Supply and Use Tables and Input-Output Tables

Principles and Guidelines - Day one, Session one

United Nations Economic Commission for Europe (UNECE)
Group of Experts on National Accounts
Special Session for Eastern Europe, Caucasus and Central Asia (EECCA) and South East Europe (SEE) countries

3-5 October 2022, Geneva, online

All views expressed reflect those of the author / presenter only and not those of the ONS

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Supply and Use Tables and Input-Output Tables
Principles and Guidelines

An overview

• Broad picture
  • Commonalities and differences

• Compilation of SUTs and IOTs
  • Some key principles and guidelines

• Framework for a coherent picture of the economy

• An overview of the compilation schematic

• Overall strategy

• Brief feedback on the UNECE SUTs / IOTs questionnaire

• Way ahead

• Any questions?
Supply and Use Tables and Input-Output Tables
Principles and Guidelines

Broad picture

Commonalities and differences

• The economic accounting statistical standards and the underlying principles and guidance are the same for all official statistical producers.

• However, countries have many differences:
  • Underlying national systems - political, legal, taxation, administrative, etc.
  • Organisational structure and governance of the statistical system.
  • Resources (e.g., limited finances, skilled staff, etc.) and costs.
  • Access and availability of detailed data to populate the national accounting frame.

• No two countries produce the SUTs and IOTs in exactly the same way.
  • Same applies to National Accounts, Balance of Payments and beyond.

and

are key to higher quality and comparability.

The UNECE Special Session is an example and a wonderful opportunity to do so.
Compilation of SUTs and IOTs

Some key principles and guidelines

- SUTs / IOTs should be at the heart of National Accounts
  - Integration leads to better quality, coherency and consistency.

- Production of SUTs enables the creation of:
  - a single estimate of GDP incorporating the components of production, income and expenditure; and
  - volume of GVA through double-deflation.

- SUTs should be produced and balanced in:
  - Basic prices and purchasers’ prices.
  - Current prices and previous years’ prices.
  - Annual terms - quarterly is an “ideal” option.

- Integrated and balanced SUTs / IOTs should include institutional sector links:
  - Goods and services (account).
  - Production accounts by industry and by institutional sector.
  - Generation of income accounts by industry and by institutional sector.
  - Physical and monetary tables as well as links to labour and productivity.
Compilation of SUTs and IOTs

Some key principles and guidelines

- Production of SUTs comes first, then the production of IOTs.
- GDP is an outcome of balanced SUTs (GDP is not a pre-set target for SUTs).
- Rectangular SUTs with more products - improves deflation and balancing.
- Use standard international statistical classifications (e.g., ISIC, CPC, etc.).
- Organisation of the balancing function:
  - Simultaneous balancing is preferred over sequential balancing.
  - Centralised balancing preferred over de-centralised balancing.
  - Limited, controlled and managed use of automated balancing tools.
- Comprehensive documentation:
  - All data building blocks recorded separately - source data, coverage adjustments, conceptual adjustments, quality adjustments, balancing adjustments, etc.
  - Operational documentation and the methodology itself.

We will touch on many of these issues during the Special Session.

UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications
Framework for a coherent picture of the economy

Balancing:
Data confrontation, benchmarking and balancing to achieve all key identities.

<table>
<thead>
<tr>
<th>Supply</th>
<th>Use</th>
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<tbody>
<tr>
<td>INDUSTRY</td>
<td>INDUSTRY</td>
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<tr>
<td>TOTAL OUTPUT</td>
<td>TOTAL OUTPUT</td>
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<tr>
<td>Imports</td>
<td>Margins</td>
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<td>Taxes</td>
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<td>Total intermediate consumption</td>
<td>Total intermediate use</td>
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<tr>
<td>GVA (Production)</td>
<td>Households</td>
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<td>TOTAL INPUT</td>
<td>Government</td>
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<tr>
<td>GVA (Income)</td>
<td>GCF</td>
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<td></td>
<td>Exports</td>
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</tbody>
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GDP (Expenditure) equals Final Use less Imports

Compiled by Sanjiv Mahajan
November 2010
An overview of the compilation schematic integrating Supply and Use Tables and Input-Output Tables (“H-Approach”)

**Supply and Use Tables**

- **Current prices**
  - Supply
    - Industry
    - Technology
  - Use
    - Industry
- **Previous years’ prices**
  - Supply
    - Industry
    - Technology
  - Use
    - Industry

**Current prices**

- Reallocate: Taxes and subsidies on products, Trade and transport margins, Imports of goods and services
- PY rate x volume change
- Deflation: Taxes/subsidies split at each stage
- Deflation (with domestic / export split)

**Previous years’ prices**

- Reallocate PYP estimates of: Taxes and subsidies on products, Trade and transport margins
- Add PYP estimates of: Imports of goods and services

**Basic prices**

**Input-Output Tables**

- **Type of tables** (assumptions)
  - P x P Tables use Technology
  - I x I Tables use Fixed sales structure
- **Product or industry or hybrid**
  - P or I or Hybrid
  - P sales or I sales
  - Leontief Inverse, multipliers, etc.

**Compiled by Sanjiv Mahajan June 2009**
Supply and Use Tables and Input-Output Tables
Principles and Guidelines

Overall strategy
Growing central role of SUTs and IOTs including feedback loops

Full integration of SUTs and IOTs
in the National Accounts
and
Balance of Payments

….. and the development of physical SUTs / IOTs / EE-IOTs

With SUTs having a central and integral role, they have:
lots of links and degrees of impact on business registers, administrative data, business surveys and statistics, NA, BoP, labour, regional, productivity and environmental statistics
which will help to improve the quality, consistency and coherency of related statistics
and the SUTs and IOTs too.
Brief feedback on the UNECE SUTs / IOTs questionnaire

Based on 18 country responses (no two countries are exactly the same)

- 15 countries compile SUTs including two are at the experimental compilation stage.
- 10 countries compile on an annual basis - two five-yearly and one on an ad-hoc basis.
  - Most have a recent reference year, e.g., 2019 or 2020.
  - Six countries utilise an IT-based balancing tool.
- SUTs / IOTs used for balancing national accounts, analysis, forecasting, tax policy, etc.

Challenges being faced

- Lack of reliable source data, e.g., IC, margins, regional
- Lack of experts
- Lack of methodological and technical assistance
- SUTs by sectors and regional SUTs
- Time consuming (manual balancing)
- Lack of cooperation with Government and private sector
- GDP target totals set before SUTs compilation
- Constant prices

Thank you all for responding to the UNECE Questionnaire.
Way ahead

Growing demand for SUTs and IOTs based analyses

- Major developments / policy links:
  - Climate change and Net Zero (e.g., Physical SUTs, EE-IOTs, etc.).
  - Digitalisation (e.g., Digital SUTs).
  - Globalisation (e.g., Extended SUTs, FIGARO, GVCs, TiVA, etc.).
  - Well-being and Sustainability (e.g., SDGs, regional, labour and distribution links through I-O, etc.).
  - Engagement with “new” guidelines: SNA, BPM, SEEA, ISIC, etc.
- Big Data, Data Science and real-time indicators:
  - Opportunities to incorporate more, and new, data sources.

Recognise these may take time and are not easy but are achievable with appropriate resources and available data.
The principles and guidelines lay out an ambitious but a key programme of work which will help to better meet a range of growing uses and users’ needs …,

This Special Session will help to cover lots of small steps along the journey …,
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Principles and Guidelines

Any questions?

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Extra slides for information
Simplified version of the “outputs” and the “flows” in the compilation schematic for SUTs, IOTs, PSUTs and EE-IOTs in current prices and SUTs and IOTs in previous years’ prices

**Current Prices**

- **BOX A**: Supply and Use Tables at purchasers’ prices $PxI$
- **BOX B**: Supply and Use Tables at basic prices $PxI$
- **BOX C**: Input-Output Tables $PxP$ and $IxI$
- **BOX G**: PSUTs and PIOTs / EE-IOTs

**Previous Years’ Prices**

- **BOX E**: Supply and Use Tables at purchasers’ prices $PxI$
- **BOX D**: Supply and Use Tables at basic prices $PxI$
- **BOX F**: Input-Output Tables $PxP$ and $IxI$

**Deflation processes**

- Separation of valuation and imports matrices
- Addition of valuation and imports matrices
- Assumptions applied
National Accounts - Broad definitions

Total output (at basic prices)

*equals*  Total sales of goods and services
  - As invoiced, excluding VAT.
  - Excludes sales of capital formation items and much of other operating income.

*plus*  Change in inventories of work-in-progress and finished goods

*plus*  Output produced for own final use, for example computer software, R&D, and construction (also known as own account capital formation)

*less*  Purchases of goods and services for resale without further processing (thereby only including the gross margin within output)

*plus*  Income earned-in-kind

*less*  Any taxes on products

*plus*  Any subsidies on products

Sales is NOT equal to output - neither in concept nor data
National Accounts - Broad definitions

Total intermediate consumption (at purchasers’ prices)

\[
equals \text{Total purchases of goods and services for use as inputs to the production process}
\]

- Excludes employment costs, capital formation and depreciation.
- Excludes deductible VAT and includes non-deductible VAT.

\[
less \text{Change in inventories of materials and fuels}
\]

\[
less \text{Purchased / bought-in computer software and R&D (treated as GFCF)}
\]

\[
plus \text{Imputed insurance premium supplements}
\]

\[
less \text{FISIM}
\]

\[
less \text{Payments to employees such as income earned-in-kind}
\]

Gross value added (at basic prices)

\[
equals \text{Total output (at basic prices)}
\]

\[
less \text{Total intermediate consumption (at purchasers’ prices)}
\]

Purchases is NOT equal to intermediate consumption - neither in concept nor data