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Attracting Foreign Direct Investments in Europe: are Italian Regions Doomed?*

Roberto Basile
(*Isae and University of Macerata)*

Luigi Benfratello
(*University of Turin and Ceris-CNR, Turin)*

Davide Castellani
(University of Urbino and Centro Studi Luca d'Agliano)

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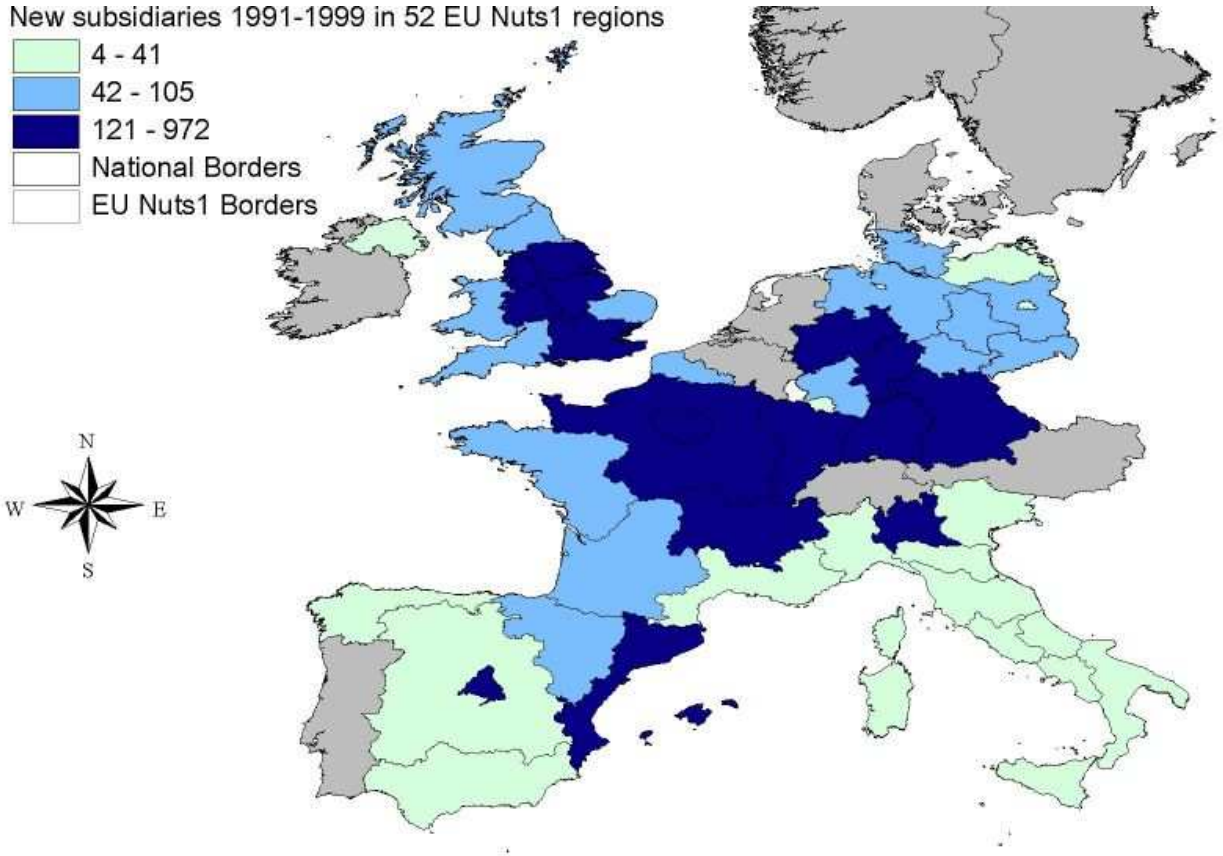
OUTLINE

- **BACKGROUND AND MOTIVATION**
- **DATA AND METHODOLOGY**
- **ECONOMETRIC RESULTS**
- **CONCLUDING REMARKS AND POLICY RECOMMENDATIONS**

BACKGROUND AND MOTIVATION

- During the nineties, the EU became the largest recipient of multinational activity
- However, Italian regions turned out to attract a small share of FDI flows
- Basile, Castellani and Zanfei (2003) provided evidence of a ‘country effect’ in the case of Italian regions
- In this paper we go beyond Basile, Castellani and Zanfei (2003) by testing:
  - whether Italian regions indeed attracted less FDI than their potential
  - whether national characteristics (national institutions and policies) can explain this result.

Number of foreign subsidiaries established in 52 NUTS 1 regions in 5 EU countries, 1991-1999



Source: Elaborations on Elios dataset (University of Urbino)

DATA AND METHODOLOGY

– Elios dataset (University of Urbino): information on location decisions made by a sample of 5,354 MNEs over the 1991-1999 period in 52 NUTS 1 regions in the 5 largest EU countries (Germany, France, United Kingdom, Spain and Italy).

We aggregated firm-level data

- by region (NUTS 1),
- sector (2-digits SIC)
- time (three consecutive periods 1991-1993, 1994-1996 and 1997-1999).

➔ (52 regions × 20 sectors × 3 periods) ⇒ 3,120 obs.

– Data on national institutions and policies from various sources (IMD's World Competitiveness Yearbook, OECD Regulation Database, IFS dataset on corporate taxation)

– Econometric methodology: NEGBIN2 random effects panel data techniques

RESULTS

1) Italian regions (with the exception of Lombardy) attract 40% less FDI than their potential

- *The potential attractiveness of EU regions is modelled in terms of their main observable characteristic:*
  - Regional market size and market potential
  - Agglomeration economies
  - Wages
  - R&D intensity
  - Schooling rate
  - Transport infrastructures

➔ **Italian regions are actually 'doomed'**

Variable List and Description, regional variables

	Variables	***Description***	***Source***
Demand	Market Size	Log (Value Added in region)$_{it}$	Eurostat
	Market Potential	Log of the sum of value added in all regions r ≠ i weighted by the inverse euclidean distance between the major cities in r and i	Eurostat
Agglomeration Economies	Overall agglomeration	Log (cumulative number of establishments)$_{ijt}$	Elios
	Foreign-firms agglomeration	Log (cumulative number of foreign-owned)$_{ijt}$	Elios
Local labor market	Wages	Log (labor cost$_{it}$ / number of employees$_{it}$)	Eurostat
	Unemployment Rate	Log (Unemployment rate) $_{it}$	Eurostat
Technology	R&D intensity	Log (R&D95$_i$ / VA95$_i$)	Eurostat
Regional policy	Transport Infrastructure	Index of transport infrastructure stock in region I at 1995	Confidustria-Ecoter
Human capital	Secondary schooling enrolment	Log (Students enrolled in sec. school at 1995 / Total pop. aged 10-19)	Eurostat
Specialization	Normalized Balassa Index	$(X_{ijt}/X_{jt}) / (X_{it}/X_t)$ with X=number of firms	Elios

Regression results:
The role of regional characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Market size	0.213	0.240	0.219	0.217	0.241	0.221	0.222	0.220
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Market potential	0.365	0.357	0.373	0.377	0.351	0.373	0.380	0.366
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Agglomeration (overall)	0.179	0.175	0.172	0.170	0.174	0.176	0.174	0.171
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Agglomeration (foreign)	0.652	0.592	0.634	0.636	0.590	0.629	0.626	0.631
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Wage	-0.780	-0.754	-0.759	-0.751	-0.753	-0.762	-0.766	-0.757
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Unemployment	0.033	-0.048	-0.077	-0.069	-0.047	-0.084	-0.073	-0.072
	[0.476]	[0.338]	[0.120]	[0.166]	[0.344]	[0.090]	[0.138]	[0.145]
R&D intensity	0.220	0.124	0.118	0.126	0.123	0.110	0.120	0.119
	[0.000]	[0.006]	[0.008]	[0.005]	[0.006]	[0.015]	[0.007]	[0.008]
Transport infrastructure	0.036	0.056	0.051	0.050	0.056	0.052	0.052	0.051
	[0.034]	[0.001]	[0.003]	[0.003]	[0.001]	[0.002]	[0.002]	[0.002]
Schooling rate	1.114	0.873	0.753	0.753	0.881	0.754	0.777	0.767
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Specialization	0.239	0.361	0.301	0.303	0.364	0.302	0.311	0.307
	[0.014]	[0.000]	[0.003]	[0.003]	[0.000]	[0.003]	[0.002]	[0.002]

Regression results:
Do Italian regions attract less FDI than their potential?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Italy	---	---	-0.505	-0.457	-0.752	-0.482	-0.421	-0.487
	---	---	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
North West	---	-0.801	---	-0.350	---	---	---	---
(excl. Lombardy)	---	[0.000]	---	[0.121]	---	---	---	---
Lombardy	---	-0.109	---	---	0.646	---	---	---
	---	[0.355]	---	---	[0.000]	---	---	---
North East	---	-0.737	---	---	---	-0.278	---	---
	---	[0.001]	---	---	---	[0.226]	---	---
Centre	---	-0.783	---	---	---	---	-0.351	---
	---	[0.000]	---	---	---	---	[0.036]	---
South	---	-0.663	---	---	---	---	---	-0.121
	---	[0.001]	---	---	---	---	---	[0.560]
Ln r	6.169	5.758	5.751	5.777	5.754	5.752	5.792	5.753
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln s	5.061	4.515	4.547	4.568	4.509	4.548	4.585	4.545
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Log-likelihood	-3682.1	-3653.1	-3663.3	-3662.0	-3653.3	-3662.5	-3661.0	-3663.1

The role of national institutions in MNEs' location choices

Variables outlined by the previous literature:

- labour market arrangements
- product market regulation (energy and marketable services)
- corporate taxation
- bureaucratic efficiency and corruption
- legal system and property right protection schemes
- openness to FDI (energy and marketable services)

Nicoletti (2002) observes that

"Italy is an outlier among OECD economies when it comes to institutions: product and labour markets are more regulated in Italy than in most of its trading partners, legal rules and their enforcement are relatively weak and that, at the same time, Italy shares broadly similar bargaining arrangements and social policies with many other European countries".

Data on National Institutions and Policies: International Comparison

	1991	1994	1997
TAX WEDGE ON LABOR			
France	42.3	43.7	44.2
Germany	37.2	39	41.2
Italy	35.6	39.6	45.4
Spain	31.8	34.6	32.7
United Kingdom	23.5	25.3	24.2
LABOUR REGULATIONS			
France	4.3	4.2	2.8
Germany	4.3	4.2	2.4
Italy	2.7	2.8	2.1
Spain	2.2	2.6	3.3
United Kingdom	7.7	7.5	8.3
CORPORATE TAX RATE			
France	27.6	27.0	34.6
Germany	51.8	46.1	49.2
Italy	39.4	43.8	41.3
Spain	31.0	27.5	27.5
United Kingdom	28.4	28.4	26.6

Data on National Institutions and Policies: International Comparison

	1991	1994	1997
	BUREAUCRACY		
France	3.4	3.4	2.9
Germany	3.8	3.8	2.9
Italy	1.8	1.8	1.3
Spain	3.3	3.3	3.8
United Kingdom	4.9	4.9	5.1
	LEGAL SYSTEM AND IPR		
France	7.7	7.5	8.1
Germany	8.3	9.1	9.1
Italy	7.7	6.5	7.7
Spain	7.2	7.5	7.5
United Kingdom	7.7	8.8	9.2

RESULTS

2) Institutional characteristics capture at least part of the Italian specificity

- Higher *taxes on labour* and a tighter legislation on *hiring and firing practices* have a negative impact on FDI
- The *efficiency of bureaucracy* and the ability of the *legal system* to adequately enforce property rights play a key role in attracting FDI

3) Lower corporate taxes do not seem to be associated to a significant increase in foreign investments

- In presence of strong agglomerative forces, tax competition is less effective (see, Baldwin et al. 2003; Baldwin and Krugman, 2004)
- More importantly, the CTR does not represent a common factor which might help explain the weak position of Italian regions.

4) Asymmetric effect of CTR

- reducing corporate taxes might have some positive impact on FDI, although limited to Southern regions.

Regression results: the effects of national institutions and policies

	(9)	(10)	(11)	(12)	(13)	(14)	WITHOUT AGGLOMERATION VARIABLES
Italy	-0.537	-0.537	-0.442	-0.016	-0.439	0.074	-0.323
	[0.000]	[0.000]	[0.000]	[0.908]	[0.000]	[0.816]	[0.314]
Tax wedge on labour	-0.740	---	---	---	---	-0.021	-1.755
	[0.000]	---	---	---	---	[0.944]	[0.000]
Corporate tax	---	0.222	---	---	---	0.119	-0.870
	---	[0.105]	---	---	---	[0.477]	[0.000]
Legal system	---	---	1.276	---	---	0.994	1.061
	---	---	[0.000]	---	---	[0.001]	[0.001]
Bureaucracy	---	---	---	0.709	---	0.822	0.607
	---	---	---	[0.000]	---	[0.088]	[0.212]
Hiring/Firing costs	---	---	---	---	0.244	-0.092	-0.382
	---	---	---	---	[0.000]	[0.618]	[0.047]
Ln r	6.144	5.851	6.107	6.028	5.847	6.322	4.089
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Ln s	4.943	4.653	4.888	4.802	4.621	5.081	2.777
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Log-likelihood	-3655.2	-3662.0	-3652.9	-3652.6	-3657.2	-3643.9	-3740.0

Regression results:
asymmetric effects of national institutions and policies.

Lombardy	8.573 [0.325]
North West (excl. Lombardy)	13.318 [0.482]
North East	3.883 [0.833]
Centre	6.041 [0.649]
South	42.054 [0.019]
Corporate tax	0.157 [0.390]
Corporate tax × Lombardy	-2.187 [0.349]
Corporate tax ×North West (excl. Lombardy)	-3.662 [0.472]
Corporate tax × North East	-1.106 [0.823]
Corporate tax × Centre	-1.701 [0.633]
Corporate tax × South	-11.389 [0.018]

CONCLUDING REMARKS AND POLICY IMPLICATIONS

- Italian regions are '*doomed*' by a negative country effect, which reduces their capacity to attract FDIs
- This country effect can be explained mainly by an *inefficient bureaucracy* and a *legal system* inadequate in ensuring an efficient enforcement of property rights
- Regional policies can affect FDI especially if they are aimed at increasing agglomeration. However, national obstacles play a strong role in depressing investments.
- The corporate tax rate is not a "common factor" that explain the low attractiveness of the country as a whole, but our evidence on asymmetric effects of national policies raises the question of whether it is appropriate within a country with significant regional imbalances like Italy to have an homogenous corporate tax rate.

Models for count data

1) **Poisson model** (Hyp.: data are generated by a Poisson density function)

$$\Pr(Y_{it} = y_{it} \mid Z_{it}) = \frac{\exp(-\lambda_{it})(\lambda_{it})^{y_{it}}}{y_{it}!}$$

$$\lambda_{it} = exp(\beta_0 + \beta' Z_{it})$$

$$E[y_{it}|Z_{it}] = var[y_i|Z_{it}] = \lambda_{it} \qquad equidispersion$$

2) **Negative binomial regression model** (allows for multiplicative gamma-distributed unobserved heterogeneity - Hyp.: data are generated by a mixture of Poisson and gamma density function)

$$\Pr(y_i \mid z_i) = \frac{\Gamma(y_i + \theta)}{y_i!\Gamma(\theta)}\left(\frac{\theta}{\theta + \lambda_i}\right)^{\theta}\left(\frac{\lambda_i}{\theta + \lambda_i}\right)^{y_i}$$ NEGBIN2 model

$$E[y_i|Z_i] = \lambda_i. = exp(\beta' Z_i)$$

$$Var[y_i|Z_i] = E[y_i|Z_i]\ \{1 + \alpha E[y_i|Z_i]\}$$

The model approaches the Poisson distribution as the dispersion parameter α=0.

3) **Random effect negative binomial regression model for panel data** (Hyp.: data are generated by a mixture of gamma and beta density function)

The random effects model for the negative binomial framework is

$$log\lambda_{it} = \beta' Z_{it} + u_i,\ i = 1 \ldots N,\ t = 1 \ldots T,$$

u_i is a random effect for the *ith* group

exp(u_i) has a gamma distribution: $\exp(u_i) \sim \Gamma\left(\delta_i, \frac{1}{\delta_i}\right)$, where $\frac{1}{\delta_i}$ is the dispersion parameter.

$\delta_i/(1+\delta_i)$ is distributed as a beta random variable with parameters (a,b).

The joint probability of a province's FDI inflows over the panel years can be derived:

$$\Pr\left[y_{i1}, \ldots\ldots, y_{iT} \middle| Z_{it} \right] = \left[\prod_t \frac{\Gamma(\lambda_{it} + y_{it})!}{\Gamma(\lambda_{it})!\Gamma(y_{it}+1)!} \right] \frac{\Gamma(a+b)\Gamma\left(a + \sum_t \lambda_{it}\right)\Gamma\left(b + \sum_t y_{it}\right)}{\Gamma(a)\Gamma(b)\Gamma\left(a + b + \sum_t \lambda_{it} \sum_t y_{it}\right)}$$

This is the basis for maximum likelihood estimation of β, a and b. Under the assumption of no random effect, $a = b = 0$. Thi restriction can be tested with a standard Wald test or a likelihood ratio test.