

We all live in a (yellow) granular world (wide web): The impact of MNEs on a regional economy

S. Rosignoli¹ T. Ferraresi D. Burgalassi
A. Peruzzi S. Bertini

¹Irpet

Aisre 2016

Ancona

September 20th - September 22nd

Background

- Granularity as a pervasive feature of modern economies (see Gabaix, 2011)
- The network structure of (globally) integrated supply chains as a powerful transmission mechanism of aggregate and idiosyncratic shocks (Acemoglu et al., 2012) and the Input-Output framework as a powerful tool to investigate such a structure
- MNEs and the (home/host) economy: growth enhancing effects due to externalities (see Alfaro et al., 2004)? what about employment volatility/growth (see Barba Navaretti et al., 2003)? MNEs and job polarization (Acemoglu and Autor, 2011)
- MNEs and growth at the (sub)regional level: proximity and technological spillovers; input/output linkages (see, e.g., Immarino and McCann, 2013; Gori and Paniccià, 2015)

Our work

- We estimate the weight of MNEs in the Tuscan economy in terms of employees, value added and exports up to the local labor system (LLS) level
- We assess the contribution of MNEs to the macroeconomic dynamics during the Great Recession in terms of value added and employees at the LLS level
- We modify the regional Input-Output (I-O) model of IRPET so as to isolate MNEs firms and estimate their (direct and indirect) impact on the regional economy

Who's whom? Identifying MNEs operating in Tuscany

- From Reprint dataset we identify foreign MNEs (ultimate owner localized abroad) and Italian MNEs (active abroad; ultimate owner in Italy)
- We consider a firm as multinational even in cases of minority ownership: relatively few cases; sometimes the information is missing
- We count firms but consider plants (KAUs): e.g., if an Italian MNE based in Milan has a plant in Tuscany, we count it as an MNE operating in Tuscany

Sizing MNEs within the Tuscan economy

- Data sources: Asia (Firms, Local units, Frame-SBS; Istat); Aida (Bureau van Dijk); International trade (goods; Istat); Reprint (Italian and foreign MNEs, Agenzia ICE - Politecnico di Milano); Irap declarations (Tuscan government and Sogei)
- Items (stock and, when possible, dynamics): number of firms, employees, value added (and composition), intermediates consumption (and composition in terms of goods and services) exports, imports
- Method: localized employees on total employees as a weight to construct regional (and LLS) based items within firms balance sheets

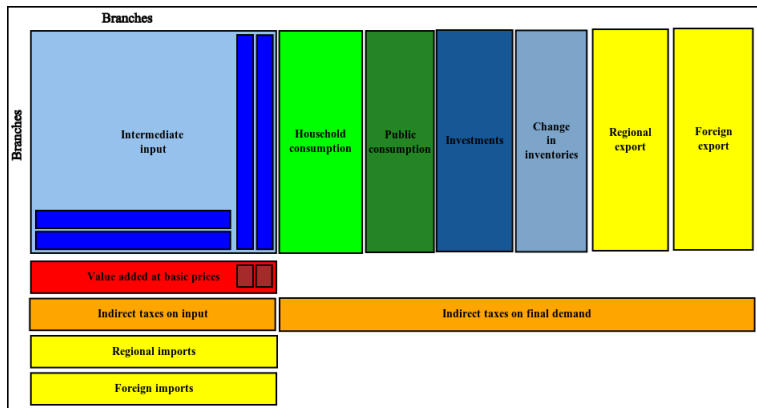
Sizing MNEs within the Tuscan economy (*con't*)

- Frame (2012, ASIA local units, excluding banks): 0.66% of (active) firms, 12.49% of employees, 26.67% of value added and 58.22% of exports (goods)
- Manufacturing sector: 1.92% of (active) firms, 22.72% of employees, 43.60% of value added and 62.74% of exports
- Contribution to growth at the LLS level (all sectors, excluding PA): strong, especially in terms of value added (e.g., foreign MNEs in Firenze: +3.04% vs. -3.07% as a whole; Italian MNEs in Pontedera: -7.60% vs. -14.27% as a whole)

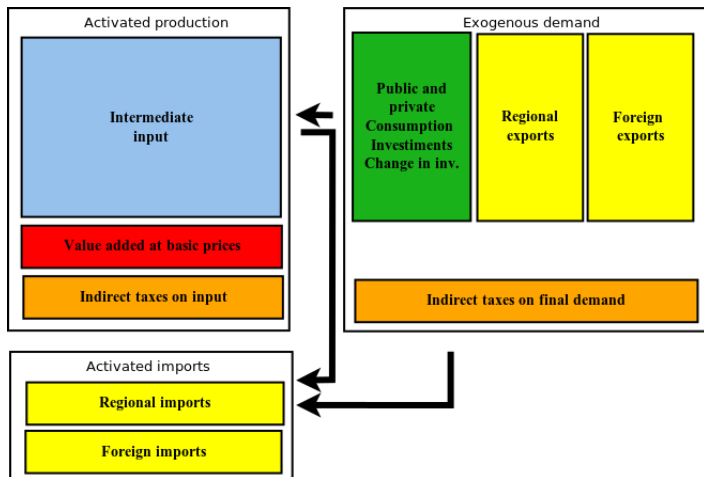
An I-O model for estimated the impact of MNEs

- The facts depicted thus far does not consistently insert MNEs in regional accounts
- The impact of MNEs is not simply given by their weight (*by the way, imprecisely computed!*) in the economy, since they affect the whole system both directly (through their supply chain) and indirectly
- A regional I-O model, in the vein of those traditionally designed by IRPET, allows to carefully account for this in a consistent macro accounting framework and reasonable assumptions regarding the behavior of the economy in the short-run (see, e.g., Casini Banvenuti & Panicià, 2003; Cherubini et al., 2012)

Symmetrical IO Table



IO Model



Direct and indirect MNEs impact estimation

We run a counterfactual exercises and compare a world **with** MNEs and a world **without** MNEs, under the hypothesis of non-substitutability.

The MNEs regional economic impact is estimated adding-up several io model computations:

1. Direct (not impacted) value added of the MNEs by branches
2. Impact of MNEs intermediate input reduced from the imported part
3. Impact of MNEs foreign exports (part of final production)
4. Impact of investments made by MNEs

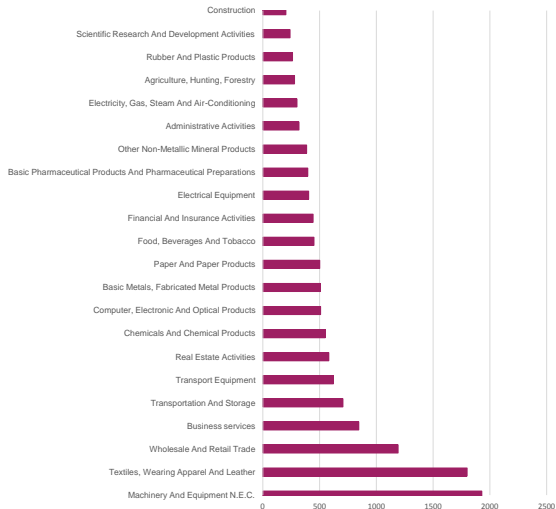
The impact of MNEs (exogenous consumption)

Once inserted in the regional accounting framework the weight of manufacturing MNEs on total economy is **7%**. Then, let the model run and...

	Italian MNEs	Foreign MNEs	All MNEs
Production	20289.0	17047.6	37336.6
Exported prod.	8286.6	7213.8	15500.5
Foreign imports	7572.6	6586.2	14158.8
Direct va	7251.9	6305.4	13557.3
Indirect va	477.7	366.7	844.5
Total	7729.6	6672.2	14401.8
% on total va	8.02%	6.92%	14.95%

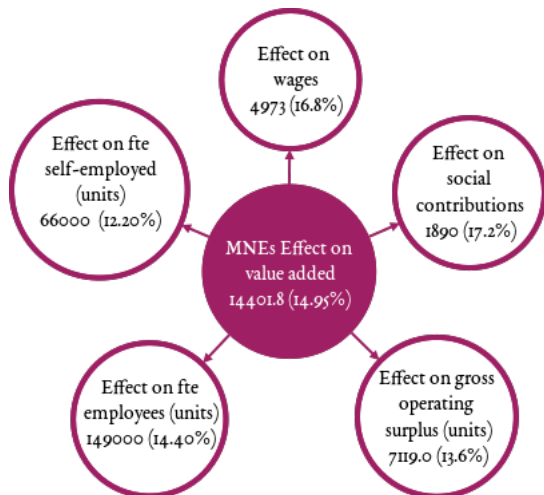
With endogenous consumption: **16.68%**

The impact on sectors (exogenous consumption)



The impact on value added components (million of euros) and labour demand (units)

Computed using sectoral shares of value added by input-output models (not micro data).



To sum up

- We assess the weight of multinational enterprises within the Tuscan economy and their contribution to growth up to the LLS level
- We modify a regional I-O model with (Italian and foreign) MNEs and estimate their impact on the regional economy in terms of direct as well as indirect and induced transmission mechanisms
- According to our results, both Italian and foreign MNEs do exert a relevant impact on the Tuscan economy. The aggregate effect is the result of direct, indirect and induced impact

Further research

1. Using labor productivity information to better attribute firm level data to plants (ad hoc surveys to get plant level information)
2. Embedding the results from surveys so as to reduce the biases when it comes to modifying the I-O accounting framework with MNEs
3. Ameliorating the scenario analysis and the model: endogenous investment? a multi-regional model?
4. How does our story fit with the rise of global value chains? a time series perspective