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eIOT FRAMEWORK FOR THE ITALIAN ECONOMY: HOW TO COMPILE IT AND ITS ANALYTICAL POTENTIAL

FEDERICO SALLUSTI, EMANUELE PALLOTTI, STEFANIA CUICCHIO
Istat | National Accounts

Outline

- Introduction
- The eSUT framework
- Building eIOT
- Analytical potential
- Conclusion and way forward

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Introduction

- This presentation shows how eIOTs for the Italian economy are obtained based on the information provided by a (partial) eSUTs framework
- eIOTs are built by exploding the aggregated IOTs using the information coming from the eSUTs framework
- This allows to maintain the overall consistency while gaining higher granularity in the representation of the economy and enhancing the potential of IOTs in terms of both structural and impact analyses
- eIOTs have the following structure:
  - I/O linkages consider 64 industries and 48 typologies of business unit (3072x3072 matrix)
  - All relevant aggregates (including distribution of income) are included
  - A detailed breackdown for imports (by origin) and exports (by destination) is provided

The eSUT framework | Aggregates

- The eSUT framework developed as yet provides information related to the following aggregates…
  - Output
  - Intermediate costs
  - Value added
  - Compensation of employees
  - Gross operating surplus
  - Imports
  - Exports
- …considering, for each industry, 48 typologies of business unit

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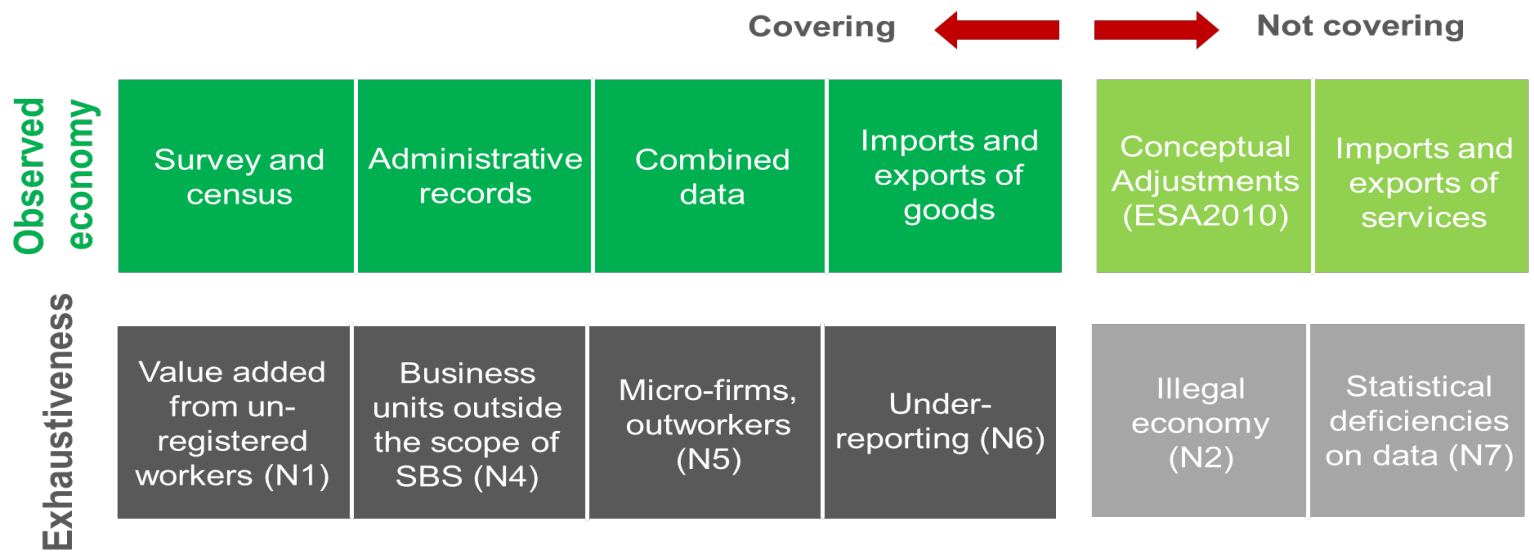
The eSUT framework | Typologies of business unit

- Business units are clustered according to three classification layers:
  - **Size-class** (4 categories):
    - Micro-firms: 1-10 workers
    - Small firms: 10-50 workers
    - Medium firms: 50-250 workers
    - Large firms: 250+
  - **Governance status** (3 categories):
    - Domestic-owned
    - MNE with Italian GDC
    - MNE with foreign GDC
  - **Degree of participation in GVCs** (4 categories, following Veugelers *et al*., 2013):
    - No participation
    - Low participation (Single-mode)
    - Medium participation (Dual-mode)
    - High participation (Full-mode)

The eSUT framework | Coverage

- As yet, the extended information is partial in terms of coverage…

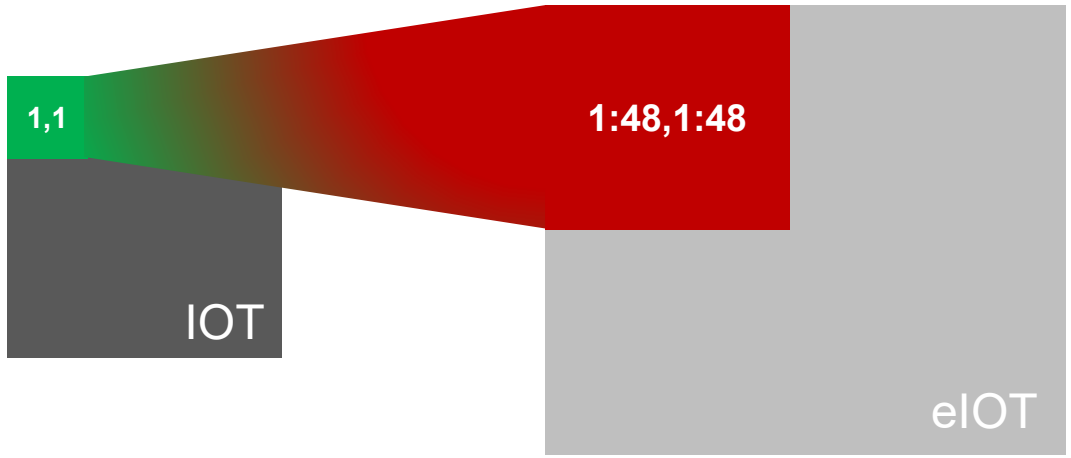


- …in terms of the compilation of all product x industry matrices needed to complete the SUT scheme
- …in terms of the breakdown by product of the results obtained by industry for output and intermediate costs

Building eIOTs | Concepts

- eIOTs are built by exploiting two sets of information:
  - The eSUTs framework, which provides, for each aggregate and industry, the breakdown by typology of business unit
  - The aggregated IOTs, which provide the full structure representing the Italian economy

- The main idea is to use the eSUTs to explode aggregated IOTs figures, using the latter as constraint to assure the consistency of the extended system of accounts



- eIOTs framework is composed by the three customary matrices (industry by industry with fixed structure of sales):
  - Total eIOT (compiled)
  - Domestic eIOT (compiled)
  - Import eIOT (obtained as Total eIOT – Domestic eIOT)

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Building eIOTs | Structure of matrices

TOTAL AND DOMESTIC eIOTs

I/O LINKAGES

64 industries and 48 typologies

FC

GCF

CH INV

EXP

EXP BY PARTNER

64 industries and 48 typologies x 19 destinations

IMP

TAXSUB

IC

OUTPUT

VALUE ADDED

COMP EMP

TASUPR

OP SURP

IMPORT eIOTs

I/O LINKAGES

FC

GCF

CH INV

EXP

IMP BY PARTNER

64 industries and 48 typologies x 19 origins

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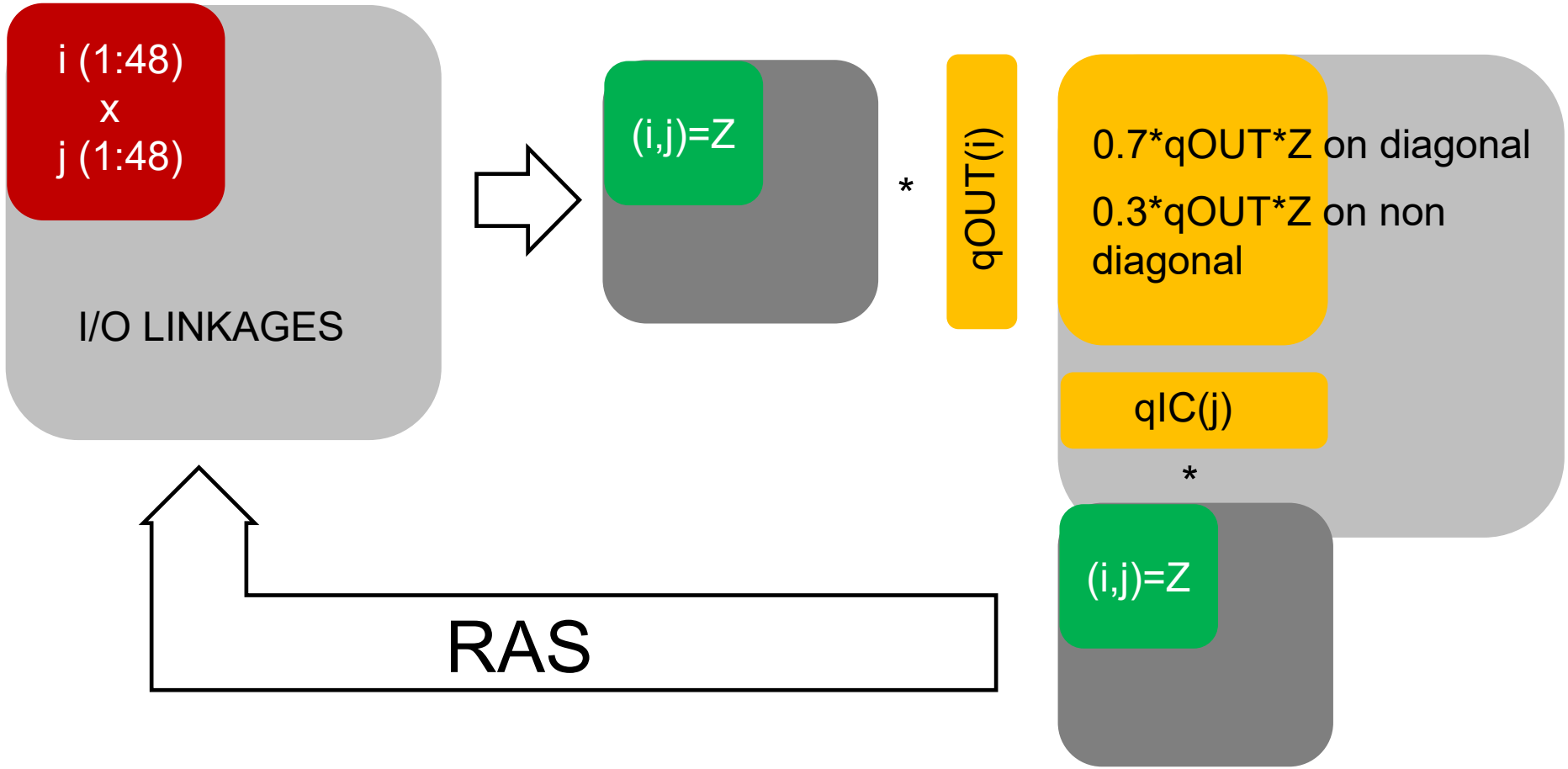
Building eIOTs | Compilation

- For total and domestic eIOTs, I/O linkages are compiled for each (i, j) exploiting the information of the eSUT framework (the share of output and intermediate costs by typology) to explode the related value in the IOT matrices



Building eIOTs | Compilation

- Exports and imports (total and by partner) for each i and j are compiled exploting the structure of eSUT framework to split the values from IOT

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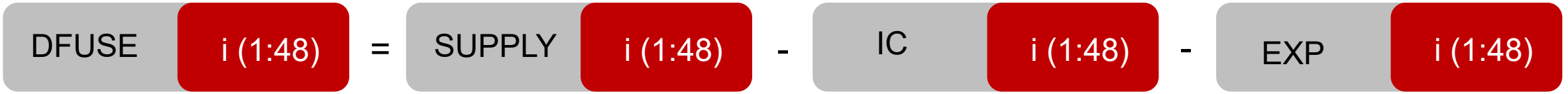
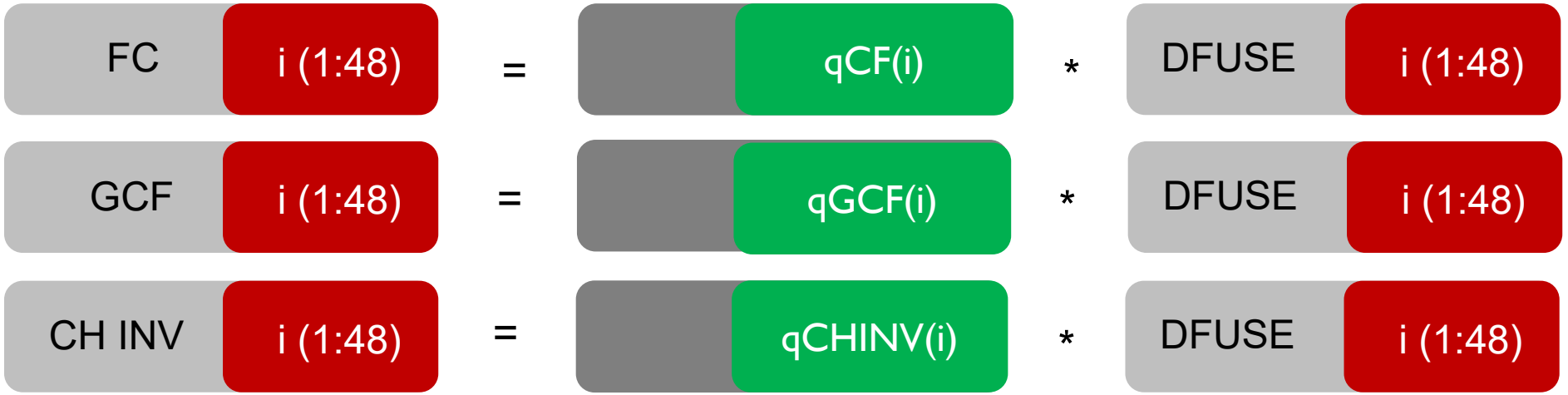
Building eIOTs | Compilation

- Final consumption, Gross capital formation and Change in inventories are compiled for each i by assigning domestic total final use to the different components following the row-structure of the IOT





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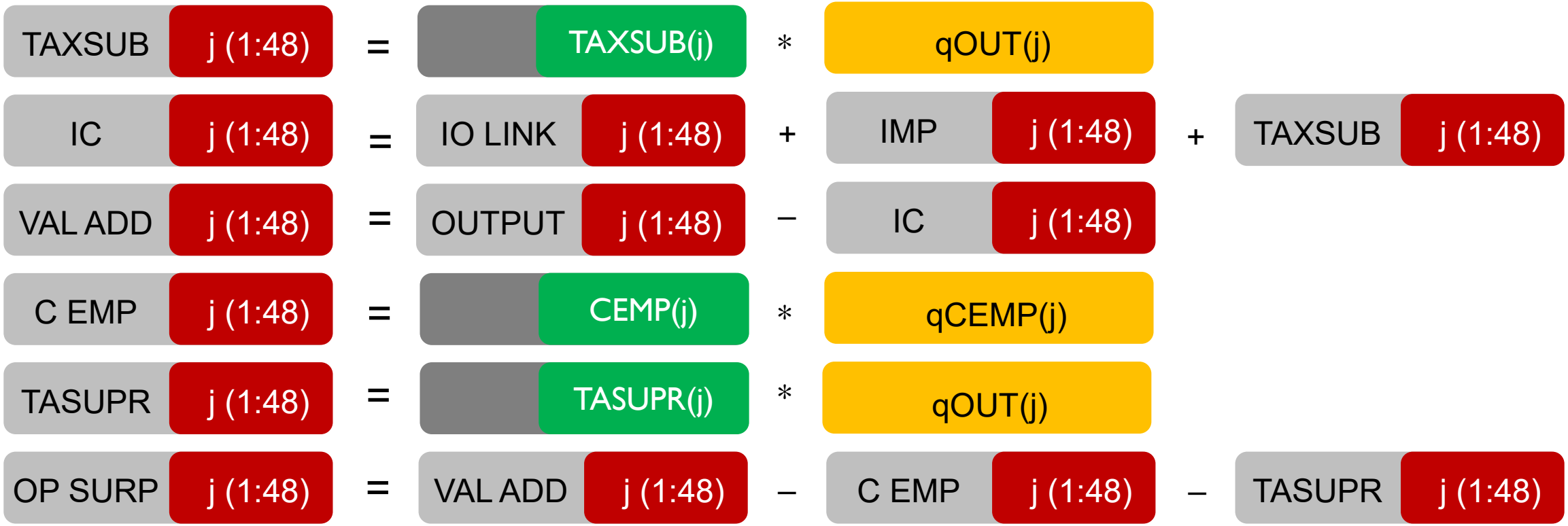
Building eIOT | Compilation

- The other aggregates are compled as follows:s



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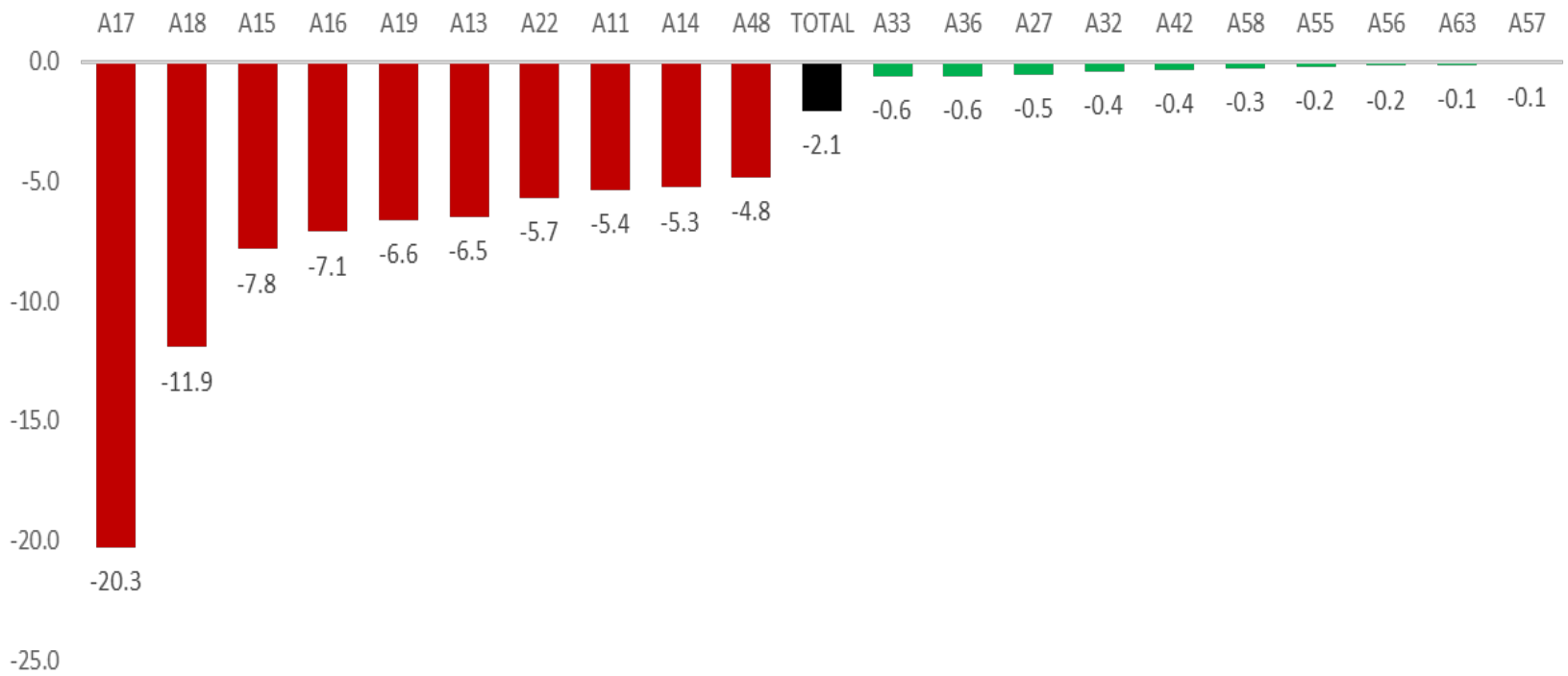
Analytical potential | Granularity

- IOTs can be used to analyse the structure of sectoral relationships (network approach) and the impact of different types of shock (Leontief approach)
- eIOTs allow to increase the granularity of both types of analysis, considering heterogeneous behaviours and reponses of different typologies of business unit, thus improving the precision of results
- Stepping from IOTs to eIOTs involves considering 3072 agents instead of taking into account only 64 industries
- In terms of à la Leontief analysis this applies to both shocks (detail of impulses) and responses (detail of impacts)
- In the following excersice the impact of exports to Germany on the Italian economy is analysed by using eIOTs framework

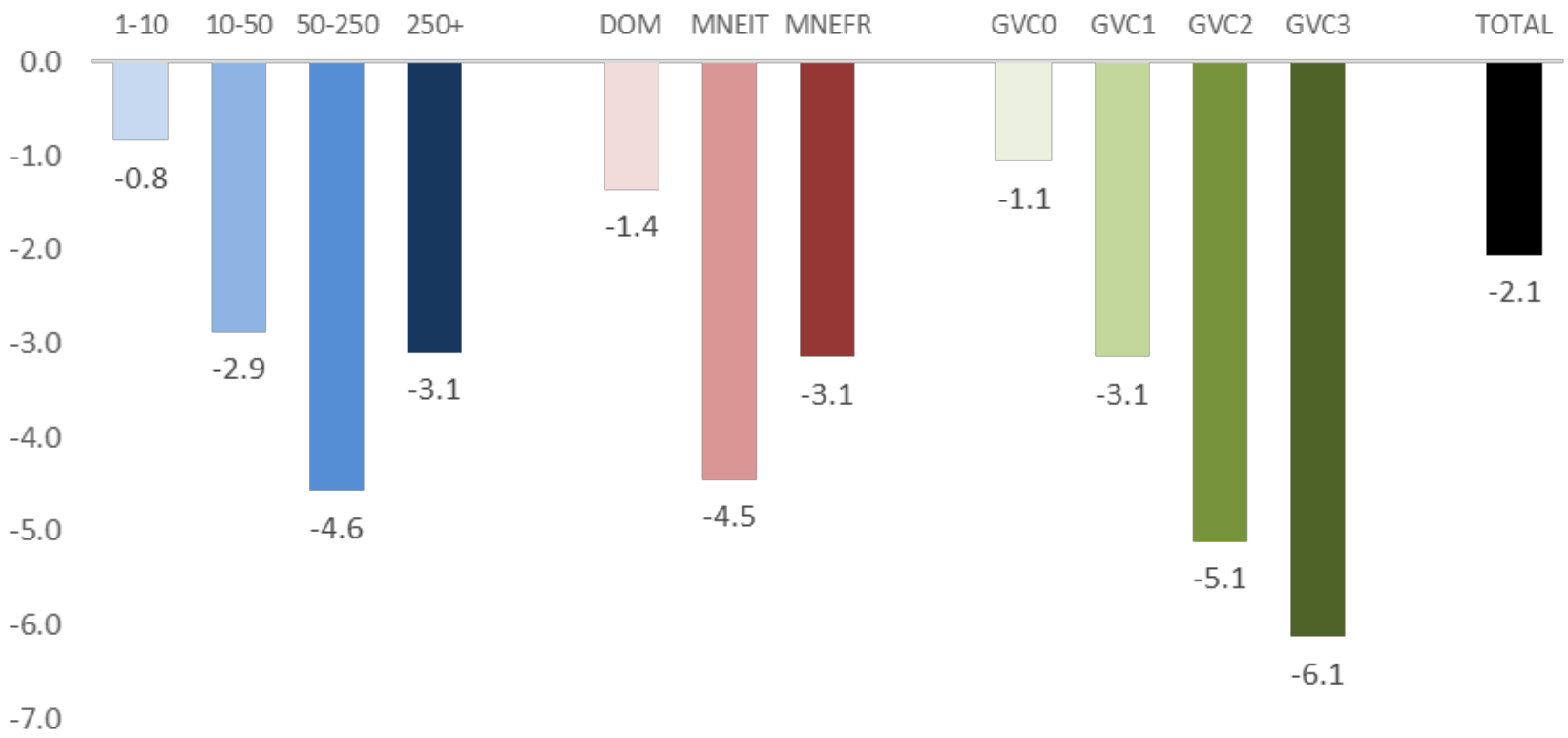
Analytical potential | Customary sectoral analysis

- Exports to Germany represent about 10% of overall Italian exports (50 bn euros)
- Zeroing exports to Germany, the Italian value added lowers by 2.1%, mainly in Manufacturing
- Compensation of employees decreases by 2.0%, while operating surplus by 2.1%. Imports lowers by 4.6%
- The new set-up of the system involves:
  - Higher degree of integration
  - Lower dependency from imports
  - Higher profit share



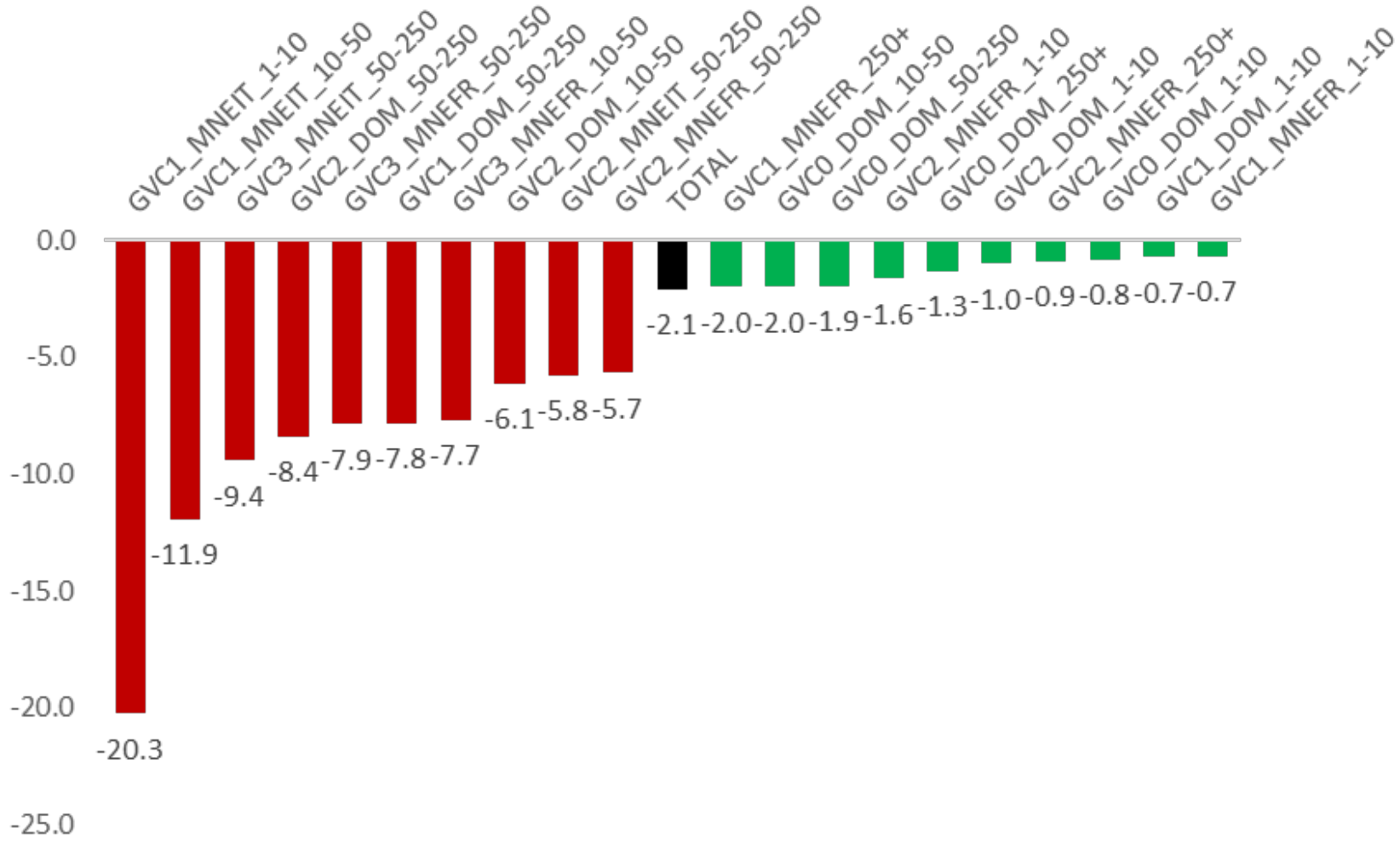
Analytical potential | Classification layers

- eIOTs allows to consider a finer breakdown of results, accounting for the heterogeneity across different typologies of business units
- Effects are concentrated:
  - In medium (-4.6%) and large firms (-3.1%)
  - In Italian MNEs (-4.5%)
  - In business units more involved in GVCs (-6.1% for GVC3 and -5.1% for GVC2)



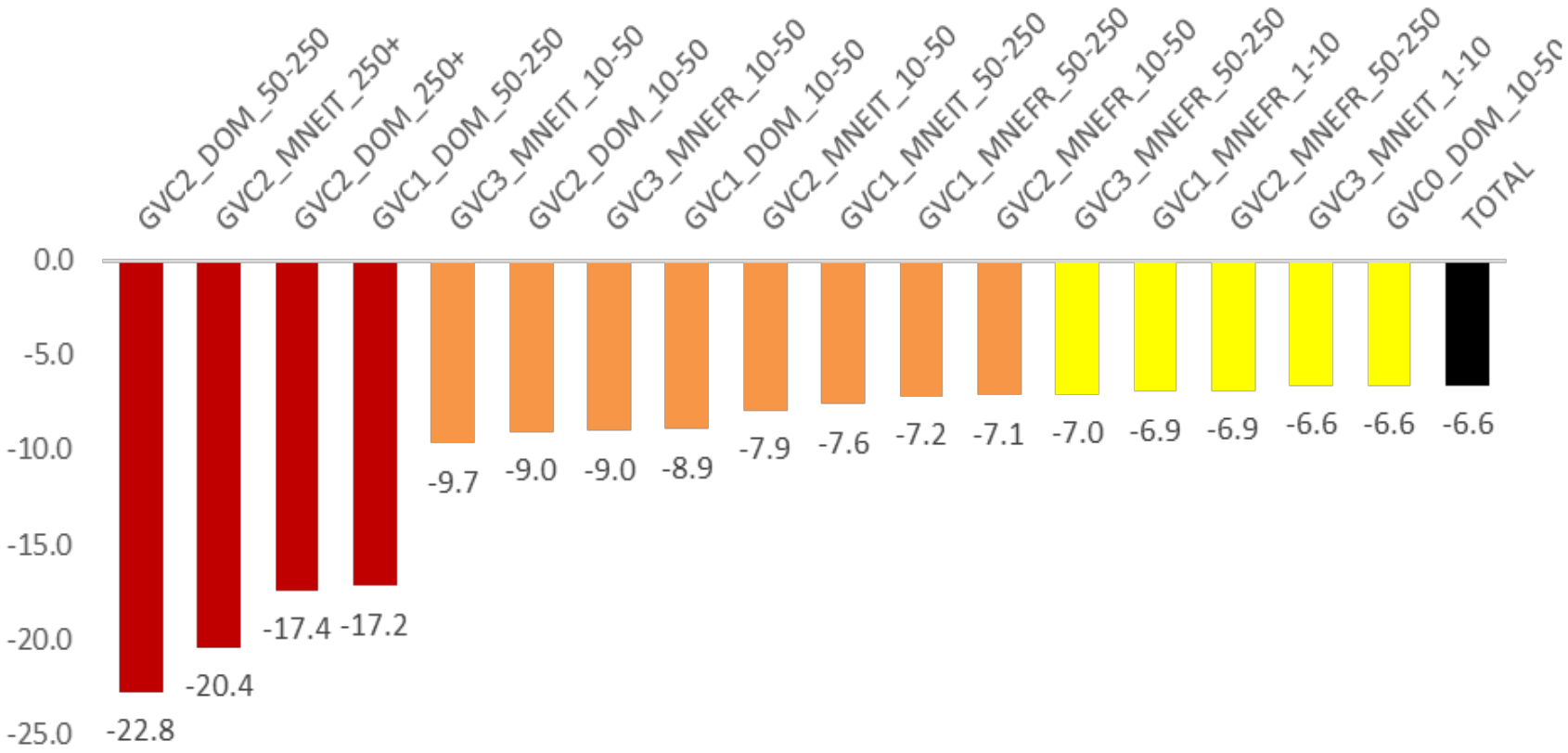
Analytical potential | Typology focus

- eIOTs also permit to consider the effects by typology of business units, independently from the industry
- Italian MNEs (independently from size class and GVC participation) shows the lager effects
- Medium firms are more affected if involved in GVCs

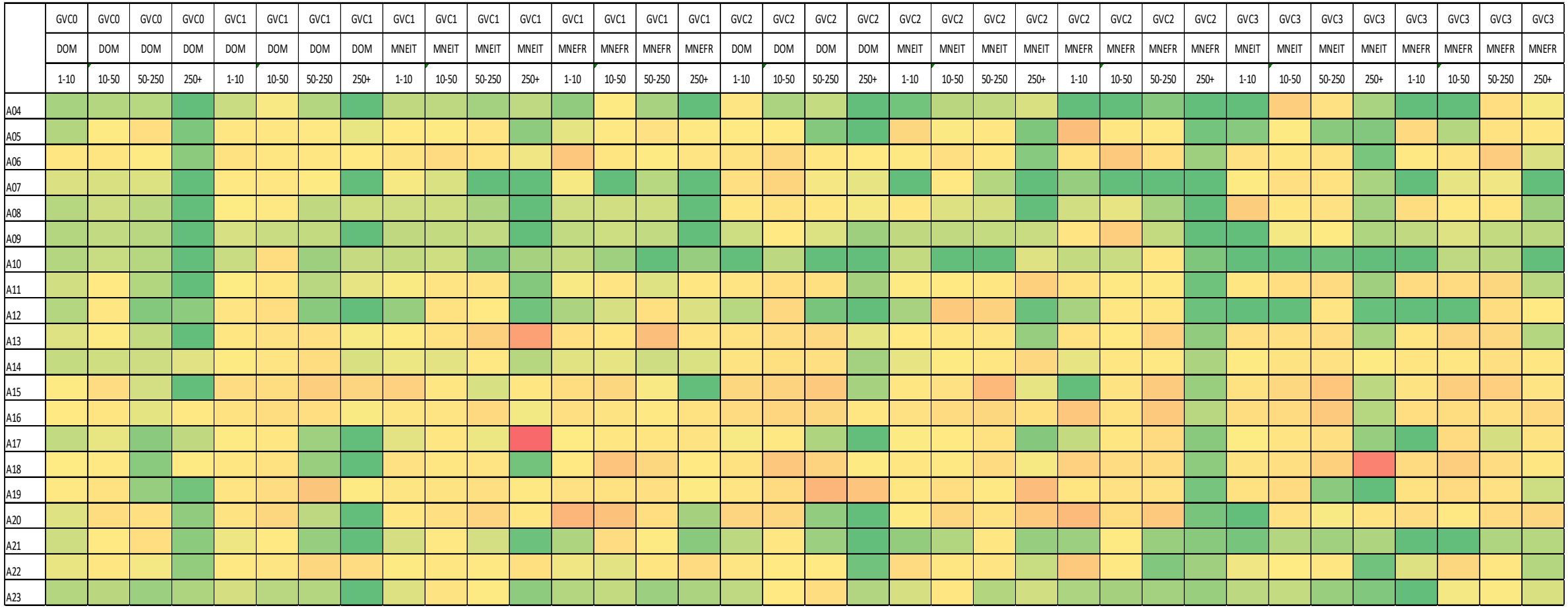


Analytical potential | Sectoral focus

- Typologies of business unit can be used to map the effects within a given industry (Machinery in this example)
- The impact on Machinery is mainly connected with medium and large firms involved in GVCs
- MNEs shows a lower response to the shock with respect to domestic



Analytical potential | Mapping effects



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Conclusion and way forward

- Using a (partial) eSUTs framework eIOTs can be obtained starting from the aggregated IOTs
- eIOTs allows to gain in granularity of representation and analysis of the Italian economy, enanching the capability of IO analysis to grasp heterogeneous behaviours and different responses to stimuli across the different typologies of business units
- Istat is now setting up a thematic area to develop eSUTs and eIOTs frameworks in the next years, having the following goals:

1. Integrating this preliminary version of eIOT for Italy into multi-regional IOT (Figaro, ICIO) following a preceding experience (*completion expected by the 3rd trimester 2024*)
2. Obtaining a complete eSUTs framewrok (*completion expected by the 2nd trimester 2025*)
3. Obtaining final eIOTs from the complete eSUTs framework (*completion expected by 4th trimester 2025*)

thank you

FEDERICO SALLUSTI | fsallusti@istat.it

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