# FIGARO

**F**ull **I**nternational and **G**lobal **A**ccounts for **R**esearch in Input-**O**utput analysis

## The EU Inter-country Supply, Use and Input-Output Tables

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# Outline

1. Background
2. Methodological framework (FIGARO)
3. Integration with global OECD ICIO tables
4. Next steps

# 1. Background

- Based on **National Accounts** framework

- Build up on available data from National Accounts dimension (**national SUIOTs**) and **trade statistics**

- **Standards**: ESA 2010, NACE Rev 2 (ISIC 4), CPC/CPA

- EU (**28 MS**) Inter-country SUIOTs + **United States**

- **Eurostat (C5, G2, G5, E2) regular production** with support from **DG JRC** + EU **part of OECD global ICIO** database

- Link to labour and capital productivity, environmental accounts and business statistics **extensions**

# 2. Methodological framework (FIGARO)

- Builds on Ahmad (2017), Fortanier and Sarrazin (2016), Fortanier et al (2016) and Miao and Fortanier (2016) - OECD
  - ✓ **Transparency**
  - ✓ **Modularity**
  - ✓ **Collaboration and collective ownership**
  - ✓ **Long-term horizon**

[Concepts adapted to the EU version]

# 2. Methodological framework (FIGARO)

- Roadmap to FIGARO:

  1. Preparing **national SUIOTs**

  2. Creating a coherent view of **EU bilateral trade statistics**

  3. **Aligning** the balanced view of trade with **National Accounts** estimates

  4. **Domestic vs. national concepts**: Purchases by non-residents and residents' expenditures abroad

  5. Integrating the balanced view of trade with national SUTs – **EU- International SUTs**

  6. The construction of **EU-ICIO tables**

# 2. Methodological framework (1/9)

*Preparing National SUIOTs:*

- **National SUTs (pp, bp, dom/imp, A64)** - Good practices guidelines, Eurostat and DG JRC (2013) and available official data

- **National IOTs (dom/imp, A64)** – Models B for product x product IOTs and Model D for industry x industry IOTs; and available official data – but wait until the final stage of constructing ICIO

# 2. Methodological framework (2/9)

*Creating coherent view of EU bilateral trade:*

- **Trade in goods (merchandise trade)**
  - ✓ EU COMEXT: Country of consignment/origin
  - ✓ UN COMTRADE: Country of origin + Re-exports
  - ✓ OECD-ESTAT integration of extra-EU trade
  - ✓ Trade asymmetries:
    - ✓ <u>Reasons</u>: cif/fob; time lag between exp/imp; re-exports; transit trade; unallocated and/or unclassified trade…
    - ✓ <u>Reconciliation</u>: *Symmetry index* (weights = % of each country's total trade that approximately match mirror trade flows) + *Manual ad-hoc adjustments*
    - ✓ <u>Statistical</u> vs. Analytical tables (Steering Comm. Nov 16)

# 2. Methodological framework (3/9)

*Creating coherent view of EU bilateral trade:*

- **CIF/FOB estimations (by product, partner)**
  - ✓ Miao and Fortanier (2017) – explicit model with NSIs estimates and UN COMTRADE;
  - ✓ FIGARO (2017) – implicit model with COMEXT data 1995-2015 (lack of available data: only FI, DE, SK)
    - ✓ Gravity model based on: distance; GDP of reporter and partner countries; oil price; insurance costs (median unit value); contiguity; (opt) FE for product, partner and time
    - ✓ Data sources: COMEXT (imports and exports, EUR/kg – HS-4 digit); CEPII (distance and contiguity); World Bank (GDP p/c); US Energy Information Administration

# 2. Methodological framework (4/9)

- **Trade in services**
  - ✓ Only financial flows observable – modes of supply
  - ✓ EBOPS items and confidentiality issues
  - ✓ BPM6-EBOPS2010 and STEC wherever available
  - ✓ Total Services (S200) complete; gaps in sub-items:
    - ✓ Top-down approach from: structural info over time; simple derivations; mirror data; linear interpolations; moving averages…
    - ▪ Gravity models for specific items: Travel services (SD); Use of IPRs (SH); Audio-visual and related services category (SK)
  - ✓ Trade asymmetries (BOPWG, October 2016) + Index
  - ✓ Conversion tables EBOPS-> CPA/CPC – RACE method

# 2. Methodological framework (5/9)

## *Aligning with National Accounts*

✓ <u>Goods sent abroad for processing</u>: not accounted any more as gross exports and gross imports in ESA2010

✓ <u>Merchanting activities</u>: trade data should reflect merchanting margins applied by the merchanting country included in the amounts paid by importer country

✓ <u>Re-exports</u>; re-exports should be separated from domestic exports in trade statistics; countries may report only net trade in NAs;

✓ <u>Unobserved trade;</u> attributed to the difference between:

- *Balanced view of trade* (incl. adjustments for merchanting)
- *SUTs/NAs* (incl. changes for re-exports and goods sent abroad for processing)

# 2. Methodological framework (6/9)

## *Aligning with National Accounts*

- ✓ <u>Unobserved trade;</u> reduce as much as possible this difference by a transparent conversion matrix that reallocates differences across products in a way that it preserves each country's total imports by industry and partner (Ahmad, 2017)

- **Discrepancy item**

  - ✓ What remains = "discrepancy item"

  - ✓ Either leave it aside (<u>statistical</u> approach) or allocating it bi-proporitonally (GRAS) throughout the matrix (<u>analytical</u> approach)

  - ✓ <u>Comparison</u> of resulting balanced trade with SUTs pp -> Feedback loops, still possible...

# 2. Methodological framework (7/9)

## *Domestic/national concepts in consumption*

- ✓ **Direct purchases** abroad by **residents** (imp) and direct purchases in the domestic territory by **non-residents** (exp) usually in **NAs** = **lump-sum figure**
- ✓ Tourism Satellite Accounts + common spending patterns across tourists = used to **split** balanced view of "travel services" (EBOPS) into "**goods**" and "pure services" + **geographical allocation** using balanced view of trade + proportional allocation of **remaining difference** with NA

# 2. Methodological framework (8/9)

## *Construction of EU International SUTs:*

- ✓ **Trade values of the national SUTs are respected** (by industry and reporting country)
- ✓ Although later changed possibly due to **revision of NAs**
- ✓ **Exports** by product and reporter country split **across trading partners** using balanced bilateral trade data
- ✓ Split **across users** with info from STEC, TEC and import use tables
- ✓ Further adjustments to **match national imports** by industry and reporter country from national SUTs
- ✓ **SUTs bp** available, including TTM and TLS tables (2010)

# 2. Methodological framework (9/9)

## *Construction of EU-ICIO:*

- ✓ **Based on** the **previously** estimated EU International SUTs

  - ✓ Product by product; final demand components unchanged + Model B (industry technology) + Constrained by official IO tables, wherever available

  - ✓ Industry by industry; value added components unchanged + Model D (fixed product sales structure) + Constrained by official IO tables, wherever available

- ✓ Models **B** and **D** must **not be applied** to the **full** EU International SUTs

# 3. Integration with OECD ICIO

- **MoU (2016-2020) – Schedule**
  - 2017: **Finalize FIGARO** EU-IC-SUIOTs (2010) as consistent as possible with the OECD + **dissemination/revision strategies** + agreement on process and methodology for **balanced bilateral trade** database
  - 2018: Full integration for 2010 (FIGARO and OECD-ICIO)
  - 2019: Construction of anual time series (2011-14)
  - 2020: Construction of time series (2010-15) + revisions

# 4. Achieved so far and ahead...

- As of **May 2017**,
    - All national **SUTs** pp, bp collected, estimated, validated
    - **IT** infrastructure implemented to store database
    - **CIF-FOB** margins estimated
    - Estimation of **missing services trade** (SD, SH, SK)
    - Work in progress on the compilation of the balanced view of the **EU bilateral trade**, including trade asymmetries
    - Work in progress on the process development to **align** the balanced view of **bilateral trade with NA** and integration with OECD ICIO tables
    - Work in progress on the FIGARO **environmental** accounts

# Thank you for your attention!!

## The FIGARO Project

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