

Barriers to Entry, Deregulation and Workplace Training

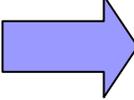
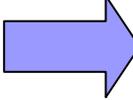
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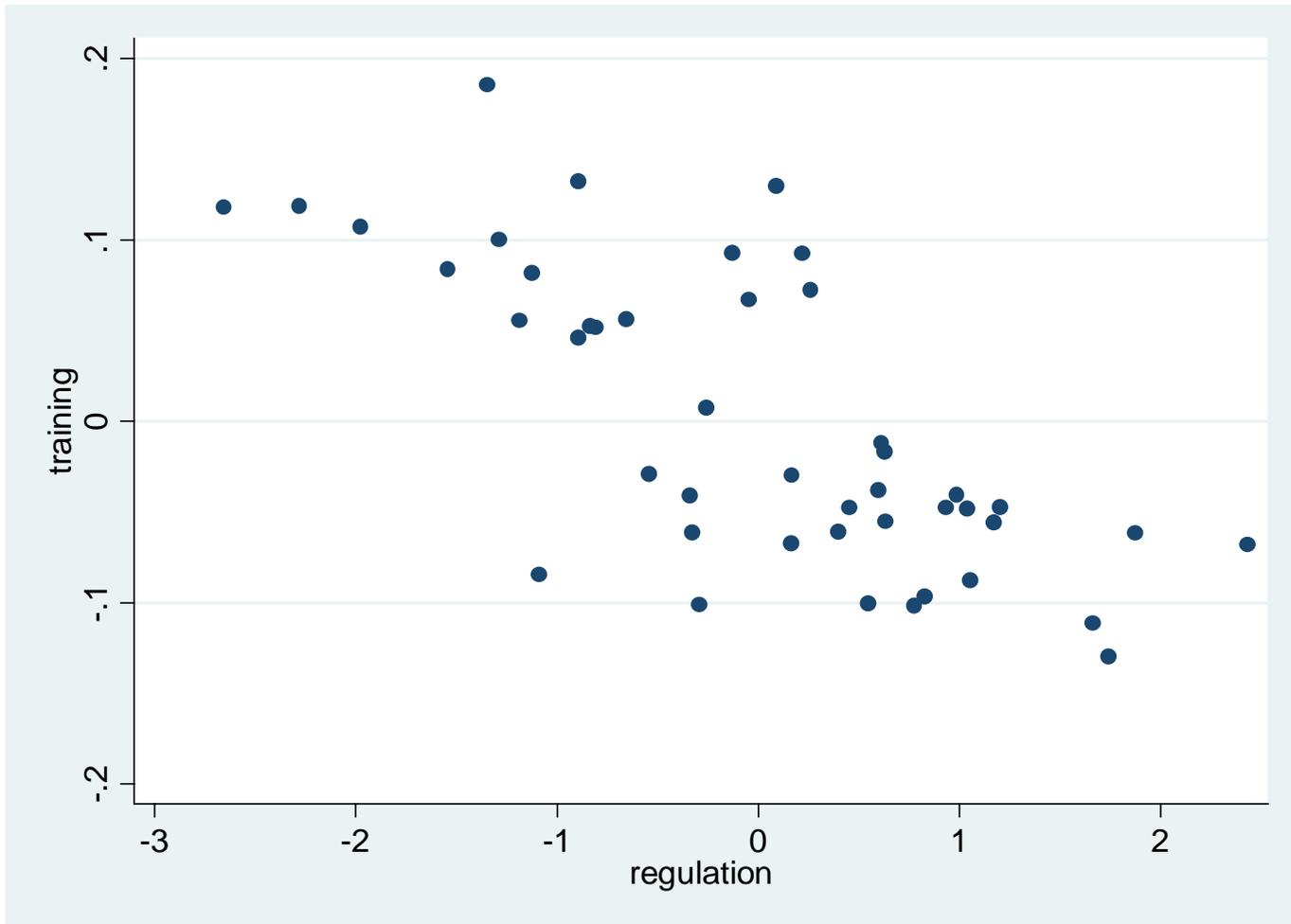
Background

- Large literature on regulation, barriers to entry and growth
- Large empirical literature on competition and performance (productivity, innovation, etc...)
- Deregulation can foster growth by affecting:
 - employment (Kugler and Pica, Fiori et al)
 - productivity growth (Nicoletti and Scarpetta)
 - investment in capital stock (Alesina et al)
 - innovation (Aghion et al)
 - business startups (Djankov et al)

Does deregulation affect training?

- Human capital accumulation important engine of productivity growth
- Deregulation  more training  faster productivity growth?

Training and deregulation (deviations from sectoral means) in energy, transport and communication. 15 EU countries. 1995-2002





What the paper does

- A theoretical model
- Empirical analysis based on European data

Key features of our model

- Imperfectly competitive product and labour markets (as in Blanchard and Giavazzi QJE 2003)
- Training is firm – specific and paid by firms
- Wages are the outcome of bargaining
- The number of firm is endogenous but firm entry is limited by barriers to entry

Key Result

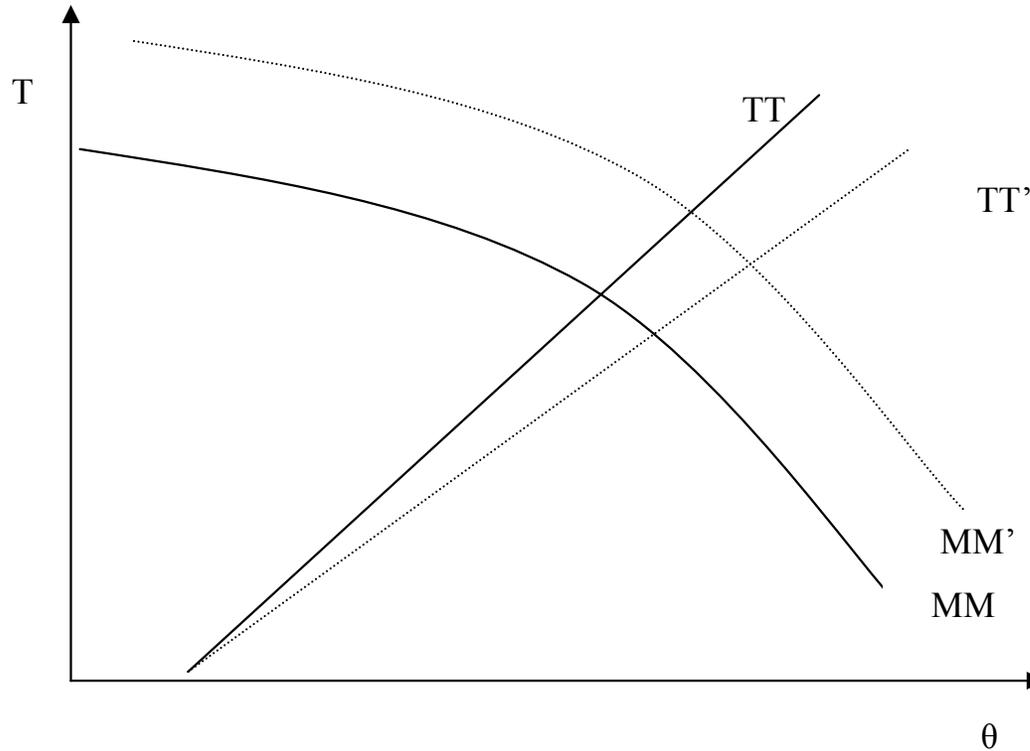
- Two contrasting effects:

- With a given number of firms: competition $\uparrow \Rightarrow$ rents $\downarrow \Rightarrow$ training \downarrow (Acemoglu and Pischke 1999)

- When the number of firms is allowed to vary:
elasticity or business stealing effect (Vives 2006
Raith 2001)

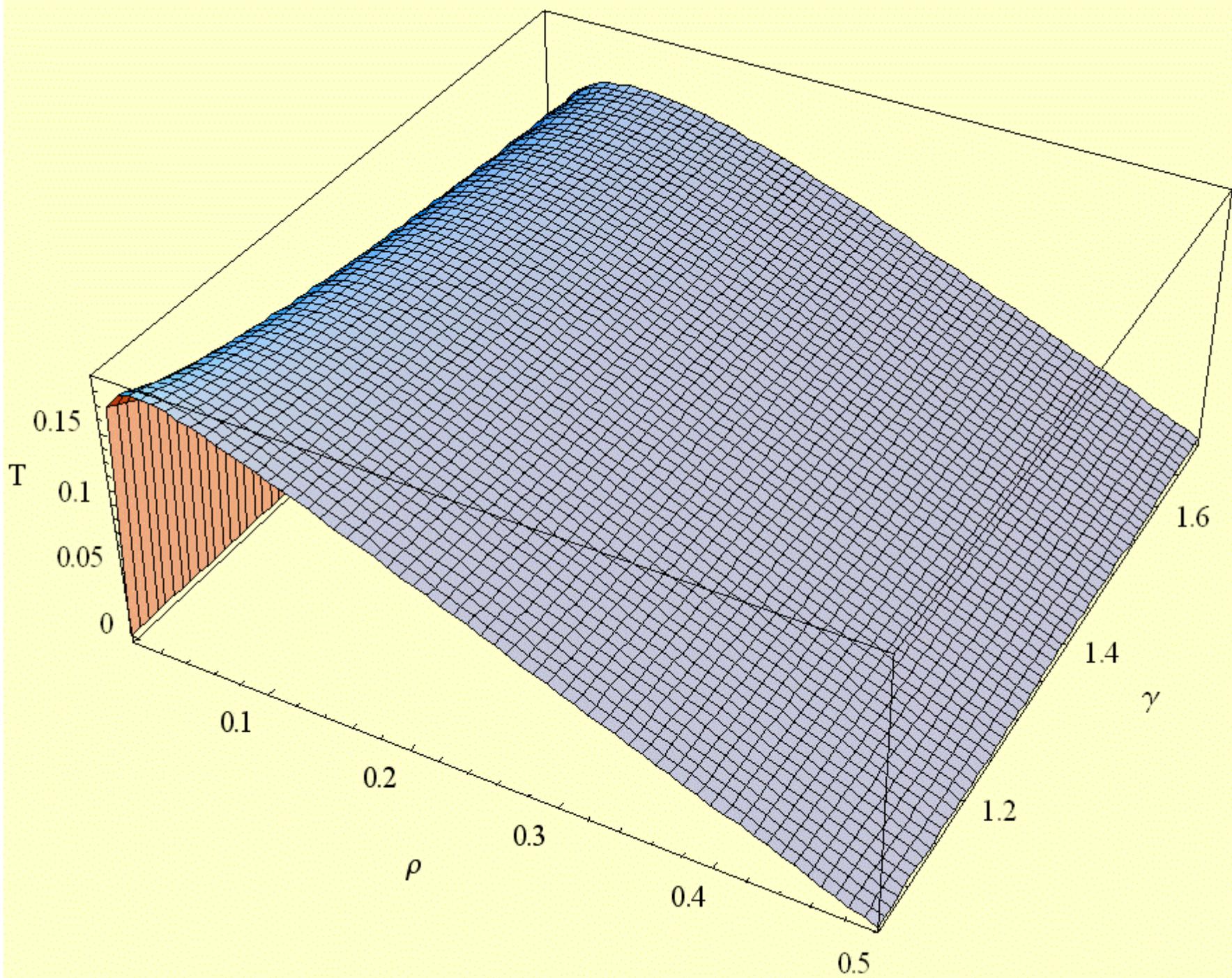
competition $\uparrow \Rightarrow$ elasticity of product demand \uparrow
output gains from training $\uparrow \Rightarrow$ training \uparrow

Reducing entry barriers



In words..

- Lower barriers increases the number of firms
→ MM shifts out and training increases because output gains from reducing unit costs go up
- Lower barriers rotate the TT curve downwards because they reduce net profits per unit of output



Robustness

- The result holds also when training is general, the employee bears the training costs and there is no wage bargaining
- The business stealing effect increases the demand and wages of skilled labour and induces additional supply

Empirical analysis: a DID strategy

- Compare a treatment group of industries directly affected by deregulation (utilities) to a control group not directly affected (manufacturing)
- Use country variation in deregulation measures: the intensity of deregulation varies across countries for each sector (more variation and possibility of controlling for macroeconomic effects)
- Confounders are controlled by country by year, country by sector and year by sector dummies

Empirical Setup

$$T_{ict} = \lambda_0 + \lambda_1 X_{ict} + \lambda_2 Y_{ict} + \varepsilon_{ict}$$

$$\varepsilon_{ict} = \xi_{ic} + \xi_{it} + \xi_{ct} + \omega_{ict}$$

Y = measures of deregulation

$$T_{ict} = \lambda_0 + \lambda_1 X_{ict} + \lambda_2 LI_{ict} + \varepsilon_{ict}$$

LI = Lerner Index, instrumented by Y.

We decompose the effect of regulation on training into the effect on the Lerner index (positive) and the effect of the Lerner index on training (negative if the business stealing effect prevails)

Data

- OECD industry-specific regulatory indicators
- Eurostat Labour Force Survey
- OECD STAN database on output, imports and labour

Definition of training in the data

- Training flow in the 4 weeks before the interview
- We focus on fully employed individuals aged 25 to 54
- We collapse data by country year and industry

OECD regulation indicators

- Cover 3 industries: utilities (electricity gas), transport (air road rail) and communication
- Detailed indicators of sector specific entry barriers, public ownership, market share of dominant player, vertical integration and price controls
- Range from 0 – no regulation – to 6, maximum regulation
- We focus on barriers to entry indicators (but also check with broader ones)

Table 1. *Estimates of training as function of the index of product market regulation REGNO, which excludes public ownership.*

Panel A: Linear specification estimated by OLS

	(1)	(2)	(3)	(4)	(5)
Regulation, excluding public own. (REGNO)	-0.014 [3.24]***	-0.015 [3.29]***	-0.014 [3.00]***	-0.017 [3.47]***	-0.015 [3.29]***
Percentage with low education		-0.141 [3.11]***	-0.129 [2.73]***	-0.147 [3.06]***	-0.141 [3.10]***
Percentage with intermediate education		-0.065 [1.51]	-0.069 [1.37]	-0.073 [1.64]	-0.064 [1.48]
Percentage females		0.070 [1.82]*	0.068 [1.71]*	0.076 [1.82]*	0.075 [1.90]*
Import-weighted real exchange rate		-0.025 [1.02]	-0.021 [0.82]	-0.025 [1.03]	-0.025 [1.03]
Log worked hours gap		-0.207 [1.94]*	-0.268 [2.42]**	-0.213 [1.81]*	-0.208 [1.94]*
Percentage large firms			0.005 [0.29]		
Age			-0.000 [0.12]		
Employment growth			0.012 [0.41]		
Logarithm of R&D intensity				-0.004 [1.33]	
Union density					0.000 [0.55]
EPL times US job turnover					-0.007 [0.11]
Estimated elasticity of training wrt regulation	-0.472	-0.494	-0.490	-0.500	-0.492
Country by sector dummies	yes	yes	yes	yes	Yes
Country by year dummies	yes	yes	yes	yes	Yes
Sector by year dummies	yes	yes	yes	yes	Yes
Number of observations	1236	1224	1188	1061	1224

Table 3. *Estimates of training stock as a function of REGNO. Alternative measures*

	Coefficient	Elasticity
Training stock – base measure	-0.062 [2.62]***	-0.204
Training stock – alternative measure based on observed growth rates	-0.130 [4.51]***	-0.426
Training stock – alternative measure assuming 2% steady state growth	-0.037 [2.15]**	-0.122
Training stock – alternative measure assuming 2.5% steady state growth	-0.037 [2.16]**	-0.123

Table 4. *Estimates of training as function of the Lerner index, instrumented with REGNO.*
 Dependent variable: training participation rates.

Panel A: Linear model, 2SLS

	(1)	(2)	(3)	(4)	(5)
Lerner Index	-1.323 [1.90]*	-1.419 [2.00]**	-1.391 [1.82] *	-1.187 [2.27]**	-1.456 [1.92]*
Percentage with low education		-0.167 [2.49]**	-0.169 [2.48]***	-0.176 [2.71]**	-0.171 [2.49]**
Percentage with intermediate education		-0.074 [1.22]	-0.071 [1.18]	-0.086 [1.47]	-0.083 [1.37]
Percentage females		0.142 [2.31]**	0.141 [2.25]**	0.109 [2.10]**	0.144 [2.27]**
Import-weighted real exchange rate		-0.001 [0.03]	-0.000 [0.01]	-0.014 [0.46]	0.001 [0.05]
Log worked hours gap		-0.042 [0.23]	-0.110 [0.59]	-0.042 [0.26]	-0.031 [0.17]
Percentage large firms			0.040 [1.24]		
Age			0.000 [0.18]		
Employment growth			0.054 [0.84]		
Logarithm of R&D intensity				-0.017 [2.11]*	
Union density					-0.002 [0.96]
EPL times US job turnover					0.149 [1.05]
Durbin-Wu-Hausman exogeneity test ($\chi^2(1)$)	23.75***	24.70***	27.86***	25.89***	27.64***
Coeff. of REGNO in the first-stage regression	0.013 [2.67]***	0.013 [2.71]***	0.013 [2.56]**	0.016 [3.20]***	0.013 [2.58]***
Elasticity of training to the Lerner Index	-1.613	-1.749	-1.744	-1.381	-1.789
Derivative of training wrt REGNO	-0.017	-0.018	-0.019	-0.019	-0.019
Elasticity of training wrt REGNO	-0.445	-0.486	-0.488	-0.497	-0.488
Country by sector dummies	yes	yes	yes	yes	yes
Country by year dummies	yes	yes	yes	yes	yes
Sector by year dummies	yes	yes	yes	yes	yes
Number of observations	1120	1108	1084	985	1108

Conclusions

- An increase in product market deregulation generates a sizeable increase in training incidence (10 percent reduction in regulation increases training incidence by 2.8 to 5 percent in the exposed industries)
- These findings suggest that an important link in the relationship between deregulation and productivity growth is the investment in human capital taking place in firms

Thank you!!

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