

Guidance for Industry vs. Product

Andrew Baer
US Census Bureau

31st Meeting of the Voorburg Group on Services Statistics
September 19, 2016

Guidance paper

- Based on papers and presentations from last year's meeting by:
 - Susanna Tag, Finland
 - Dorothee Blang, Germany
 - Ildikó Hamvainé Holocsy , Hungary
 - Andrew Baer, US

Industry/activity surveys

- Data collection covering all economic production from statistical units within the same industry classification group
- Classification groups are “...based on similarities in the economic activity, taking into account the inputs, the process and technology of production, the characteristics of the outputs and the use to which outputs are applied.” (ISIC Rev.4)

Industry/activity surveys

- Based on “Production-oriented supply-based framework”
- Ideally collected at establishment statistical unit to maintain homogeneous production
- Large challenge of secondary products - often difficult for respondents to report accurately

Industry/activity surveys - challenges

- In the US, secondary production is growing significantly (~33% increase from 2002-2007)
- Industry/activity classifications becoming less stable for service providers
- Technology has allowed businesses to shift activities with far less plant and equipment expenses than were needed in the past

Product surveys

- Data collection for a particular product exclusively, from those statistical units known to produce it.
- Products are classified “based on the physical properties and the intrinsic nature of the products as well as on the principle of industrial origin.” CPC Ver 2.1
- NAPCS does not consider industrial origin, only “how (products) are principally used”

Uses of SPPI & nominal output data

- Short-term economic indicators
- Deflation of national accounts
- Measuring productivity
- Business contract escalation (SPPIs)
- Analysis of price transmission by stages of processing (SPPIs)

Questions for small group discussion

- 1) For each of the five principal data uses described, are industry or product statistics more appropriate?
- 2) Are there other significant data uses that should be considered? If so, are industry or product statistics more appropriate for these additional uses?

Short-term economic indicators

- Industry, Product
 - Captures effects of market competition between those that use different processes to produce comparable services
 - More straightforward to interpret
 - “Prices for financial advisory services increased 2%” vs. “Prices for all services offered by firms primarily classified as financial advisors increased 2%”

Deflation of national accounts

- Industry, Product
 - SNA recommends supply and use tables as accounting framework of national accounts
 - While the tables are organized by industry, the activity that is being measured is products
 - In the US, national accountants perform multiple steps to isolate “primary” product data from industry statistics

Measuring productivity

- Industry, Product
 - Industry organizes data based on *how* goods and services are produced
 - Aligned with collecting at establishment unit
 - Allows for easier linkages between labor and capital inputs used to produce real output

Business contract escalation

- Industry, Product
 - Long-term contracts specify *products* to be transacted in future years, not industries
 - Product data most directly measures market prices for contracted services

Analysis of price transmission

- Industry, Product
 - CPIs are conducted on a product basis
 - Product data provides easiest point of comparison

Guidance on industry vs. product

- Draft guidance (subject to change based on discussion!) suggests product data is most appropriate for most uses of SPPIs and nominal output data
- Unfortunately there are many challenges with producing product data

Challenges of product-based data

– insufficient sampling frames

- Most services businesses do not maintain records that allow for enumeration of employment, wages, or turnover by product
- Most business registers and national tax records do not include data by product
 - Countries that collect VAT may be an exception
- Makes probability proportionate to size sampling for product surveys very difficult

Possible solutions – insufficient sampling frames

- In the US, we could take product information collected every 5 years on the Economic Census to create product-based frames
- Alternative sampling frame sources, such as scanner data for retail trade, private-sector directories and databases could be used

Question for discussion

- 1) For countries that collect VAT, is that a potential source of product sampling frames?
- 2) What are some other strategies to address this problem?

Challenges of product-based data – collecting at establishment level

- Increasingly difficult for service providers to report product turnover by physical location
- Establishment data is very important for detailed geographic reports (frequently requested) and productivity measures
- Example – cloud computing, should the turnover be recorded at the data center? Which one? Headquarters? Sales office that handles account?

Possible solutions

– collecting at establishment level

- Instead of establishment, use kind-of-activity unit or enterprise as the statistical unit
- Allocate turnover to establishment level based on model-identified characteristics associated with turnover generation (employment, wages, capital expenditures, etc.)

Question for discussion

- 1) What statistical unit is used for SPPI and turnover programs in your country?
- 2) Have you found that it has become harder to collect services data at establishment level?
- 3) Does your program use modeling to tabulate geographic detailed data?

Challenges of product-based data – organizing data collection

- Large companies often produce a large number of products
- US SPPI model of rotating schedule of in-person initiation interviews would create significant burden for large companies
- When survey is for specific product, may be difficult to collect data for sampled firms found not to produce it

Possible solutions – organizing data collection

- Modify SPPI collection routine in the US to include collecting fewer items more frequently
- Adopt alternatives to in-person initiation interview – video conference, Internet, etc.
- Implement “account manager” program to provide key respondents with a single point of contact to coordinate all data requests

Question for discussion

- 1) Would organizing data collection by product cause challenges for your agency?
- 2) If so, what strategies might help?
- 3) Does your agency have an organized program to assistance large companies that receive many data requests?

Challenges of product-based data

– continuity with industry data

- If transition to product-based survey approach, may need to create “approximate industry-based surveys” to maintain data series continuity
- If guidance that product-based data is more valuable is accepted, countries developing new SPPIs and services turnover should start their new data series by product

Approximate product-based data

- Frequently used as solution to produce useful product data without all of the challenges of product-based survey collection
- Reorganizes data collected from industry surveys into product groupings

Creating approximate product-based data

| | Wired telecom industry | Wireless telecom industry | Satellite telecom industry | All other industries |
|-----------------------------|-------------------------------|----------------------------------|-----------------------------------|-----------------------------|
| Industry total turnover | \$1 billion | \$500 million | \$250 million | |
| Home telephone services | \$200 million | \$100 million | \$50 million | \$60 million |
| Business telephone services | \$100 million | \$50 million | \$25 million | \$40 million |
| Programming services | \$400 million | \$200 million | \$100 million | \$50 million |
| Data services | \$300 million | \$150 million | \$75 million | \$100 million |

Creating approximate product-based data

| | Home telephone service product-based data | |
|---|---|------|
| Product total | \$410 million | 100% |
| Home telephone services from wired telecommunications firms | \$200 million | 49% |
| Home telephone services from wireless telecommunications firms | \$100 million | 24% |
| Home telephone services from satellite telecommunications firms | \$50 million | 12% |
| Home telephone services from all other industries | \$60 million | 15% |

Challenges of approximate product-based data

Example: Industry sample, 5 frame units, sample size = 2

| Industry | Turnover | % of Total | Sampling Pattern |
|-----------|-------------|------------|-----------------------|
| Company 1 | \$1,000,000 | 72% | Certainty Selection |
| Company 2 | \$100,000 | 7% | |
| Company 3 | \$100,000 | 7% | Probability selection |
| Company 4 | \$100,000 | 7% | |
| Company 5 | \$100,000 | 7% | |
| Total | \$1,400,000 | 100% | |



Company 3 selected and weight is magnified 4x to represent companies 2, 4, and 5

Challenges of approximate product-based data

- Procedure of magnifying weights of smaller companies is based on theory they represent the activities of similarly-sized frame units not selected
- Concept works if all units selected from same sampling frame and offer similar products
- Mixing items from different industries with different weight adjustment schemes into a single product index (“from all other industries”) is problematic

Challenges of approximate product-based data

- For very large service providers, some products represent small share of enterprise turnover but large share of product market
- For SPPIs, these cases need to be identified prior to data collection and judgmentally selected
- For turnover surveys, questionnaires must include these products on the survey instrument

Challenges of approximate product-based data

| | Retailer A Sales | % of Retailer A Sales | Total Market Sales | Retailer A Market Share |
|-----------------|------------------|-----------------------|--------------------|-------------------------|
| Groceries | \$100 billion | 71.0% | \$1 trillion | 10.0% |
| Pharmaceuticals | \$20 billion | 14.0% | \$1 trillion | 2.0% |
| Apparel | \$10 billion | 7.0% | \$500 billion | 2.0% |
| Electronics | \$10 billion | 7.0% | \$200 billion | 5.0% |
| Books | \$1 billion | 0.7% | \$10 billion | 10.0% |
| Greeting Cards | \$500 million | 0.3% | \$2 billion | 25.0% |

Thoughts on the presentation and guidance paper appreciated!

Andrew Baer

Assistant Division Chief, Services Sectors
Economy-Wide Statistics Division

U.S. Census Bureau

(301) 763-3183

andrew.l.baer@census.gov