Economics of European and International Integration

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UAB

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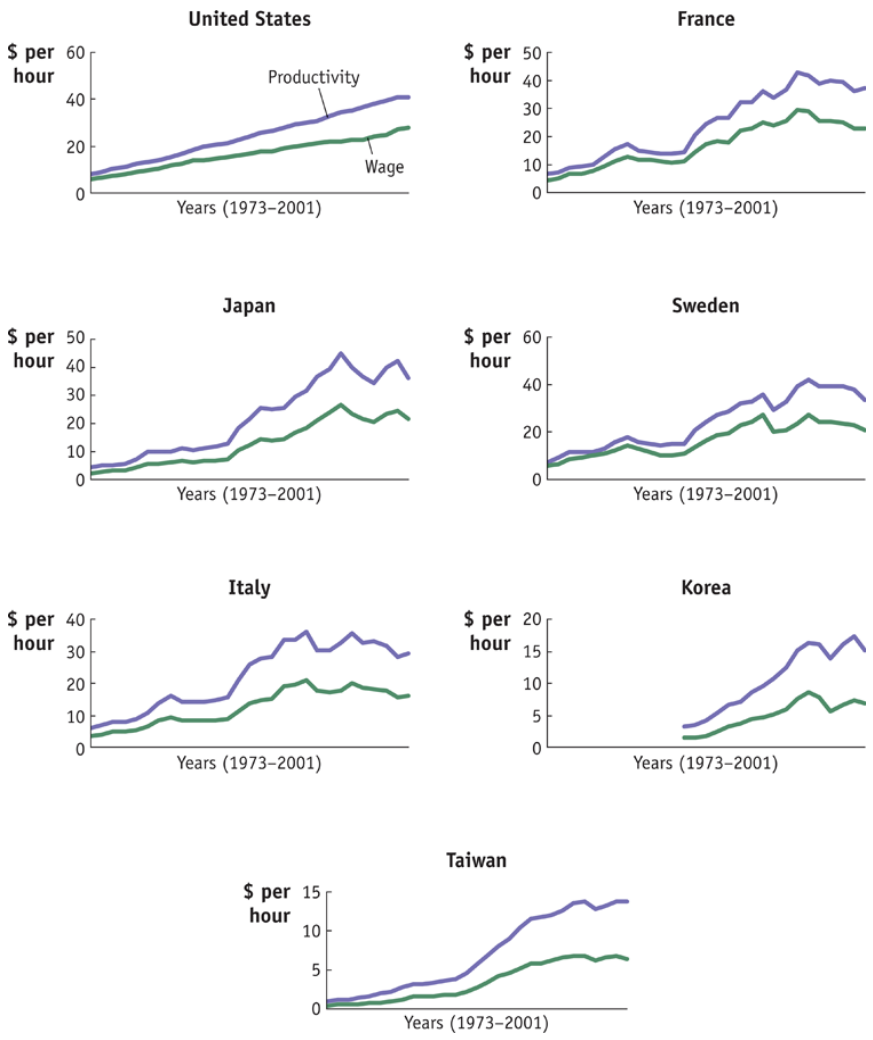
What are we learning today ?

- Does higher productivity entails also competitiveness ?

Evidence


United States
$ per hour
60
40
20
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Productivity
Wage
Years (1973–2001)
France
$ per hour
50
40
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30
20
10
0
Years (1973–2001)
Korea
$ per hour
20
15
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5
0
Years (1973–2001)
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Background: Ricardo Model

Consider a world economy with two countries: **Home and Foreign.**
Asterisk denote variables related to the Foreign country.

- Ricardian models differ from other neoclassical trade models in that there only is one factor of production.

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Consider a world economy with two countries: **Home and Foreign.**
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- Ricardian models differ from other neoclassical trade models in that there only is one factor of production.
- If a factor is perfectly mobile then its return will be equalized across countries (and hence not generate comparative advantage)

Ricardo Model (III)

- Previous supply-side assumptions are all we need to make qualitative predictions about pattern of trade.

Let *p (z)* denote the price of good z under free trade.
Profitt-maximization requires:

$$p(z) - wa(z) \leq 0, \text{with equality if } z \text{ is produced at Home}$$

$$p(z) - w * a * (z) \leq 0, \text{ with equality if } z \text{ is produced Abroad}$$

Theorem

Proposition: There exists $\widetilde{z} \in$ [0, 1] such that Home produces all goods $z < \widetilde{z}$ and Foreign produces all goods $\widetilde{z} > z$

Fundamentals

- Competitiveness: being able to export and gaining market share in the international market
- *Labour productivity vs unit labor costs*

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- *Total factor productivity (TFP)*

Labor productivity

Labor productivity measures the capacity of one unit of labor (in one unit of time) to produce output:

$$\frac{Y}{L}$$

when working time varies, we compute the labor productivity per-hour worked:

$$\frac{Y}{L * H}$$

Labor productivity

In the growth analysis labor productivity is important because of the following relationship:

GDP per-capita =
Productivity per hour worked x
Total hours worked x *Participation rate* x *Share of adult population to be able to work*

Fundamentals: unit labor costs

The unit labor costs are the costs of one unit of production and their change is inversely proportional to that of productivity. There are several way to compute them: the most natural one is:

$$ULC = \frac{Compensation}{Y}$$

Fundamentals: productivity and competitiveness

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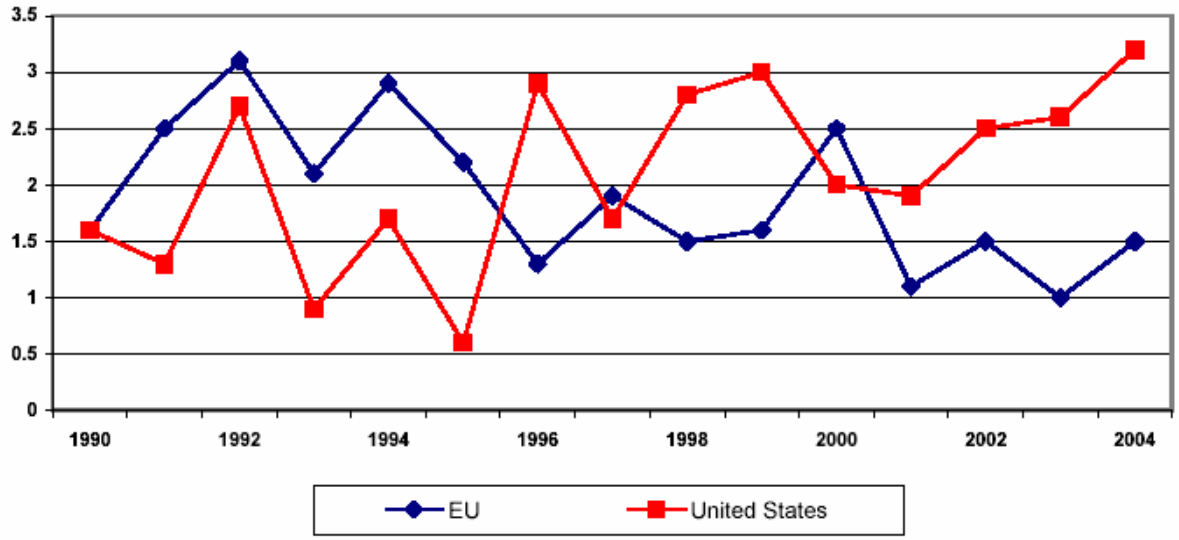
3. What's happens to Europe ?

Productivity: evidence

How does productivity changed in the EU and US in time ?

Figure 1: Annual labor productivity growth (%) in the European Union (13 countries) and the United States, 1990-2004. (Source: OECD)



Productivity: evidence

D. Jorgenson et al. (2008)

Table 1

Sources of U.S. Output and Productivity Growth 1959–2006

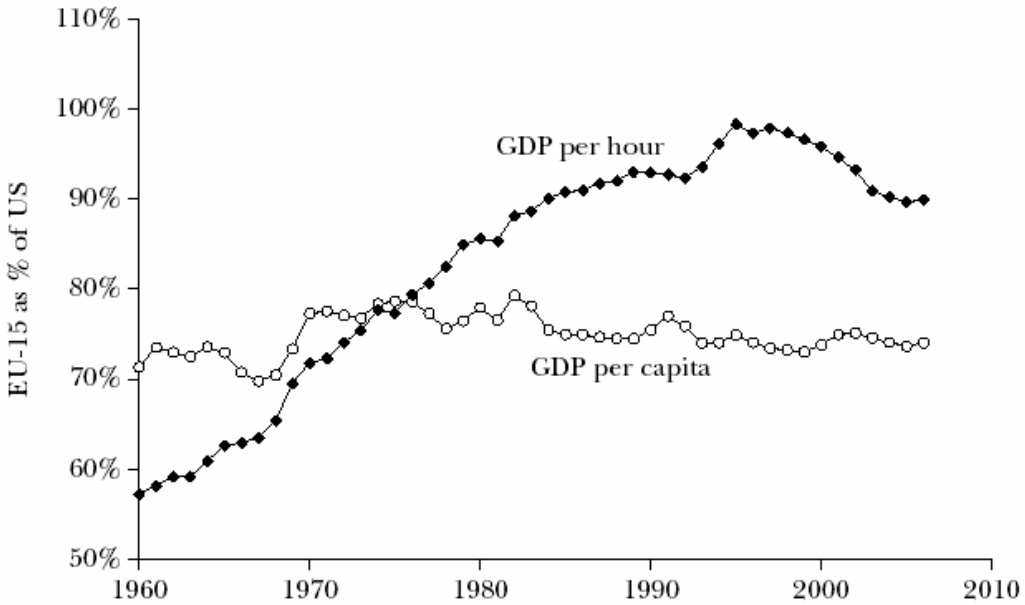
(average annual growth rates)

	1959–2006	*1959–1973*	*1973–1995*	*1995–2000*	*2000–2006*
Private output	**3.58**	**4.18**	**3.08**	**4.77**	**3.01**
Hours worked	1.44	1.36	1.59	2.07	0.51
Average labor productivity	2.14	2.82	1.49	2.70	2.50
Contribution of capital deepening	**1.14**	**1.40**	**0.85**	**1.51**	**1.26**
Information technology	0.43	0.21	0.40	1.01	0.58
Non–information technology	0.70	1.19	0.45	0.49	0.69
Contribution of labor quality	**0.26**	**0.28**	**0.25**	**0.19**	**0.31**
Total factor productivity	**0.75**	**1.14**	**0.39**	**1.00**	**0.92**
Information technology	0.25	0.09	0.25	0.58	0.38
Non–information technology	0.49	1.05	0.14	0.42	0.54
Share attributed to information technology	**0.32**	**0.11**	**0.43**	**0.59**	**0.38**

Productivity: evidence

van Ark et al. (2008)

Figure 1
Total Economy GDP per Hour Worked and GDP per Capita in EU-15, 1960–2006
(relative to the United States)



Productivity: evidence

Inklaar et al. (2008)

Table 1. Growth rates of GDP per hour worked in European countries and the US, 1980–2006 (average annual growth in %)

	1980–1995	1995–2006
EU-15	2.3	1.4
United States	1.3	2.2
Austria	2.4	2.3
Belgium	2.0	1.4
Denmark	2.5	1.2
Finland	3.0	2.5
France	2.5	1.8
Germany	2.4	1.7
Greece	0.9	2.5
Ireland	3.6	4.2
Italy	2.1	0.4
Luxembourg	2.6	1.9
Netherlands	1.7	1.5
Portugal	2.1	1.7
Spain	3.0	–0.2
Sweden	1.3	2.5
United Kingdom	2.6	2.0
Average of 15 EU countries	2.3	1.8
Standard deviation	0.7	1.0

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Productivity: evidence

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Table 2. Share in GDP and average annual labor productivity growth in European countries and the US, market services, 1980–2004 (%)

	Share of market services in GDP (%)			Growth of value added per hour worked	
	1980	1995	2004	1980–1995	1995–2004
Austria	37	40	43	2.1	0.7
Belgium	32	40	44	1.4	1.2
Denmark	34	38	40	3.0	0.9
Finland	30	34	36	2.5	1.7
France	36	38	41	1.9	1.3
Germany	32	38	40	2.3	0.8
Italy	36	40	42	0.6	0.3
Netherlands	34	42	46	0.3	2.4
Spain	31	38	41	1.0	0.4
UK	33	41	49	1.9	2.5
US	37	41	44	1.4	3.3
Average	34	39	42	1.7	1.4
Standard deviation	2.4	2.2	3.3	0.8	1.0

Productivity: evidence

Inklaar et al. (2008)

Table 5. The share of high-skilled workers in market services employment (%)

	1980	1995	2004
Austria	3.3	7.6	10.9
Belgium	6.7	12.0	15.5
Denmark	2.7	5.8	8.5
Finland	14.6	29.8	30.7
France	6.3	11.9	16.1
Germany	3.7	6.6	8.0
Italy	4.7	7.4	14.1
Netherlands	3.8	8.6	11.2
Spain	5.3	12.1	19.4
UK	8.0	12.8	18.0
US	19.4	26.9	30.6
Average	7.1	12.9	16.6
Standard deviation	5.2	8.1	7.8

Productivity: Spanish case

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- Economic growth has been supported with increasing labor.
- Remark: remember data in class 1 (Spain lost part of their international competitiveness)

Productivity: Spanish case

Table 3. Average annual growth rate in employment by sector (%)

	Industry		Services	
	1990–1995	1995–2001	1990–1995	1995–2001
Spain	−2.9	5.4	1.2	5.0

Source: EUROSTAT – calculus: author.

Productivity: Spanish case

Table 9. Correlation between labour productivity and share of employment in industry and services

Industry

	pi7786	pi8693	pi9502
ei7786	-0.2420		
	0.3494		
ei8693		-0.7868***	
		0.0002	
ei9502			-0.7706***
			0.0003

Services

Productivity: Management practices

Evidence: Bloom and van Reenen (2007, QJE)

- Persistent evidence of differences in productivity across countries (and forms). It is argued it is due to differences in management.

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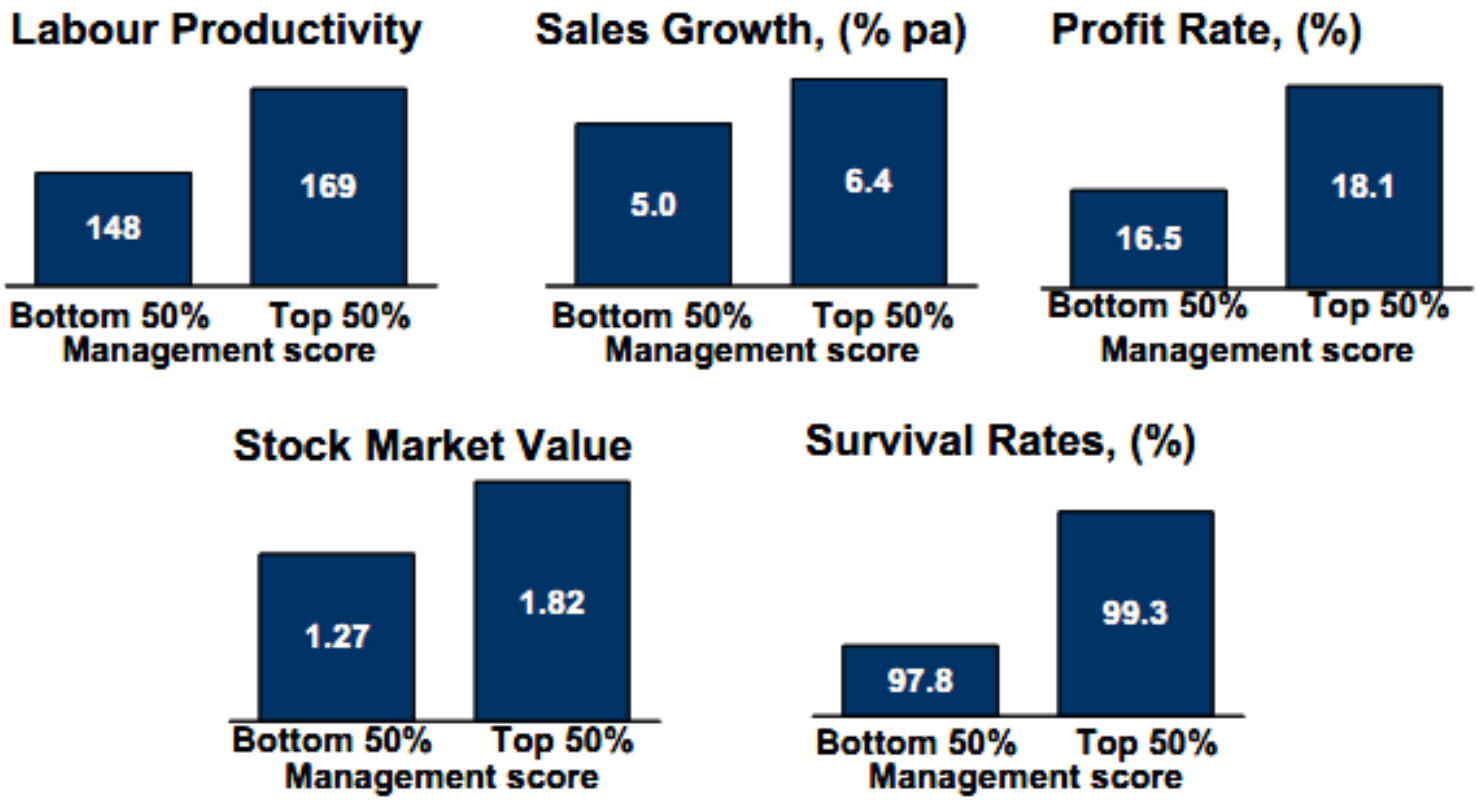
Evidence: Bloom and van Reenen (2007, QJE)

- Persistent evidence of differences in productivity across countries (and forms). It is argued it is due to differences in management.
- They develop a measure on management performance for a sample of US and European firms
- They take care details about characteristics of the firms: market competition and firm ownership are important differences in management practices (here ownership matters because they are referring to medium size firms)

Productivity: Management practices



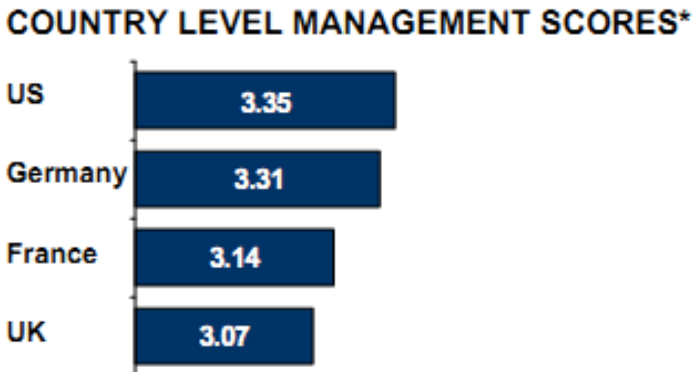
(source: ERS, Lectures)

Productivity: Management practices

Dependent variable	Sales (in Ln)	Sales (in Ln)	Sales (in Ln)
Estimation[1]	OLS	OLS	OLS
Firms	All	All	All
Management$_i$	**0.085 (0.025)**	**0.034 (0.011)**	**0.042 (0.012)**
Ln(Labor) $_{it}$	0.999 (0.014)	0.539 (0.021)	0.540 (0.021)
Ln(Capital) $_{it}$		0.103 (0.013)	0.104 (0.013)
Ln(Materials) $_{it}$		0.362 (0.020)	0.354 (0.020)
Controls[1]	No	Yes	Yes
Noise controls	No	No	Yes
Observations	6,267	5,350	5,350
Firms	732	709	709

(source: ERS, Lectures)

Productivity: Management practices



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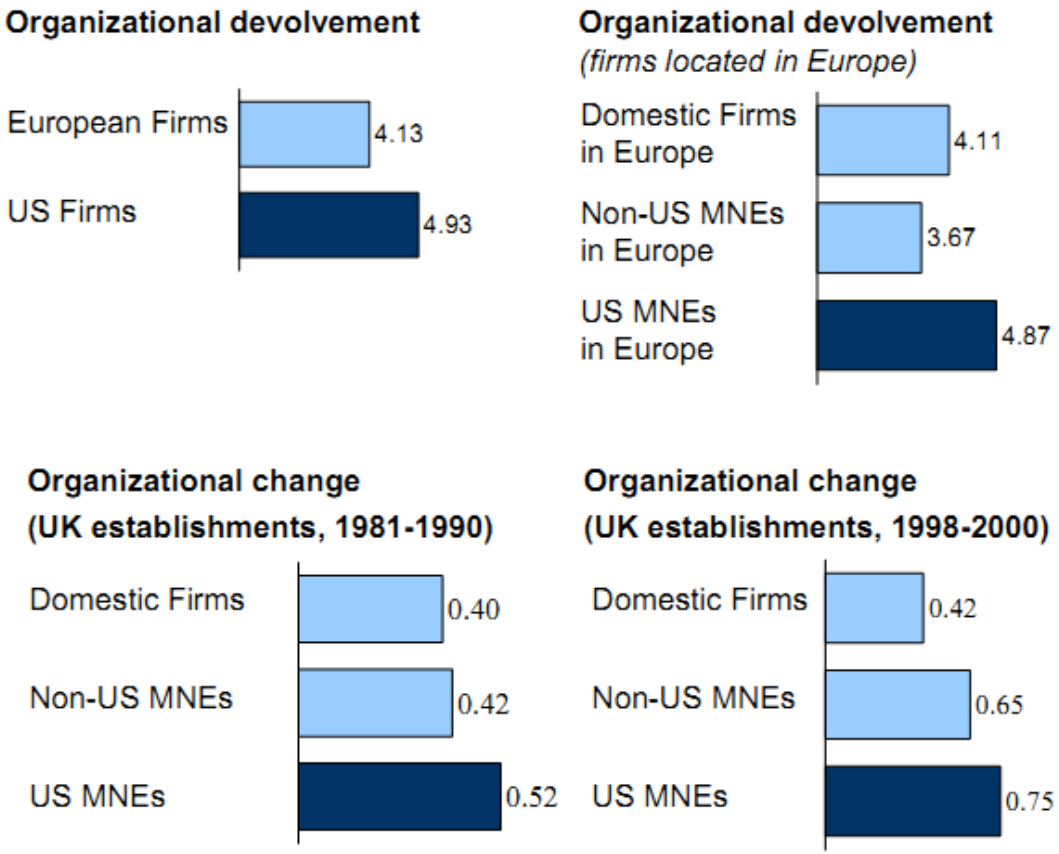

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Productivity: Management practices

AGE AND MANAGEMENT PRACTICES (KERNEL[1])

(source: ERS, Lectures)