



# **Volume indices for all economic sectors**

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# History

- In the last 30 years or so, service industries have become increasingly important
  - Often outweigh industrial activities now
  - Partly result of:
    - strong growth in services per se
    - different classification
    - recording of different production arrangements
      - Choice of statistical unit

# Industry vs. service indices

- The basic approach to calculating the index in different industries remains the same
- Calculation should be done at 4-digit industry level (and higher)
- For practical reasons, Laspeyres index is recommended
  - Has many of the desired characteristics of index numbers

# Industry vs. service indices

- Volume extrapolation has been used as primary method for industrial sector in the past
- Prices can be assigned to each of the produced products (linked to physical output)

# Industry vs. service index

- Volume extrapolation possible since physical outputs can be measured in mostly straightforward ways and units
  - Number (count)
  - Tons
  - Square meters
  - Etc.
- (for each detailed, well defined product)

# Industry vs. service index

- Still, problems exist for some industries in using such easy approaches:
  - When production spreads of many time periods
  - When selection of small sets of characteristic products is difficult
- Deflation works very well in some of these cases, **if** an appropriate deflator exists

# Industry vs. service indices

- For service industries, easy quantifications don't exist
- What can be used?
  - Depends very much on the industry
    - E.g. passenger-kilometers for transport
- However, deflation method usually works better, **if** a suitable deflator exists
  - The type of deflator available usually changes by industry

# Preferred approaches

- The question remains: What is the most appropriate method for each industry and what data should be used for it?
- This has been addressed in the latest recommendations on index numbers:
  - IRIIP 2010, chapter 6
  - ISP Manual 2007, Annex 1 and 2



# IRIIP 2010

ISIC class	Description	Explanatory notes	Products or product groups	Preferred method	Alternative method	Other methods
3011	Building of ships and floating structures	This class includes the building of ships, except vessels for sports or recreation, and the construction of floating structures	<ul style="list-style-type: none"> <li>-Passenger vessels, ferry boats, cargo ships, tankers, tugs</li> <li>-Warships</li> <li>-Fishing boats and fish-processing factory vessels</li> <li>-Floating docks, pontoons, cofferdams, floating landing stages, buoys</li> </ul>	<p>Volume indicator (input-based)</p> <p>Number of hours worked adjusted for changes in productivity</p>	<p>Volume indicator (input-based)</p> <p>Number of persons employed adjusted for changes in productivity</p>	<p>Deflated indicator</p> <p>Value of raw material consumption (major materials) used in production deflated by appropriate quality-adjusted PPI</p>
3012	Building of pleasure and sporting boats	This class includes: <ul style="list-style-type: none"> <li>-manufacture of inflatable boats and rafts</li> <li>-building of sailboats with or without auxiliary motor</li> <li>-building of motorboats</li> </ul>	<ul style="list-style-type: none"> <li>-Inflatable boats and rafts</li> <li>-Canoes, kayaks, rowing boats, skiffs</li> <li>-Motorboats</li> <li>-Sailboats</li> </ul>	<p>Volume indicator (output-based)</p> <p>Quantity (count) of products produced, by product or</p> <p>Volume indicator (input-based)</p> <p>Number of hours worked adjusted for changes in productivity</p>	<p>Deflated indicator</p> <p>Value of output deflated by appropriate quality-adjusted PPI</p>	<p>Volume indicator (input-based)</p> <p>Number of persons employed adjusted for changes in productivity</p>

# Manual for index of service production 2007

## Recommendation of deflator by ISIC

CPI			PPI
72	721	None	Consultancy (hardware; software)
	722	Software packages	Software (publishing; consultancy; production; maintenance)
	723	None	Data processing; operation of data processing facilities
	724	Internet services	Database service; online publishing
	725	None	Maintenance of (computing equipment; photocopiers; other office machinery)
	729	None	Computer disaster recovery; software installation services

Note: This is still ISIC Rev.3

# Manual for index of service production 2007

## Preferred approach

722	<b>Software publishing, consultancy and supply</b>	<p>Includes</p> <p>7221 - Software publishing i.e. production, supply and documentation of ready-made software</p> <p>7229 - Other software consultancy and supply i.e. analysis, design and programming of custom software, software maintenance and web page design.</p> <p>Excludes reproduction of software and retail sale of non-customised software</p>	<p><b>Gross turnover deflated by appropriate quality adjusted price indices</b></p> <p>Turnover from survey of software publishers and software consultants or administrative data taken from tax returns which could be split by type of software consultancy activity.</p> <p>Examples are:</p> <ul style="list-style-type: none"> <li>- Software publishing</li> <li>- Software consultancy</li> <li>- Production of made-to-order software</li> <li>- Software maintenance</li> </ul>	<p>Weighted appropriate price indices</p> <p>Examples are:</p> <ul style="list-style-type: none"> <li>- CPI: Software packages</li> <li>- PPI: Software publishing</li> <li>- PPI: Software consultancy</li> <li>- PPI: Software production</li> <li>- PPI: Software maintenance</li> </ul>
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# Manual for index of service production 2007

## Alternative and other approach

<p><b>Gross turnover deflated by partially representative price indices</b></p> <p>Turnover from survey of software publishers and software consultants or administrative data taken from tax returns</p> <p>Examples are:</p> <ul style="list-style-type: none"> <li>- Number of software licences sold</li> <li>- Number of programming hours</li> <li>- Number of billable hours</li> </ul>	<p>Deflated by partially representative PPIs or a general price index</p> <p>Or</p> <p><b>Volume indicators</b></p>	<p><b>Volume indicators</b></p> <p>Examples are:</p> <ul style="list-style-type: none"> <li>- Employment</li> </ul>	<p><b>722</b></p>
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Note: This is still ISIC Rev.3

# Preferred approaches

- Both manuals provide a comprehensive set of detailed recommendations for compiling indices for all economic sectors
  - Includes also retail trade
- UNSD – International Recommendations for the Index of Industrial Production (IRIIP) 2010
- OECD – Compilation Manual for an Index of Service Production 2007
- Feedback on applied methods is always appreciated

# Thank You