimates
  - Estimates prepared within a balanced framework
  - Review focuses on both industries and products

- Provide feedback to the NIPA’s
For now …

Partial integration
- Annual I-O and GDP-by-Industry Accounts
- Incorporate information from the Benchmark I-O Accounts

In the longer run …

Full industry integration
- Benchmark I-O, Annual I-O, and GDP-by-Industry Accounts
- A production-based approach
- Requires improved/expanded source data
- Alternative measure of GDP
Steps to Integration

**Step 1.** Develop a “1997 Prime” benchmark I-O table

**Step 2.** Develop a time series of gross output, intermediate inputs, and value added by industry

**Step 3.** Develop a time series of balanced Annual I-O tables

**Step 4.** Develop real (inflation-adjusted) measures
Integration

**Step 1.** Develop a “1997 Prime” benchmark I-O table

- The “1997 Prime” table provides the starting point for integrating the industry accounts
  - Incorporates the results of the 2003 NIPA comprehensive revision
  - Provides “best level” estimates of gross output, intermediate inputs, and value added

- Options for setting the levels of value added
  - Use the value-added estimates from the 1997 Benchmark I-O Accounts
  - Use the value-added estimates from the GDP-by-Industry Accounts
  - Use both--undertake industry-specific evaluations
Step 2. Develop a time series of gross output, intermediate inputs, and value added by industry

✓ Gross-output, intermediate inputs, and value-added levels are set by the “1997 Prime” benchmark I-O table.

✓ Source data to extrapolate gross output by industry are available (for example, Census Bureau annual surveys).

✓ Options for extrapolating value added by industry
  - Extrapolate with estimates of gross output by industry--assume constant, nominal I-O ratios
  - Extrapolate with estimates of value added from the GDP-by-Industry Accounts.
## Extrapolated Value Added for 1995

(billions of dollars)

<table>
<thead>
<tr>
<th></th>
<th>Gross-Output Extrapolation</th>
<th>Gross Domestic Income Extrapolation</th>
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<tbody>
<tr>
<td>Goods-producing industries</td>
<td>1,880.2</td>
<td>1,880.4</td>
</tr>
<tr>
<td>Services-producing industries</td>
<td>4,693.7</td>
<td>4,510.4</td>
</tr>
<tr>
<td>Government</td>
<td>989.5</td>
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<td>Total value added</td>
<td>7,563.4</td>
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<td>Published GDP</td>
<td>7,400.5</td>
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<tr>
<td>Level difference</td>
<td>-162.9</td>
<td>20.3</td>
</tr>
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<td>Percent difference</td>
<td>-2.2</td>
<td>0.3</td>
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Integration

**Step 3.** Develop a time series of balanced Annual I-O tables

- Each year’s Annual I-O table is balanced given the initial estimates of gross output, intermediate inputs, value added, and final demand.

- Review of the balanced I-O tables
  - Industry and product review--industry I-O ratios and commodity ratios
  - Feedback to the NIPA’s
  - Time-series continuity
Integration

Step 4. Develop real (inflation-adjusted) measures

- The double-deflation procedure is applied to the time series of balanced Annual I-O tables
  - Price and quantity indexes, contributions, and unit costs
  - Greater consistency with the expenditures-based measures of real GDP
Preliminary Results are Encouraging:

Comparison of Average Annual Growth Rates for Real GDP

- Published GDP: 3.69
- Published GDP by Industry: 4.03
- "Integrated" GDP by Industry: 4.3

1992-2000: 3.69
1995-2000: 4.03
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Comparison of Average Annual Growth Rates for Real GDP

1992-2000
1995-2000

Published GDP
Published GDP by Industry
"Integrated" GDP by Industry
Results of Integration: Timing and Products

- Comprehensive revision to the annual industry accounts released in the Spring of 2004
  - Accelerated Annual I-O Accounts
  - Consistent with the 2003 NIPA comprehensive revision
  - NAICS-based
  - Common level of industry detail
Questions

• Is partial integration the best approach in the short-term, given current source-data limitations?

• Do the “Steps to Integrate” seem reasonable? Are there details that you would like to elaborate on?

• Do you agree with the extrapolation procedures proposed for gross output, intermediate inputs, and value added by industry (Step 2)?