FIGARO 2022 edition – Towards a global view of National Accounts Main Aggregates

UNECE Special session on supply, use and input-output tables
3-5 October 2022, Geneva

Martin Weiss, Ricardo Lobato, Fabienne Montaigne, Pedro Martins Ferreira
Eurostat – ESTAT.C5

José Manuel Rueda Cantuche, Santacruz Banacloche Sanchez
Joint Research Centre – JRC.B7
Content

• FIGARO 2022 edition – EU inter-country supply, use and input-output tables

• Towards a global NAMA

• Outlook
FIGARO – 2022 edition (1/3)

- FIGARO - ‘**Full** International and **Global** Accounts for **Research in input-**Output analysis’

- Inter-country Supply, Use and Input-Output tables (FIGARO tables)

- Result of a long-term collaboration between Eurostat and the European Commission’s Joint Research Centre

- Since 2021, FIGARO has become **EU Official Statistics**: benchmarked to the latest official macroeconomic aggregates (T - 2 years)

- Years 2010-2020 (csv, excel + new matrix format)

https://ec.europa.eu/eurostat/web/esa-supply-use-input-tables/figaro
FIGARO – 2022 edition (2/3)

16 main trading partners
Rest of the world (ROW)

27 EU Member States + NO, CH

NACE Rev. 2 A*21 → A*64

FIGARO COVERAGE (45 COUNTRIES + ROW)

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

- 30 million jobs (14% of 206 million jobs in the EU-27) supported by EU exports in 2020
- Direct and indirect domestic effects + spillovers across Member States
- CO₂ footprint estimates
Towards a global NAMA (1/9)

• Why a global NAMA?
• Consistent picture of global economy at a given point in time
• Constraints – vintages, balancing world trade as a reference
• Higher granularity, less accuracy
• Measure the economy of the world in an input-output framework

Let’s zoom in on the global economy…
Towards a global NAMA (2/9)

- Gross Domestic Product - GDP (ESTAT, UN, NSI), Population, Employment
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- \( \text{GDP} = \text{Final consumption expenditure (P3)} + \text{Gross capital formation (P5)} + \text{Exports (Goods+Services)} - \text{Imports (Goods+Services)} \)
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- GDP = P3*+P5*+(P61*+P62*) – (P71*-P72*)
- World Trade Balance + World GDP (205 countries)

*Adjustments to match total GDP
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- \( GDP = P3^* + P5^* + (P61^* + P62^*) - (P71^* - P72^*) \)
- World Trade Balance + World GDP (205 countries)
- From GDP, Taxes less subsidies on production (D21X31) and Output (P1), derive Gross value added (B1G) and Intermediate consumption (P2)
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- GDP = P3*+P5*+(P61*+P62*) – (P71*-P72*)
- World Trade Balance + World GDP (205 countries)
- From GDP, D21X31 and P1, derive B1G, P2
- From GDP, derive Compensation of employees (D1), Other taxes less subsidies on production (D29X39), Gross operating surplus and mixed income (B2A3G)
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- GDP = P3\*+P5\*+(P61\*+P62\*) – (P71\*-P72\*)
- World Trade Balance + World GDP (205 countries)
- From GDP, D21X31 and P1, derive B1G, P2
- From B1G, derive D1, D29X39, B2A3G
- A64 break down: Output, Intermediate consumption, Gross value added, Compensation of employees, Other taxes less subsidies on production, Gross operating surplus and mixed income
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- \( \text{GDP} = P3^* + P5^* + (P61^* + P62^*) - (P71^* - P72^*) \)
- World Trade Balance + World GDP (205 countries)
- From GDP, D21X31 and P1, derive B1G, P2
- From B1G, derive D1, D29X39, B2A3G
- A64 break down: P1, P2, B1G, D1, D29X39, B2A3G
- Supply and use tables

SUTs are ultimate granularity in terms of National Accounts
Towards a global NAMA (2/9)

- GDP (ESTAT, UN, NSI), Population, Employment
- GDP = P3*+P5*+(P61*+P62*) – (P71*-P72*)
- World Trade Balance + World GDP (205 countries) (External balance of goods and services = 0)
- From GDP, D21X31 and P1, derive B1G, P2
- From B1G, derive D1, D29X39, B2A3G
- A64 break down: P1, P2, B1G, D1, D29X39, B2A3G
- Supply and Use Tables (SUT) – 45 countries (T1500, T1600, T1610, T1611, T1612, T1620, T1630)
- ‘SUT-RAS’ methodology paper
Towards a global NAMA (3/9)

- **FIGARO covers** 205 economic areas
  - ~ 99.1% World population
  - ~ 99.8% World GDP

5 biggest countries not covered
- North Korea, 26.0 M
- Syria, 19.4 M
- Somalia, 16.8 M
- Eritrea, 3.7 M
- Gabon, 2.3 M

...but, covering small but relevant economic areas in terms of international trade in services, e.g.
- Isle of Man
- Jersey
- Gibraltar
Towards a global NAMA (4/9)

FIGARO workflow

- Concatenate and convert to euro
- Estimate missing GDP

**Output and Income approaches (45)**
- Gross value added (B1G)
- Taxes less subsidies on products (D21X31)
- Output (P1)
- Intermediate consumption (P2)
- Compensation of employees (D1)
- Other taxes less subsidies on production (D29X39)
- Gross operating surplus and mixed income (B2A3G)

**Expenditure approach (205)**
- Final consumption expenditure (P3)
- Gross capital formation (P5)
- Export of goods (P61)
- Export of services (P62)
- Import of goods (P71)
- Import of services (P71)

**P3 e P5 breakdown (205)**
- Final consumption expenditure (P3)
- Government
- Households
- NPISH
- Gross fixed capital formation (P51G)
- Changes in inventories and valuables (P5M)
Towards a global NAMA (4/9)

FIGARO workflow (cont.)

A64 breakdown (45)
- Output (P1)
- Intermediate consumption (P2)
- Gross value added (B1G)
- Compensation of employees (D1)
- Other taxes less subsidies on production (D29X39)
- Gross operating surplus and mixed income (B2A3G)

Direct purchases abroad (46)

Rest of the World aggregates
Towards a global NAMA (5/9)

Estimate missing GDP

• **Approach:** websites & most correlated economy in terms of diff log, apply same ‘growth rate’

• **Coverage:**
  - 2010-2018: 99%
  - 2019: 98%
  - 2020: 93%
Towards a global NAMA (6/9)

Step-by-step estimation - A64 breakdown

• **Data availability:** available for most EU countries (some A21 breakdown)

• **Missing data:** SUT structures of previous years

• **Confidentiality:**
  - Activities flagged as confidential in NAMA or SUTs replaced by EU averages adjusted to countries’ totals
Towards a global NAMA (7/9)

Step-by-step estimation - Direct purchases abroad (46)

- **Data availability**: available for most EU countries, some non-EU countries
- **Missing data**: similar economies approach calibrated with trade in services
- **Rest of the world**:  
  - Geographical distribution of direct purchases abroad, proxy trade in services(*)  
  - Preliminary estimates of ‘rest of the world’ direct purchases abroad  
  - World balance of direct purchases abroad
Towards a global NAMA (8/9)

Rest of the world (FIGW1) estimate

• GRAS bilateral trade in goods totals to meet export/import of goods (P61/P71)

• GRAS bilateral trade in services totals to meet export/import of services (P62/P72)

• Trade within 160 countries set to zero

• Aggregate 160 countries into one economic entity: FIGW1

• **Result:** NAMA estimates for 46 economies, full consistency of three GDP approaches, A64 activity break down, world trade balanced, direct purchases abroad world balanced
Towards a global NAMA (9/9)

On the use of NAMA in FIGARO

- For 46 economies, SUTs are jointly adjusted to NAMA:
  - T1500, T1611, T1612, T1620, T1630

- IC-use table: 46 use tables of domestic inputs (IC) + bilateral trade + direct purchases abroad + gross value added components

- **IC-use is the world NAMA in an integrated framework**
  - Balancing: only trade is changed, NA remains fixed
  - Significant balancing improvements: 10’
Outlook - Towards a ‘global NAMA’ (?)

• It is important to have a global view of the economy where exports equal imports and direct purchases abroad are balanced

• **FIGARO tables** contribute to this aspiration

• Questions to be addressed:

  • Further integration of FIGARO in other global inter-country input-output tables initiatives (e.g. OECD, UN-ECLAC)

  • Timeliness

  • Coordination and distribution of work
Thank you

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

© European Union 2022

Unless otherwise noted the reuse of this presentation is authorised under the CC BY 4.0 license. For any use or reproduction of elements that are not owned by the EU, permission may need to be sought directly from the respective right holders.
FIGARO links

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