U.S. PPI Program Enhancement: Adding Services & Construction to PPI’s Primary Aggregation Structures (FD-ID)

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Introduction

- With the January 2011 data release, PPI introduced a new experimental index aggregation system, now called Final Demand-Intermediate Demand (FD-ID)

- PPI plans to shift the focus of its press release to this new FD-ID system with the release of data for January 2014
Prior to the mid 1980s, PPI produced only goods based price indexes. Due to the rapid growth of the services sector, the PPI undertook an effort to expand its coverage to include services and construction price indexes.
Introduction – Long-Term PPI Goal

- The Stage of Processing (SOP) system indexes are currently the focus of the PPI press release.
- The SOP indexes are aggregate indexes composed only of goods prices.
- Since the expansion initiative began, PPI planned to add services and construction price indexes to the aggregate indexes featured in the press release.
- Transition to FD-ID system is the first change in PPI’s headline number since March 1978.
Introduction – Coverage

- Coverage of the service and construction sectors is high enough to produce meaningful new aggregate inflation numbers that include goods, services, and construction

  - 72 percent of services covered (measured by Census revenue)
  - 34 percent of construction covered (measured by Census revenue)
Current SOP system

- **Finished goods**
  - Goods sold as personal consumption and capital investment

- **Intermediate goods**
  - Processed goods purchased by businesses as inputs to production

- **Crude goods**
  - Unprocessed goods purchased by businesses as inputs to production
Criteria for new PPI Aggregation System

- Include all commodities for which PPI currently has indexes
- Cover both intermediate and final demand
- Additional indexes should be able to be added to the system
- Eliminate or minimize multiple counting problems
- Conceptually understandable
- Analytically useful:
  - Price transmission analysis
  - Source of inflation pressures
Final Demand-Intermediate Demand System

- Expands coverage beyond SOP system by adding services, construction, exports, and government purchases
  - more than doubles PPI coverage of the United States economy as compared to SOP system
  - coverage is over 75 percent of in-scope domestic production
Final Demand-Intermediate Demand System

- System contains two main portions
  - Final demand - personal consumption, capital investment, government, export
  - Intermediate demand - purchases by business of inputs to production
Final Demand

- Indexes track prices for commodities sold to all categories of final demand.
- Indexes organized by type of commodity:
  - Goods
  - Transportation and warehousing services
  - Trade Services
  - Services excluding trade, transportation, and warehousing
  - Construction
  - Overall
## Final Demand Structure

<table>
<thead>
<tr>
<th>Index</th>
<th>Relative importance (December 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final demand</td>
<td>100.000</td>
</tr>
<tr>
<td>Final demand goods</td>
<td>34.518</td>
</tr>
<tr>
<td>Final demand foods</td>
<td>5.582</td>
</tr>
<tr>
<td>Final demand energy</td>
<td>6.790</td>
</tr>
<tr>
<td>Final demand goods less foods and energy</td>
<td>22.146</td>
</tr>
<tr>
<td>Final demand services</td>
<td>63.443</td>
</tr>
<tr>
<td>Final demand trade services</td>
<td>20.390</td>
</tr>
<tr>
<td>Final demand transportation and warehousing services</td>
<td>4.849</td>
</tr>
<tr>
<td>Final demand services less trade, transportation, and warehousing</td>
<td>38.203</td>
</tr>
<tr>
<td>Final demand construction</td>
<td>2.039</td>
</tr>
</tbody>
</table>
## Final Demand Structure (Continued)

<table>
<thead>
<tr>
<th>Index</th>
<th>Relative importance (December 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final demand services</td>
<td>63.443</td>
</tr>
<tr>
<td>Final demand trade services</td>
<td>20.390</td>
</tr>
<tr>
<td>Trade of finished goods</td>
<td>18.105</td>
</tr>
<tr>
<td>Trade of personal consumption goods</td>
<td>15.699</td>
</tr>
<tr>
<td>Trade of private capital equipment</td>
<td>2.406</td>
</tr>
<tr>
<td>Trade of government purchased goods</td>
<td>0.727</td>
</tr>
<tr>
<td>Trade of government purchased goods, excluding capital equipment</td>
<td>0.516</td>
</tr>
<tr>
<td>Trade of government purchased capital equipment</td>
<td>0.212</td>
</tr>
<tr>
<td>Trade of exports</td>
<td>1.558</td>
</tr>
<tr>
<td>Final demand transportation and warehousing services</td>
<td>4.849</td>
</tr>
<tr>
<td>Final demand services less trade, transportation, and warehousing</td>
<td>38.203</td>
</tr>
</tbody>
</table>
Final Demand versus Finished Goods

- Finished goods: goods sold to personal consumption and capital investment
- Final demand:
  - Goods sold as personal consumption, capital investment, government, and export
  - Services and construction sold as personal consumption, capital investment, government, and export
- Finished goods comprise only 24 percent of final demand
Final Demand Services by Type

Final demand services
Final demand transportation and warehousing services
Final demand trade services
Final demand services less trade, transportation, and warehousing
Value Added of New Final Demand Indexes

- Adds services and construction to current PPI coverage
- Detailed indexes by type of buyer and type of commodity
- Available monthly
- Trade and transportation services separated from value of good
- Producer perspective
Two Treatments of Intermediate Demand (ID)

Two separate parallel treatments have been created for different data users

- **Commodity Type**
  - Similar to current SOP
  - Adds intermediate services and intermediate construction
  - Does not prevent multiple counting

- **Commodity Flow**
  - Stage based system
  - Adds intermediate services and intermediate construction
  - Eliminates multiple counting
Intermediate Demand by Commodity Type

- No overall Intermediate Demand index

- Indexes track price change for intermediate demand commodities grouped by type of commodity
Intermediate demand: Commodity Type

- Indexes track prices for business inputs.
- Indexes organized by type of commodity:
  - Unprocessed goods
  - Processed goods
  - Transportation and warehousing services
  - Trade Services
  - Services other than trade, transportation, and warehousing
  - Construction
## ID by Commodity Type Relative Importances

<table>
<thead>
<tr>
<th>Index</th>
<th>Relative Importance (December 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total intermediate demand (not calculated)</td>
<td>100.000</td>
</tr>
<tr>
<td>Processed goods for Intermediate Demand</td>
<td>43.240</td>
</tr>
<tr>
<td>Materials and components for manufacturing</td>
<td>19.351</td>
</tr>
<tr>
<td>Materials and components for construction</td>
<td>4.108</td>
</tr>
<tr>
<td>Processed fuels and lubricants</td>
<td>8.747</td>
</tr>
<tr>
<td>Containers</td>
<td>1.103</td>
</tr>
<tr>
<td>Supplies</td>
<td>9.930</td>
</tr>
<tr>
<td>Unprocessed goods for intermediate demand</td>
<td>9.402</td>
</tr>
<tr>
<td>Services for intermediate demand</td>
<td>46.928</td>
</tr>
<tr>
<td>Intermediate demand trade services</td>
<td>9.309</td>
</tr>
<tr>
<td>Intermediate demand transportation and warehousing services</td>
<td>6.500</td>
</tr>
<tr>
<td>Intermediate demand services less trade, transportation, and warehousing</td>
<td>31.119</td>
</tr>
<tr>
<td>Construction for intermediate demand</td>
<td>0.430</td>
</tr>
</tbody>
</table>
Intermediate Demand Commodity Type

- Processed goods for intermediate demand
- Unprocessed goods for intermediate demand
- Intermediate demand services
- Construction for intermediate demand
Services for Intermediate Demand

Intermediate demand services

Intermediate demand transportation and warehousing services

Intermediate demand trade services

Intermediate demand services less trade, transportation, and warehousing
Intermediate Demand by Production Flow: Introduction

- Commodities assigned to aggregates based on production flow
- Four intermediate demand stages
- More useful for price transmission analysis
Intermediate Demand: Production Flow PPI System

- Stage 1 → Stage 2 → Stage 3 → Stage 4 → Final Demand

- Example:
  Mining support services (S1) → iron ore (S2) → steel (S3) → car parts (S4) → cars (FD)

- Net indexes – no multiple counting
Production Flow PPI System

- Various numbers of stages were tried.

- Four stage system performed the best in terms flow minimizing backflow and maximizing forward flow.
## Intermediate Demand by Production Flow Relative Importances

<table>
<thead>
<tr>
<th>Index</th>
<th>Relative Importance (December 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>100.000</td>
</tr>
<tr>
<td>Stage 1 intermediate demand</td>
<td>11.817</td>
</tr>
<tr>
<td>Goods</td>
<td>6.856</td>
</tr>
<tr>
<td>Services</td>
<td>4.956</td>
</tr>
<tr>
<td>Construction</td>
<td>0.006</td>
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<tr>
<td>Stage 2 intermediate demand</td>
<td>18.193</td>
</tr>
<tr>
<td>Goods</td>
<td>10.410</td>
</tr>
<tr>
<td>Services</td>
<td>7.667</td>
</tr>
<tr>
<td>Construction</td>
<td>0.116</td>
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<tr>
<td>Stage 3 intermediate demand</td>
<td>23.177</td>
</tr>
<tr>
<td>Goods</td>
<td>12.625</td>
</tr>
<tr>
<td>Services</td>
<td>10.436</td>
</tr>
<tr>
<td>Construction</td>
<td>0.116</td>
</tr>
<tr>
<td>Stage 4 intermediate demand</td>
<td>46.813</td>
</tr>
<tr>
<td>Goods</td>
<td>23.785</td>
</tr>
<tr>
<td>Services</td>
<td>22.867</td>
</tr>
<tr>
<td>Construction</td>
<td>0.161</td>
</tr>
</tbody>
</table>
Intermediate Demand by Production Flow
Index Change FD and all ID Stages

Percent change

Final demand
Stage 4 intermediate demand

Percent change
Stage 4 intermediate demand
Stage 3 intermediate demand

Percent change
Stage 3 intermediate demand
Stage 2 intermediate demand
Stage 1 intermediate demand

BLS
Intermediate Demand by Production Flow
Index Change by Stage – Food
Intermediate Demand by Production Flow
Index Change by Stage – Energy
Intermediate Demand by Production Flow
Index Change by Stage – Goods less Foods and Energy

![Graphs showing intermediate demand and index change by stage.](image-url)
Intermediate Demand by Production Flow Value Added

- Flow based approach facilitates pass-through analysis
- Includes services and construction
- Eliminates multiple counting through stage creation and net weighting
Outreach to Data Users

- While improvements significant, still represents major change for data users, especially the media & general public
- PPI program has designed extensive outreach program including briefings, supporting materials, analysis, etc.
- “Parallel” releases for July 2013 through December 2013
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