Embodied employment in exports and value added content of exports and imports at EU28 level using of input-output techniques

Isabelle Rémond-Tiedrez, Eurostat
Statistical facts of 2014 for EU

28,3 million employed persons in the EU were supported by exports to the rest of the world
= 12,5% of total EU employment

1552 billion€ of value added produced in EU due to exports
= 12,5% of total EU value added
Methodological framework

- EU28 input-output table
- Leontief quantity model
- Eurostat website, tables disseminated since 2011
- ESA2010 methodology
- Years 2005 to 2014 for European tables
- National input
Input to EU Input-Output tables

- 28 National tables
  - Input-Output tables
  - Supply and use tables
  - Basic prices

- Basic prices
  - Purchasers' prices
  - Non-deductible VAT
  - Other net taxes on products
  - Trade and transport margins

- European transmission program
Data availability

Regulation (EU) No 549/2013

Annually
- Supply table at basic prices with transformation to purchasers' prices
- Annual Use table at purchasers' prices

5-yearly
- Symmetric input-output tables, total, domestic production, imports
- Use table at basic prices, total, domestic, imports
- Valuation matrices: taxes less subsidies, trade and transport margins

Voluntary transmission

Good practices for estimation
Compilation at country level

Sup PP $\rightarrow$ TLS $\rightarrow$ TTM $\rightarrow$ Sup BP

Use PP $\rightarrow$ TLS $\rightarrow$ TTM $\rightarrow$ Use BP
Country use table at basic prices

- Use table of domestic production
- Use table of imports
- Use table of imports intra EU
- Use table of imports extra EU

- Total import by product (supply table)
- Trade statistics for goods and for services
  - **Share of imports intra EU commodity-wise**
- Proportionality assumption
Consolidation to European level

$$\sum_{n=1}^{28} Supply$$

$$\sum_{n=1}^{28} Use$$
Consolidation to European level (2)

1: exports to intra-EU countries
2: exports to extra-EU countries
3: transit trade – imported from intra-EU, exported to intra-EU
4: transit trade – imported from intra-EU, exported to extra-EU
5: transit trade – imported from extra-EU, exported to intra-EU
6: transit trade – imported from extra-EU, exported to extra-EU
Consolidation to European level (3)

Main problem of the consolidation steps is to balance the intra-EU import table with the information on intra-EU exports in column 1.

Each trade flow is reported by two countries which two values usually do not match (mirror trade statistics).
Consolidation to European level (4)

**Step 1:** Adjust for taxes less subsidies on intra-EU imports

**Step 2:** Correct trade flows imported from intra-EU, re-exported to intra-EU (column 3)
Consolidation to European level (5)

Step 3: Correct for trade flows imported from within the EU and re-exported outside the EU

Step 4: Correct for trade flows imported from outside the EU and re-exported within the EU
Consolidation to European level (6)

Step 5: Rescale all intra-EU imports such that their total equals that of the intra-EU exports
Factor of circa 10%

Step 6: Balancing the intra-EU import table with the intra-EU export column using GRAS

Final step: benchmark to macro data at European level (Value added, Taxes less subsidies, Final consumption, consumption of fixed capital)
Consolidated environmental tables

✓ Adding environmental extensions (EE) to the Supply and Use Tables (SUT);

**R** Environmental extensions - industries (env. ext. by industries)

**H** Environmental extensions - direct of final demand categories (env. ext. by final demand category)
Consolidated IO tables

- Transformation matrix is calculated according to market shares.

Use of the industry technology assumption to give product-by-product tables (Model B, Eurostat 2008 Manual)
Sectoral structure of output

- Products of agriculture, forestry and fishing
- Industrial products (except construction works)
- Constructions and construction works
- Wholesale and retail trade; transportation and storage; accommodation and food services
- Information and communication services
- Financial and insurance services
- Real estate services
- Professional, scientific and technical services; administrative and support services
- Public administration, defence, education, human health and social work services
- Arts, entertainment and recreation; other services; services of household and extra-territorial organizations and bodies

Embodied employment in exports extra EU

Embodied employment in exports EU-28
Embodied employment in exports EA-19
Embodied employment in exports Germany (2012)
Employment EU-28
Employment EA-19
Employment Germany

Products of agriculture, forestry and fishing
Constructions and construction works
Information and communication services
Real estate services
Administration and other public services
Industrial products (except construction works)
Trade, transportation, accommodation and food services
Financial and insurance services
Professional and support services
Arts, entertainment and other services
Further data

- Time series of EU consolidated tables 2005 – 2014
- European inter-country supply, use and input output table
- Development of a quality adjusted labour productivity index in the European Union
Embodied employment in exports EU28

- Products of agriculture, forestry and fishing
- Industrial products (except construction and construction works)
- Constructions and construction works
- Wholesale and retail trade; transportation
- Information and communication services
- Financial and insurance services
- Real estate services
- Professional, scientific and technical
- Public administration, defence, education,
- Arts, entertainment and recreation; other

Legend:
- High
- Medium
- Low