THE EFFECTS OF EXPORTS AND IMPORTS: THE CASE OF ITALY

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Outline

- Overview of literature on productivity effects of trade:
  - Inevitably incomplete because huge and fast growing
  - Both exports and imports
  - Direct and indirect effects of trade on productivity

- The case of Italy:
  - Why is Italy interesting?
  - Brief description of all the available evidence

- An example in detail: Chinese import penetration and output prices in Italy

- Concluding remarks and policy challenges
Two channels

- Trade can affect productivity in two ways:
  - Reallocation (between firms)
  - Within firm: learning-by-exporting, scale effect, firms’ reaction to competition
- Some recent surveys:
  - Wagner (11) on empirical studies of int'l trade and firm performance
  - Redding (11) on theories of heterogeneous firms and trade
  - Singh (10): trade and growth (macro and sectoral)
  - Silva, Africano and Afonso (10) on learning-by-exporting (firms)
Between: theory

- Melitz (03), Bernard, Eaton, Jensen & Kortum (03), Melitz & Ottaviano (08)
  - Firm heterogeneity in size and productivity within sectors: due to fixed costs of exporting, only most productive firms export
  - Trade liberalization forces least productive firms to exit (competitive pressure)
  - Market shares get reallocated from less to more productive firms
  - Higher average (aggregate/sectoral) productivity
  - Aggregate effect depends on the shape parameter of the Pareto distribution of firms’ productivity.
  - Recent developments: focus on number and quality of products as margins of adjustment

Between: empirics

- Bernard & Jensen (04): export-driven reallocation explain about 40% of US manuf. TFP growth (83-92)
- Pavcnik (02): productivity growth after trade lib. in Chile due to large reallocation (also within firm productivity growth in import-competing sectors)
- Bernard, Jensen & Schott (06a,b): reduction in trade costs and greater exposure to LWC imports is positiv. (neg.) correlated with prob. of plant death (empl.). Effect stronger on low-productive firms (US)
- Bloom, Draca & Van Reenen (12): Chinese import competition reduce empl growth and increases plant exit (firms from 11 EU countries)
Within: theoretical arguments

- **Learning-by-exporting (LBE):** firms benefit from foreign buyers’ (and competitors) technical and managerial expertise
- **Scale effect:** access to foreign markets allows to increase capacity utilization/revenues, thus favoring tech adoption (Yeaple, 05; Bustos, 11), product innovation (Grossman & Helpman, 91), productivity growth
- **Type of demand/utility function:** foreign consumers may be more willing to pay for quality (lower marginal U of income), thus inducing product innovation and quality upgrading (Verhoogen, 08)
- **Learning-by-importing:** firms learn from foreign suppliers; imports of capital goods enable tech transmission and firm-level productivity growth
- **Competition:** increased competition (typically, imports from LWC) may induce firms to innovate more
- ![Productivity spillovers of exports: firms close (location or technology) to exporting firms can learn](Literature review)

Within: empirics [1]

- **Learning-by-exporting (LBE) and scale effect:** not always clear distinction of 2 channels

  - **Exports and productivity:** mixed results, serious identification issues
    - Clerides, Lach & Tybout (98) for Mexico & Morocco, Bernard & Jensen (99) for US: no effect of exporting on productivity; only self-selection
    - ISGEP (07): in a cross-country harmonized exercise finds robust evidence of self-selection into exporting, while LBE only in Italy
    - De Loecker (07): Slovenian export entrants become more productive once they start exporting and productivity gap wrt to domestic firms increases over time. Stronger effects from exports to high-income regions.
    - Crespi, Criscuolo & Haskel (08): exporters more likely to report (CIS) they learn (technological innovation) from buyers. These firms record higher productivity growth
**Within: empirics [2]**

Exports and innovation/tech adoption (identify a mechanism to productivity growth):

- Salomon & Shaver (05): on a sample of Spanish firms, exporting is associated with ex-post increase in patenting and product innovation. Salomon & Jin (06): stronger for tech-advanced firms
- Girma, Gorg & Hanley (08): previous exporting experience enhances R&D propensity of Irish firms, but not of British ones
- Damijan, Kostevc & Polanec (10): on Slovenian firms, exports increase prob. of process innovation and productivity growth
- Lileeva & Trefler (10): on Canadian firms, elimination of US tariffs increase productivity, innovation and high-tech adoption due to market size effect. Impact stronger on least productive starters
- Bustos (11): increase in revenues due to elimination of Brazil’s tariffs induce Argentinian firms to start exporting and to tech-upgrade (also if already exporting). Impact stronger on medium-productive firms (due to a high fixed costs of tech adoption). Interesting remark: only a permanent trade shock that makes tech adoption profitable may increase productivity growth

**Within: empirics [3]**

- **Learning-by-importing**: positive effects of imported inputs on domestic productivity (exception: Muendler, 04)
  - Amiti & Konings (2007): a 10% fall in Indonesian input tariffs leads to a 3% productivity gain for all firms (1% in case of 10% reduction of output tariffs, a measure of tougher import competition) and 11% for importing firms
  - Kasahara & Rodrigue (09): on Chilean data, becoming an importer of intermediate goods improve plant’s productivity
  - Halpern, Koren & Szeidl (11): on Hungarian firms (1992-2001), imports account for 30% of TFP growth; half of it is due to imports directly raising fir-level productivity; the rest to reallocation of market share to importers
  - Khandelwal & Topalova (11): lower tariffs on imported inputs in India raise firm-level productivity, more than lower tariff on final goods
- **New imported inputs and new domestic products**
  - Goldberg, Khandelwal, Pavcnik & Topalova (10): new imported inputs have a large positive effect on the introduction of new goods
  - Colantone & Crinò (12): on 25 EU countries (1995-2007), show that new imported inputs foster the introduction of new and better products
Within: empirics [4]

- **Competition effect**: positive effect (especially, as a reaction to increased imports from LWC) on innovation, quality upgrading and productivity growth
  - Bloom, Draca & Van Reenen (12): Chinese import competition increases propensity to R&D, patenting and ICT adoption
  - Amiti & Khandelwal (10): lower tariffs in US are associated to quality upgrading for products close to world frontier (not for the others)
  - Martin & Mejean (11): import penetration from LWC induce an upgrade in the quality of French exports
  - Utar & Torres-Ruiz (10): import penetration from China has a positive effect on productivity growth

The case of Italy
Why is Italy interesting?

- Trade very relevant: openness, # exporters (fig), export-driven growth in the last decades
- Due to sectoral specialization (leather, textile, clothing, furniture), Italy is relatively more exposed to EMEs/DCs competition (fig)
- At the same time, slow growth of productivity (fig) and loss of export market shares (fig)

*Reasonable question: how did globalization impact on Italy’s productivity, employment and economic growth?*

Empirical evidence: productivity

- Castellani (02): LBE arises when export intensity overcomes a certain threshold
- Serti & Tomasi (07, within ISGEP): Italian firms that start exporting subsequently increase productivity and size (SMEs?)
- Bugamelli & Rosolia (06): positive effect of increasing DEV-EMEs world market shares on sect. productivity, mostly due creative destruction (entry/exit)
Empirical evidence: innovation

- Bratti & Felice (10): exporting causes (IV) increase in the prob. of product innovation
- Buono (12): firms more exposed to “Southern” competition augment product innovation
- Accetturo, Bugamelli, Lamorgese & Linarello (12): increase in exports causes (IV) increase in probability of patenting

Empirical evidence: employment

- Federico (10): one SD increase in LWC import penetration decreases annual sect employment by 4% (less in capital and skill intensive sectors and with longer quality ladder)
- Accetturo, Bugamelli & Lamorgese (12): on province data (00-06), exports cause (IV strategy) sizable effect of skill upgrading (average schooling and share of white collar) in the labor force
- Manasse, Stanca & Turrini (04): on data on mechanical firms 1995-97, trade reduce the relative demand for skills
- Matano & Noticchioni (10): in regional-sectoral data (1991-2002), exports to developed (developing) countries decrease (increase) relative employment of white-collar workers
- Falzoni, Venturini & Villosio (11): on individual workers data (1991-98), exports have a positive and significant effect on the wages of unskilled workers
Chinese import penetration and output prices in Italy

Bugamelli, Fabiani and Sette (2012)
“The Age of the Dragon: Chinese Competition and the Pricing Behavior of Italian Firms”

Why relevant looking at prices?

- Direct test of the first step of the reallocation process predicted by Melitz et al.: stronger foreign competition → domestic firms reduce prices and profits → low-productivity firms exit the market → start reallocation process → aggregate productivity growth
- Bernard, Jensen, Redding and Schott (2007): “welfare gains arising from the reallocation of market shares toward high-productivity firms may be magnified if the increase in product market competition induced by trade liberalization leads to lower markups of price over marginal costs”
The empirical specification

\[ \Delta p_{it} = \beta_0 + \beta_1 \Delta \text{impen}_{china},t-1 + \beta_2 \Delta \text{impen}_{other},t-1 + \beta_3 \Delta \text{demand},t-1 + \beta_4 \Delta \text{domcomp},t-1 + \beta_5 \Delta \text{size},t-1 + \beta_6 \Delta \text{wage},t-1 + \beta_7 \Delta \text{input cost},t-1 + \beta_8 \Delta \text{tfpi},t-1 + \eta + \alpha_1 + \varepsilon_{it} \]

- Dependent variable: firm-level price annual changes (average)
- Controlling for all sources of price and mark-up variations: wage, costs of intermediate inputs, TFP, firm size, domestic and foreign competition
- Focus on foreign competition: China vs others
- IV strategy: i) equivalent import penetration measure in US (push factors); ii) China’s entry into WTO (diff-in-diff: pre vs post 2001; sectoral differences) à la Bloom et al. (12)
- Clustering s.e. by sector*year

Results: baseline regression

<table>
<thead>
<tr>
<th>Dep. variable</th>
<th>( \Delta \text{price} ) (%)</th>
<th>( \Delta \text{price} ) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta \text{impen} ) china</td>
<td>(-0.236^{**})</td>
<td>(-0.675^{**})</td>
</tr>
<tr>
<td>( \Delta \text{impen} ) other</td>
<td>(-0.044)</td>
<td>(0.114)</td>
</tr>
<tr>
<td>( \Delta \text{costs} ) (%)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>( \Delta \text{size} ) (%)</td>
<td>(0.014^{**})</td>
<td>(0.012^{**})</td>
</tr>
<tr>
<td>( \Delta \text{wage} ) (%)</td>
<td>(0.008^{**})</td>
<td>(0.005^{**})</td>
</tr>
<tr>
<td>( \Delta \text{tfpi} ) (%)</td>
<td>(-0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>( \Delta \text{impen},US ) china</td>
<td>(0.014^{**})</td>
<td>(0.014^{**})</td>
</tr>
<tr>
<td>( \Delta \text{impen},US ) other</td>
<td>(-0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>sector fixed effects</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year fixed effects</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Kiefer-Pradhan P-STAT</td>
<td>83.77</td>
<td>83.77</td>
</tr>
</tbody>
</table>

Observations: 5071

19

20
Results: robustness

- Add control for world imports
- Add control for firm’s exit
- Exclude cells with fewer than 20 obs
- Specification with FE and clustering at firm-level
- Exclude each potentially endogenous regressor once at a time and altogether
- Restrict to firms with export share < 30%
- Weighted regression: share of domestic sales as weight
- Add control for export share

Results: heterogeneity

<table>
<thead>
<tr>
<th>Sector heterogeneity</th>
<th>none</th>
<th>capital intensity</th>
<th>high skill</th>
<th>white/blue</th>
<th>quality under</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dep. variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ΔImports/shares</td>
<td>-2.62***</td>
<td>-5.67***</td>
<td>-5.74777***</td>
<td>-5.90977**</td>
<td>-1.517</td>
</tr>
<tr>
<td>ΔImports/shares*tp</td>
<td>0.059</td>
<td>0.026</td>
<td>0.193</td>
<td>0.269</td>
<td>1.707</td>
</tr>
<tr>
<td>ΔImports/shares*sec</td>
<td>0.124</td>
<td>22.827**</td>
<td>12.512</td>
<td>5.095</td>
<td>6.461</td>
</tr>
<tr>
<td>ΔImports/shares<em>sec</em>tp</td>
<td>0.066</td>
<td>-6.84**</td>
<td>-6.099</td>
<td>-0.940</td>
<td></td>
</tr>
<tr>
<td>ΔImports/after</td>
<td>-0.023</td>
<td>-0.998</td>
<td>0.011</td>
<td>-0.005</td>
<td></td>
</tr>
<tr>
<td>ΔDemand (%)</td>
<td>-0.064</td>
<td>-0.006</td>
<td>-0.004</td>
<td>-0.004</td>
<td>-0.004</td>
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<tr>
<td>ΔSize (%)</td>
<td>-0.061</td>
<td>-0.002</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
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<tr>
<td>Δwages (€)</td>
<td>0.043***</td>
<td>0.046***</td>
<td>0.0422***</td>
<td>0.0422***</td>
<td>0.0422***</td>
</tr>
<tr>
<td>Δwages (€)</td>
<td>(0.012)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>Δlabor (%)</td>
<td>0.014***</td>
<td>0.014**</td>
<td>0.013**</td>
<td>0.013**</td>
<td>0.013**</td>
</tr>
<tr>
<td>ΔExports (%)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Δwages (€)</td>
<td>-0.001</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ΔImports/shares*sec</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td>ΔImports/shares<em>sec</em>tp</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
<td>-0.000</td>
</tr>
<tr>
<td>sector fixed effects</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>year fixed effect</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>5071</td>
<td>5071</td>
<td>5071</td>
<td>5071</td>
<td>5071</td>
</tr>
</tbody>
</table>
Results: the mechanisms

Table 12: The mechanisms II

<table>
<thead>
<tr>
<th>Dep. variable</th>
<th>(1) Δ size (%)</th>
<th>(2) Δ sales (%)</th>
<th>(3) Δ mark-up (%)</th>
<th>(4) Δ GOP/VA</th>
<th>(5) Δ ROA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ impen_china</td>
<td>-2.474***</td>
<td>-4.311*</td>
<td>-2.078*</td>
<td>-2.223</td>
<td>-1.394*</td>
</tr>
<tr>
<td></td>
<td>(0.968)</td>
<td>(2.349)</td>
<td>(1.240)</td>
<td>(1.912)</td>
<td>(0.797)</td>
</tr>
<tr>
<td>Δ impen_other</td>
<td>0.317</td>
<td>1.373</td>
<td>-0.112</td>
<td>1.657*</td>
<td>0.451</td>
</tr>
<tr>
<td></td>
<td>(0.406)</td>
<td>(0.963)</td>
<td>(0.451)</td>
<td>(0.924)</td>
<td>(0.371)</td>
</tr>
<tr>
<td>Δ domcomp (%)</td>
<td>-0.006</td>
<td>0.004</td>
<td>0.006</td>
<td>0.013</td>
<td>0.003</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.014)</td>
<td>(0.006)</td>
<td>(0.008)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Δ demand (%)</td>
<td>0.066***</td>
<td>0.062*</td>
<td>0.021</td>
<td>-0.035</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.029)</td>
<td>(0.015)</td>
<td>(0.025)</td>
<td>(0.009)</td>
</tr>
</tbody>
</table>

firm fixed effects: yes
year fixed effect: yes
Number of firms: 1017
Observations: 4685

Quantitative assessment

- Average impact on inflation due to exogenous increase in Chinese import penetration in Italy: about 0.2pp per year in 1996-2006, i.e., 10% of average inflation
- Heterogeneity: if all firms had average productivity, there would be zero effect on aggregate inflation → the aggregate effect is all due to price cuts by least productive firms
  i) distribution of firms in terms of productivity matters for aggregate effects
  ii) dynamic implication of selection: after exit of least productive firms, the causal effect of China will disappear
Concluding remarks and policy challenges

Summing up

- Increased trade (exports and imports) has a positive effect on productivity growth
  - quite robust evidence on imports of intermediate inputs
  - as to export, surely through reallocation effects; in some cases also through within-firm effects (innovation)

- These results are valid in Italy; possibly, even more strongly due to evidence of LBE
Policy challenges (in general)

- No protectionism
- Allow mechanisms governing resource reallocation (labor market institutions, financial markets, product market reg…) work smoothly
- Reinforce welfare system to take care of displaced workers (as proved by effects on employment, plant exit…)
- Support firms’ efforts toward innovation (product and process) and internationalization: are there market failures?
- Support firms’ productivity

Policy challenges in Italy

- Reallocation of resources: some improvements from labor market reform; some service sectors still protected; corruption and criminality bias allocation
- Welfare system: recent labor market reform improved universality (not as much as desired)
- Support to innovation and internationalization: market failures related to credit constraints, especially among SMEs; given few resources, need to set priorities
- Productivity: this is crucial. Address main relevant dimensions: both at country-level (efficiency of PA, infrastructure, education system…) and firm-level (firm size, governance and management (fig))
Thanks for your attention

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Share of total exports by class size
Sectoral specialization

Export market shares
The case of Italy

Productivity

Source: OECD.

Share of firms by type of ownership and management

<table>
<thead>
<tr>
<th></th>
<th>Family ownership</th>
<th>only family firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family CEO</td>
<td>All family</td>
</tr>
<tr>
<td></td>
<td>ownership</td>
<td>management</td>
</tr>
<tr>
<td>France</td>
<td>80.0</td>
<td>62.2</td>
</tr>
<tr>
<td>Germany</td>
<td>89.8</td>
<td>84.5</td>
</tr>
<tr>
<td>Italy</td>
<td>85.6</td>
<td>83.9</td>
</tr>
<tr>
<td>Spain</td>
<td>83.0</td>
<td>79.6</td>
</tr>
<tr>
<td>UK</td>
<td>80.5</td>
<td>70.8</td>
</tr>
</tbody>
</table>

Source: Bugamelli, Cannari, Lotti & Magri (2012)