Technology and Organisation

John Van Reenen

Director, Centre for Economic Performance,

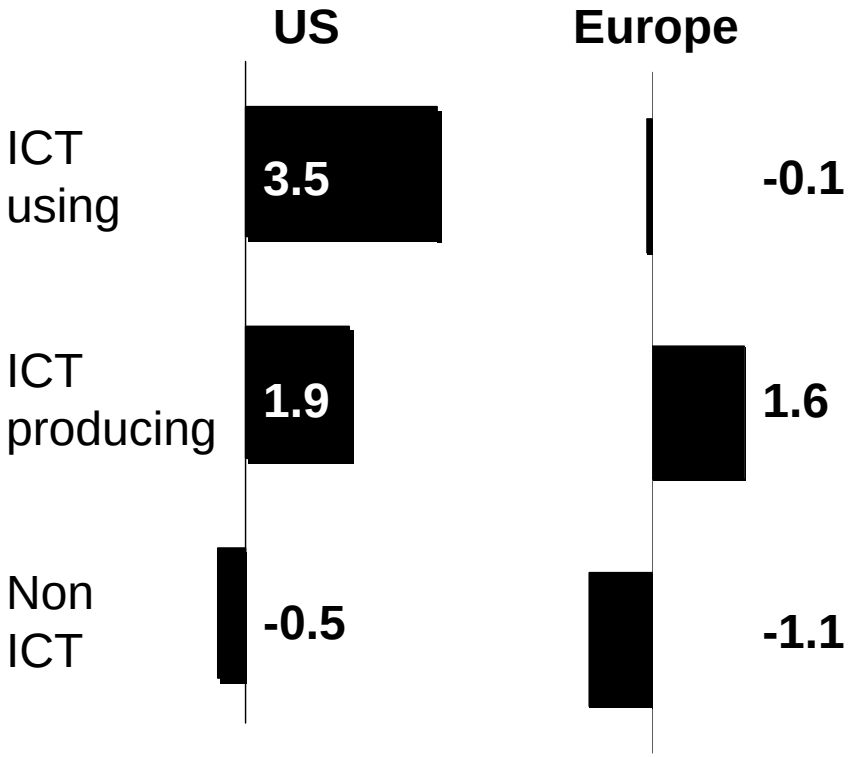
London School of Economics

Two major Issues

1. Recent US productivity acceleration
2. Theoretical models of organisational choice

1. ICT IMPORTANT FACTOR BEHIND ACCELERATION IN US PRODUCTIVITY (Oliner and Sichel, etc.)

Change annual growth of output per hour from 1990-95 to 1995-01*, %



- Structural acceleration in US productivity growth since 1995
- Not statistical fluke (continues 2001-2004)
- No acceleration in EU
- US acceleration in ICT producing sectors – but EU too
- US acceleration also in ICT using sectors – But NOT in EU
- Why a difference US vs. EU?

* Source O'Mahoney and Van Ark (2004)

Reasons for US-EU gap

- Diffusion lags?
- US environment (scale of market; product market competition, lower regulation)
- Better US management/internal organisation ("Wal- Mart effect)?
  - Implies US firms in European context should be able to make better use of their ICT

Testing the organisation hypothesis

- Examine ICT of US MNEs in UK
  - US plants more productive than other MNEs
  - Higher return to ICT of US MNEs compared to other MNEs and domestic firms. This effect is strongest in IT using sectors
- Survey of management “best practices” in US, France, Germany and UK (Bloom and Van Reenen, 2005)
  - US best management (UK worst)
  - Management US MNEs in EU look like US companies rather than European

Establishment level Production Functions (Table A3, ONS Data)

	(1)	(2)	(3)
Dependent variable	**ln(VA)**	**ln(VA)**	**ln(VA)**
Ln(Non-IT Capital)	0.302***	0.268***	0.269***
	(0.006)	(0.006)	(0.006)
Ln(labour)	0.700***	0.636***	0.636***
	(0.007)	(0.008)	(0.008)
US MNE	0.110***	0.099***	-0.012
	(0.017)	(0.018)	(0.053)
Non-US MNE	0.019	0.013	-0.001
	(0.013)	(0.013)	(0.034)
Ln(IT)	-	0.087***	0.085***
		(0.004)	(0.004)
US MNE * ln(IT)	-	-	0.021**
			(0.009)
Non-US MNE*ln(IT)	-	-	0.003
			(0.006)
Observations	16096	16096	16096

2. Determinants of organisation

- Delegation\decentralization\delayering
- Re-organizing firm to make optimal use of new technologies (Caroli-Van Reenen, 2001 QJE; Bresnahan et al, 2002 QJE)
- What is optimal organisation to learn about a new technology?
- My work with Aghion et al (2005): model of learning. Delegation to managers to make best use of private information over new technology is more likely if firm has
  - Heterogeneous environment (hard to learn from others firms' experiments)
  - Close to technological frontier (fewer firms to observe experimenting with a new technology)

Evidence

- Detailed information on organisation (delegation, delayering) from French firms and plants in the 1990s
- Heterogeneity (e.g. numbers of technological neighbours investing in ICT)
- Closeness to frontier (TFP gap)
- Both negatively related to delegation