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FIGARO – 2022 edition (1/5)

- FIGARO - ‘**Full** International and **Global** Accounts for **Research** in input-**Output** analysis’
- EU Inter-Country Supply, Use and Input-Output Tables
- Long-term collaboration between European Commission Directorates General: Eurostat and Joint Research Centre
- Since 2021, produced by Eurostat as **official statistics**: benchmarked to the latest official macroeconomic aggregates (T - 2 years)
- Years 2010-2020

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
FIGARO – 2022 edition (2/5)

16 main trading partners
Rest of the world (ROW)

27 EU Member States + NO, CH

NACE Rev. 2 A*21 \(\rightarrow\) A*64

FIGARO COVERAGE (45 COUNTRIES + ROW)

Argentina, Brazil, Mexico covered explicitly

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
FIGARO applications

• Employment and value added supported by EU exports
  • Years 2010-2020
  • NACE Rev.2: A*21 → A*64
  • Trade in services among non-EU countries

• Update of CO₂ footprints from final consumption expenditure in Q4 2022

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
FIGARO applications

- **30 million jobs** (14% of all jobs in the EU) were supported by EU exports in 2020
- **16% of value added** was supported by EU exports
- **Direct and indirect domestic effects** + spillover effects across EU Member States

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
FIGARO – 2022 edition (5/5)

- FIGARO database (csv, excel)
- FIGARO methodology
- FIGARO applications
  - Employment and value added supported by EU exports
  - CO₂ footprints *(update in Q4 2022)*
- Statistics Explained
  - Employment content in EU exports
  - Value added content in EU exports
- Eurostat website – ESA supply, use and input-output tables

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
Main features

• Regular statistical production at Eurostat, with JRC support

• Data release on ESTAT website – csv, excel, new excel pivot tables

• New estimates for Year T-2, updates for Years T-3 and T-4 (2019-2021 for the 2023 FIGARO edition)

• NACE Rev. 2: A*21 $\rightarrow$ A*64

• Globally balanced view of National Accounts Main Aggregates, adjusted to latest national GDP main aggregates (99.1% population and 99.8% GDP)

• Build upon available data from National Accounts (national SUTs) and balanced international trade statistics

• 2019 FIGARO handbook
Methodological features (2/8)

Supply and use tables
- EU countries + NO, CH (purchaser’s prices, FOB)

Supply and use tables
- 16 Non-EU countries (purchaser’s prices, FOB)

Import, export of goods and services for 205 countries (HS 6-digit level)

National Accounts Main Aggregates
- (45 countries); GDP (205 countries)
Methodological features (2/8)

Supply and use tables
- EU countries + NO, CH
  (purchaser’s prices, FOB)

Supply and use tables
- 16 Non-EU countries
  (purchaser’s prices, FOB)

Import, export of goods
and services for 205
countries (HS 6-digit level)

Estimations; adjustment
of product/industry
classification to
NACE/CPA

Trade and transport margins; taxes less subsidies
on products

CIF/FOB margins

Supply and Use
(domestic, import) tables
(basic prices, CIF)

National Accounts Main
Aggregates
(45 countries); GDP (205 countries)
Methodological features (2/8)

Supply and use tables
- EU countries + NO, CH (purchaser’s prices, FOB)
- Supply and use tables 16 Non-EU countries (purchaser’s prices, FOB)
  - Estimations; adjustment of product/industry classification to NACE/CPA
  - CIF/FOB margins, trade asymmetries, QDR approach (domestic trade, quasi-transit trade, re-exports)
  - Alignment with National Accounts (merchanting, goods sent abroad for processing, direct purchases abroad)
  - Balanced trade in goods and services
  - Import, export of goods and services for 205 countries (HS 6-digit level)

Supply and Use (domestic, import) tables (basic prices, CIF)

Trade and transport margins; taxes less subsidies on products

CIF/FOB margins

Inter-country IOTs

National Accounts Main Aggregates (45 countries); GDP (205 countries)
Methodological features (2/8)

Supply and use tables
EU countries + NO, CH (purchaser’s prices, FOB)

Supply and use tables
16 Non-EU countries (purchaser’s prices, FOB)

Estimations; adjustment of product/industry classification to NACE/CPA

Trade and transport margins; taxes less subsidies on products

CIF/FOB margins

CIF/FOB margins, trade asymmetries, QDR approach (domestic trade, quasi-transit trade, re-exports)

Alignment with National Accounts (merchanting, goods sent abroad for processing, direct purchases abroad)

Balanced trade in goods and services

Import, export of goods and services for 205 countries (HS 6-digit level)

CIF/FOB margins

Global consistent National Accounts Main Aggregates (45 countries + ROW)

National Accounts Main Aggregates (45 countries); GDP (205 countries)

SUTs (benchmarked to National Accounts)

Inter-country SUTs

Inter-country IOTs
Methodological features (3/8)

- Balancing bilateral trade
  - Exports and imports – trade statistics rarely align with national SUTs
- Challenges
  - Reporting principles in trade statistics and National Accounts (physical cross-border movement of goods vs. change of ownership)
  - Conversion to CPA product categories
  - Misclassification of products
- QDR methodology: balanced view of trade broken down by Quasi-transit, Domestic and Re-exports
Methodological features (4/8)

QDR workflow

Consolidate - trade balancing (1/2)

• Relative asymmetry \((i \rightarrow j)\)

\[
A_{ij} = \frac{|X_{ij} - M_{ij}|}{|X_{ij}| + |M_{ij}|}
\]

\(X_{ij}\): exports reported by country \(i\)
\(M_{ij}\): imports reported by country \(j\)

For each HS-6-digit level product

• Relative asymmetry of exports

\[
\theta_i = \frac{\sum_k A_{ik} X_{ik}}{\sum_k X_{ik}}
\]

• Relative asymmetry of imports

\[
\phi_j = \frac{\sum_k A_{kj} M_{kj}}{\sum_k M_{kj}}
\]
Methodological features (5/8)

Consolidate - trade balancing (2/2)

- Consolidated trade flow as weighted average over three years between exports and corresponding imports

\[ T_{ij} = \frac{(1 - \bar{\theta}_i) \cdot X_{ij} + (1 - \bar{\phi}_j) \cdot M_{ij}}{(1 - \bar{\theta}_i) + (1 - \bar{\phi}_j)} \]
Methodological features (6/8)

• National Accounts trade for FIGARO: balanced international trade for 205 countries
  • Exports of A to B = Imports of B from A
  • Compliant with aggregated estimates P61, P62, P71, P72

• Breakdown:

<table>
<thead>
<tr>
<th>P6</th>
<th>Export of goods and services</th>
</tr>
</thead>
<tbody>
<tr>
<td>P61</td>
<td>Export of goods</td>
</tr>
<tr>
<td>P610</td>
<td>Domestic exports</td>
</tr>
<tr>
<td>P61A</td>
<td>Re-exports</td>
</tr>
<tr>
<td>P61C</td>
<td>Merchanting</td>
</tr>
<tr>
<td>P61D_E</td>
<td>Goods sent abroad for processing</td>
</tr>
<tr>
<td>P62</td>
<td>Export of services</td>
</tr>
</tbody>
</table>
Supply and Use Tables

- Estimating 2020 SUTs: 2020 national accounts data + previous year SUTs structure
- SUT-RAS bi-proportional adjustment of SUTs
- Ireland – Split Q86 vs Q87_88
- Brazil – mapping industry activities to NACE Rev 2 A*64
- NO, UK, RU – adjustments and mapping of industry activities
Methodological features (8/8)

• For 46 economies: FIGARO tables are consistent with global National Accounts Main Aggregates: Supply, Use (domestic and imported), Taxes Less Subsidies (TLS) and Trade and Transport Margins (TTM)

• Global NAMA in an integrated IO framework: 46 inter-country use tables of domestic inputs (IC) + bilateral trade + direct purchases abroad + gross value added components

• Balancing: only trade is changed/adjusted, GDP remains fixed

• Significant balancing improvements: 10′
Outlook (1/5)

• 2023 FIGARO edition: years 2019, 2020, 2021

• ESTAT-JRC Administrative Arrangement FIGARO-Act II (2021-2023)
  • Steering group meeting in Q1 2023
  • Completion Q2 2023

• New Administrative Arrangement FIGARO-Act III (2023-2026) to be signed in Q4 2022
  • 4 Work packages
Outlook (2/5)

• WP1: Maintenance and further development of FIGARO tables
  • Support annual production - FIGARO tables at current and previous year’s prices
  • Support integration of FIGARO tables in other global inter-country input-output table initiatives (e.g. OECD, UN-ECLAC)
    • Data sources and common methodologies
    • Sector scope and classifications
    • Reference years
    • Joint activities (FIGARO coverage of ECLAC countries)
  • Better representation of global production arrangements (processing services, merchanting, direct purchases abroad, international transport and insurance services, CIF-FOB adjustments)
**Outlook (3/5)**

**FIGARO developments**

- Direct purchases abroad, domestic purchases by non-residents - by country and product
- CO₂ footprint:
  - domestic → national scope
  - towards an EU-27 SUIOT

<table>
<thead>
<tr>
<th>Country of purchase</th>
<th>Product</th>
<th>Origin of purchaser</th>
<th>∑ Domestic purchases by non-residents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Country A</td>
<td>Country B</td>
</tr>
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<td>Country A</td>
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<td>0</td>
<td></td>
</tr>
<tr>
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</table>

<table>
<thead>
<tr>
<th>∑ Direct purchases abroad</th>
<th>A</th>
<th>B</th>
<th>n</th>
</tr>
</thead>
</table>
Outlook (4/5)

• WP2: Implementation of a regular publication of Eurostat’s global value chain (GVC) indicators
  • Annual production of GVC indicators based on FIGARO and the TRADE-SCAN model

• WP3: Implementation of the FIGARO NAM/SAMs as experimental statistics
  • A first time series of EU Inter-Country National Accounting Matrices (NAMs) and Social Accounting Matrices (SAMs)

• WP4: Extended FIGARO tables - Compilation of satellite accounts, including a European Space Economy Satellite Account
  • Experimental satellite account based on FIGARO (output, gross value added, employment, labor compensation in the European space economy)
Outlook (5/5)

FIGARO applications

Experimental statistics (2022-2023)

- Meeting with National Statistical Institutes in December 2022
- Identification of space-related products and activities, by country
FIGARO links

• FIGARO database (csv, excel format)
• FIGARO methodology
• FIGARO applications
  • Employment and value added supported by EU exports
  • CO₂ footprints (update in Q4 2022)
• Statistics Explained
  • Employment content in EU exports
  • Value added content in EU exports
• Eurostat website – ESA supply, use and input-output tables
Thank you.

FIGARO data base: https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/data/database
Contact: ESTAT-IGA@ec.europa.eu

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