Made in Italy Firms' Competitiveness: A Multilevel Longitudinal Model on Export Performance

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Compstat 2010
Paris, 22-27 August 2010

Introduction

Some Stylized Facts:

- During the last decade, the Italian economy has experienced a significant slowdown in the rate of economic growth.
- Several reasons lie behind the Italian performance: a sharp decline in investments both in physical and human capital and in labor productivity.
- However, in the same period, "Made in Italy" sectors have been successful
- "Made in Italy" sectors are the 3F of the Italian economy (Food, Fashion and Furniture) and are usually considered the most dynamic and creative sectors in Italy (ICE, 2005; Brandolini and Cipollone, 2003; Rabellotti et al., 2009).

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Made in Italy

- In a sort of "polarization" of the economy, "Made in Italy" sectors have become worldwide famous and successful while the whole Italian economy was suffering from lost competitiveness.
- Several reasons behind:
  - Large debate on this.
  - "Made in Italy" sectors are more export-oriented
  - Firms involved in international activities are "different" from purely domestic firms: higher labor productivity, wages and skill intensity (Mayer and Ottaviano, 2007).
  - There are relatively few firms 'fit' to cope with the more competitive international markets and these firms are more productive, pay higher wages, employ more skilled workers, invest more in R&D (Giovannetti et al., 2009).

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The Goal

- How the good performance of “Made in Italy” can be useful to stimulate all Italian economy? What are the factors that affected “Made in Italy” success?
- Investigate the factors affecting the export competitiveness of “Made in Italy” sectors in the period 1999-2005 at a firm level, distinguishing between firm-specific factors (size and labor productivity) from context-specific factors (geographical location and the presence of an industrial district in the region).
- Because of the hierarchical structure of the data, we use a longitudinal multilevel approach that simultaneously models individual and context factors that affect the firms export competitiveness.

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How?

- Standard regression models assume independence of the observations. Firms working in the same region, instead, are likely to have positively correlated performance (i.e. presence of unobserved factors at geographical level).
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- Panel (from Italian National Institute of Statistics):
  - 1999-2005
  - 1,381,996 limited liability firms of industrial and service sectors.
  - The information record: Balance sheet, data of Business Register (ASIA) and Export surveys data.
  - Available info on
    - legal structure and industry affiliation,
    - year of the start of activity (age of firms),
    - economic classification,
    - geographic localization,
    - events of reorganization (mergers and acquisitions),
    - presence of industrial district in the region
    - innovative capacity.
- We select information on “Made in Italy” sectors: 183,421 firms. 7 sectors:
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  - individual variables
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Longitudinal Multilevel Model

The longitudinal multilevel approach allows to simultaneously model

- **individual variables:** $X_{t,i,j,h}$
  h is the number of covariates and i is the firm in the j-th region
- **context variables:** $Z_{t,j,k}$
  k is the number of covariates and j the region.

The linear specification can be written as

$$Y_{t,i,j} = \alpha + \sum_{h=1}^{p} \beta_h X_{t,i,j,h} + \sum_{k=1}^{s} \gamma_k Z_{t,j,k} + u_{i,j} + v_j + \varepsilon_{t,i,j}$$

where $i : 1, ...n$ and $j = 1, ...r$.
$u_{i,j} \sim N(0, \tau^2)$ - the second level casual effects of the model.
$v_j \sim N(0, \varphi^2)$ - the third level casual effects of the model.

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Estimation in two steps:

- Null Model:

$$Y_{t,i,j} = \alpha + u_{t,j} + v_j$$

Where α is the average of the overall population.
L.R. test on τ^2 and on φ^2 : if the null hypothesis (absence of a second and third level in the data) is rejected, then a hierarchical effect (at a region level) is present and a longitudinal multilevel model is appropriate.

- General Model estimation.

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Descriptive Statistics

Variable	Description	Obs	Mean	Std.Dev.	Min	Max
f_exp	Export/Sales	183421	0.21	0.28	0	1
lvaladd	Return on investments	177555	10.92	0.70	-0.45	12.83
roi	Return on net capital	183421	0.16	0.30	-1	1
roe	Return on earnings	183421	0.06	0.36	-1	1
roa	Added value (log)	183421	0.05	0.11	-1	1
compet	Added value/cost of labor	164840	140.69	61.71	-19.14	567.23
dummy_dist	belong to an industrial district	183421	0.49	0.50	0	1
age	Age of firm	183421	17.96	12.55	0	140
employees	Number of employees	183421	34.31	131.35	1	8506
inno	innovative capacity	183421	0.98	0.12	0	1

Likelihood Ratio Test	LR chi2 = 224.23
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Dep Var: f_exp	Coef.	Std.Err.	z	P>|z|
Added Value	0.0137	0.0009	15.86	<0.01
Roi	0.0112	0.0014	7.96	<0.01
Roe	0.0002	0.0011	0.21	0.83
Roa	0.0652	0.0056	11.71	<0.01
Compet	0.0002	0.0000	19.95	<0.01
Age	0.0005	0.0000	14.98	<0.01
Size	0.0008	0.0000	17.62	<0.01
District	0.0033	0.0010	3.30	<0.01
Innovation	0.0906	0.0045	20.22	<0.01
Cost of Labor	0.0199	0.0019	10.65	<0.01
Region_2	-0.0209	0.0180	-1.16	0.25
Region_3	0.0022	0.0008	1.22	<0.01
Region_4	-0.0020	0.0034	-0.61	0.55
Region_5	0.0139	0.0020	6.95	<0.01
Region_6	0.0080	0.0029	2.77	<0.01
Region_7	-0.0029	0.0029	-0.99	0.32
Region_8	-0.0053	0.0020	-2.67	<0.01
Region_9	-0.0074	0.0021	-3.59	<0.01
Region_10	-0.0198	0.0033	-6.03	<0.01
Region_11	-0.0010	0.0030	-0.33	0.75
Region_12	-0.0106	0.0019	-5.68	<0.01
Region_13	-0.0140	0.0034	-4.13	<0.01
Region_14	-0.0351	0.0070	-5.04	<0.01
Region_15	-0.0159	0.0022	-7.21	<0.01
Region_16	-0.0134	0.0027	-4.92	<0.01
Region_17	-0.0474	0.0082	-5.78	<0.01
Region_18	-0.0251	0.0037	-6.81	<0.01
Region_19	-0.0200	0.0025	-8.15	<0.01
Region_20	-0.0222	0.0030	-7.28	<0.01
Sector_17	0.0531	0.0035	15.21	<0.01
Sector_18	0.1048	0.0032	32.34	<0.01
Sector_19	0.1542	0.0036	43.22	<0.01
Sector_26	0.0368	0.0052	7.13	<0.01
Sector_29	0.0181	0.0065	2.78	<0.01

Conclusive Remarks

- **On the individual variables side**, export competitiveness is strongly influenced by labor and suffers by cuts in the remuneration of the labor factor.
- Firms investing in innovation and productivity succeed in international markets, confirming Meyer and Ottaviano (2007).
- **On the context variables side**, geographical location and sector turn out to be important factors. Work in
  - North-East regions (Veneto, Lombardia and Friuli Venezia Giulia)
  - Fashion and Leather sectors

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- **Policy implications:**
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Thanks for your attention

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