



ICT as a Driver of Productivity in CEE Countries. The Role of Structural Policies

“Workshop on Regional Productivity Study”, January 17, 2007, World Bank

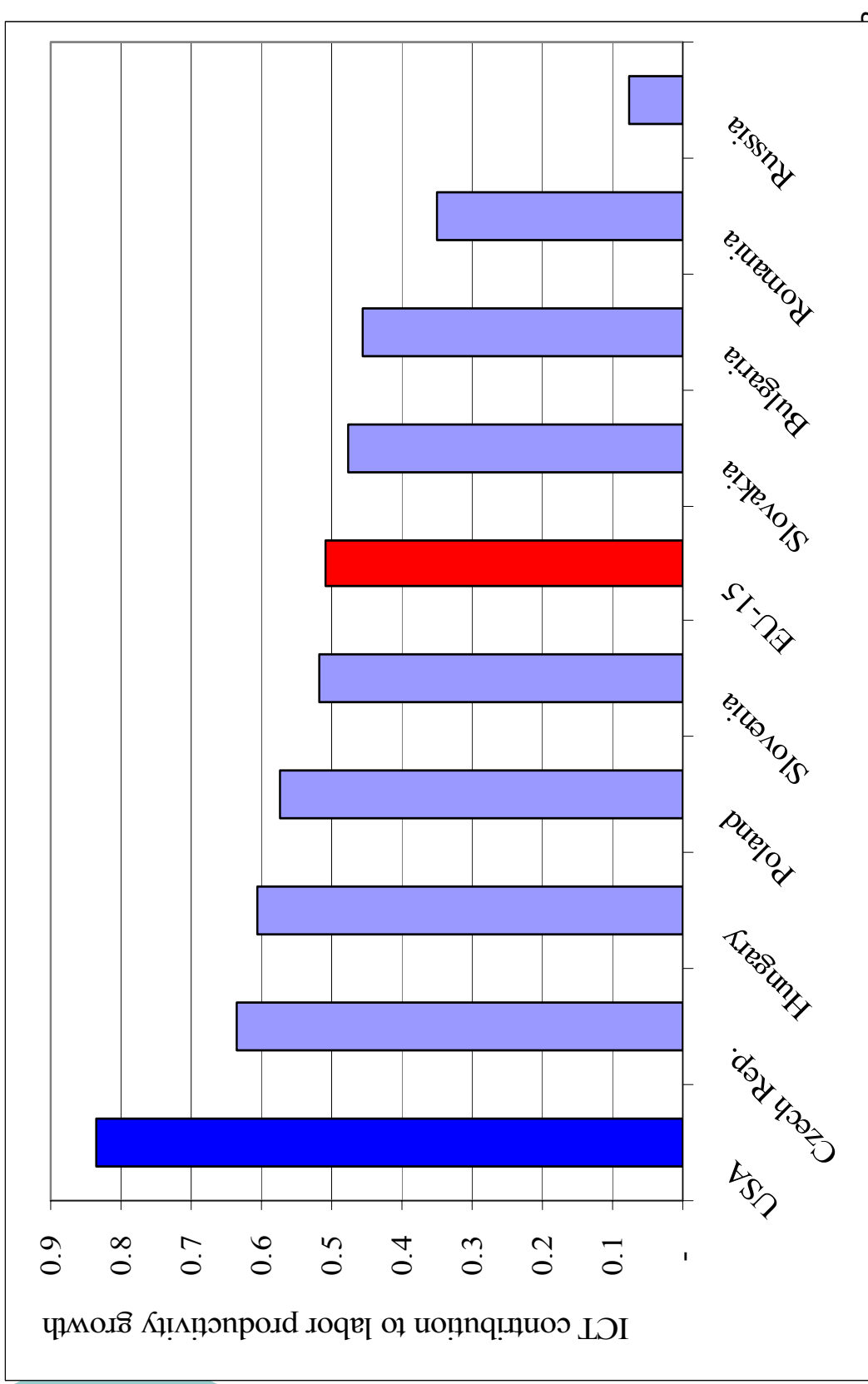
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Summary

- ICT use and production seem to have accelerated productivity growth in CEE countries both on the macro and industry-level
- There is divergence in productivity growth patterns between manufacturing and services
- Productivity growth in ICT producing and ICT using manufacturing in CEE countries seems to be mostly dependent on basic fundamental reforms...
- ... Whereas faster productivity growth in services seems to require deeper structural reforms.

The contribution of ICT to productivity growth in CEE was substantial on the macro...

Figure 1. The contribution of ICT investment to labor productivity growth in CEE countries, EU-15 and the US, 1995-2003



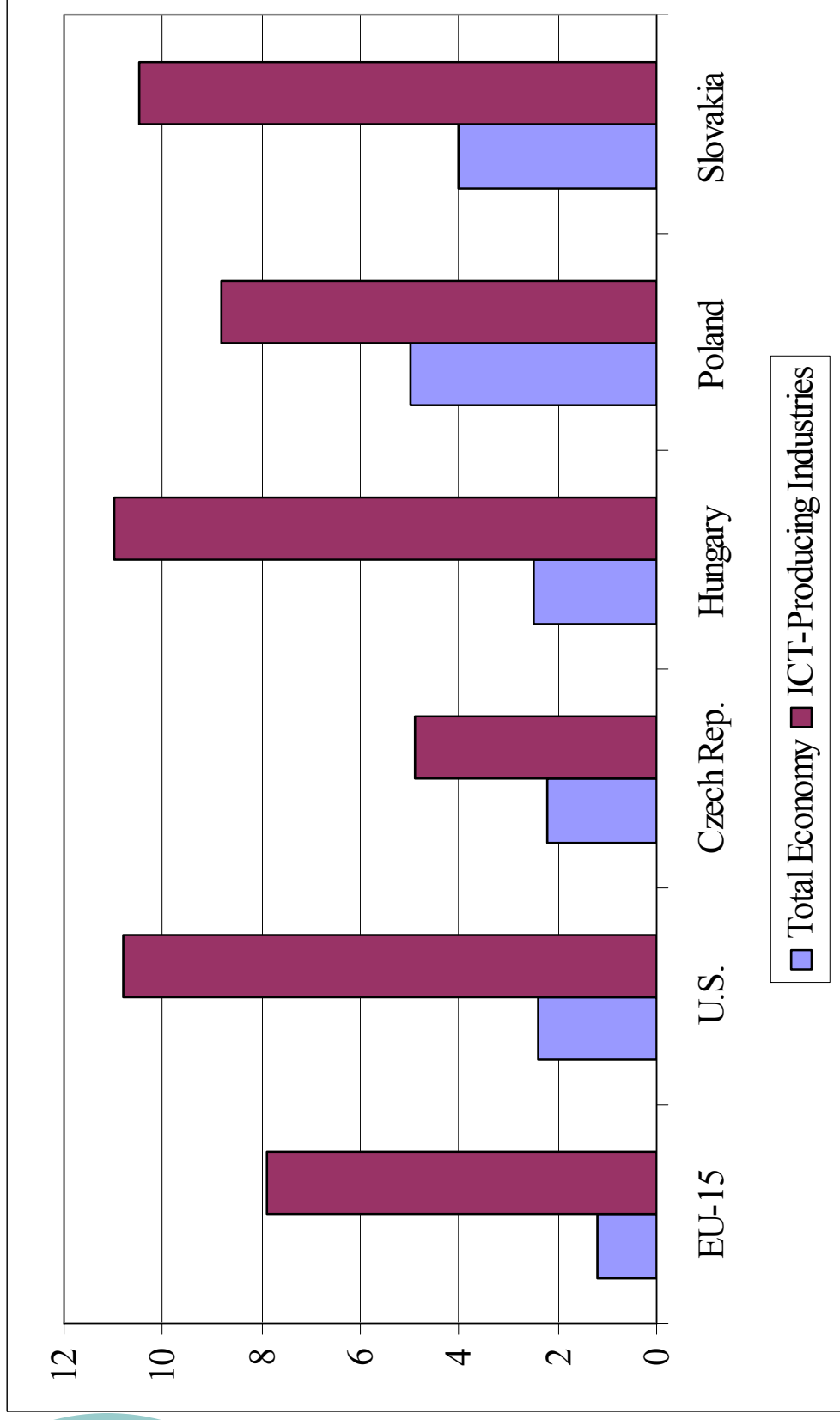
... And industry level.

Table 1. Labour productivity growth in ICT producing, using and non-ICT using industries, 1995-2003 average

	EU-15	U.S.	Czech Rep.	Hungary	Poland	Slovakia
Total Economy	1.2	2.4	2.2	2.5	5.0	4.0
ICT-Producing Industries	7.9	10.8	4.9	11.0	8.8	10.5
ICT-Producing Manufacturing	17.6	24.4	10.5	16.1	13.5	6.0
ICT-Producing Services	4.6	4.3	4.5	9.1	6.7	11.7
ICT-Using Industries	1.4	4.2	5.9	3.6	3.6	2.0
ICT-Using Manufacturing	1.6	1.9	5.4	11.1	12.2	5.5
ICT-Using Services	1.3	4.8	6.1	1.4	0.9	-0.1
Non-ICT-using Industries	0.5	0.4	0.2	1.1	5.0	4.1
Non-ICT-using Manufacturing	1.6	2.2	3.5	0.9	5.3	3.0
Non-ICT-using Services	-0.1	0.3	-1.9	1.0	2.6	4.9
Non-ICT-using Other	1.7	0.4	0.7	1.8	5.8	4.9

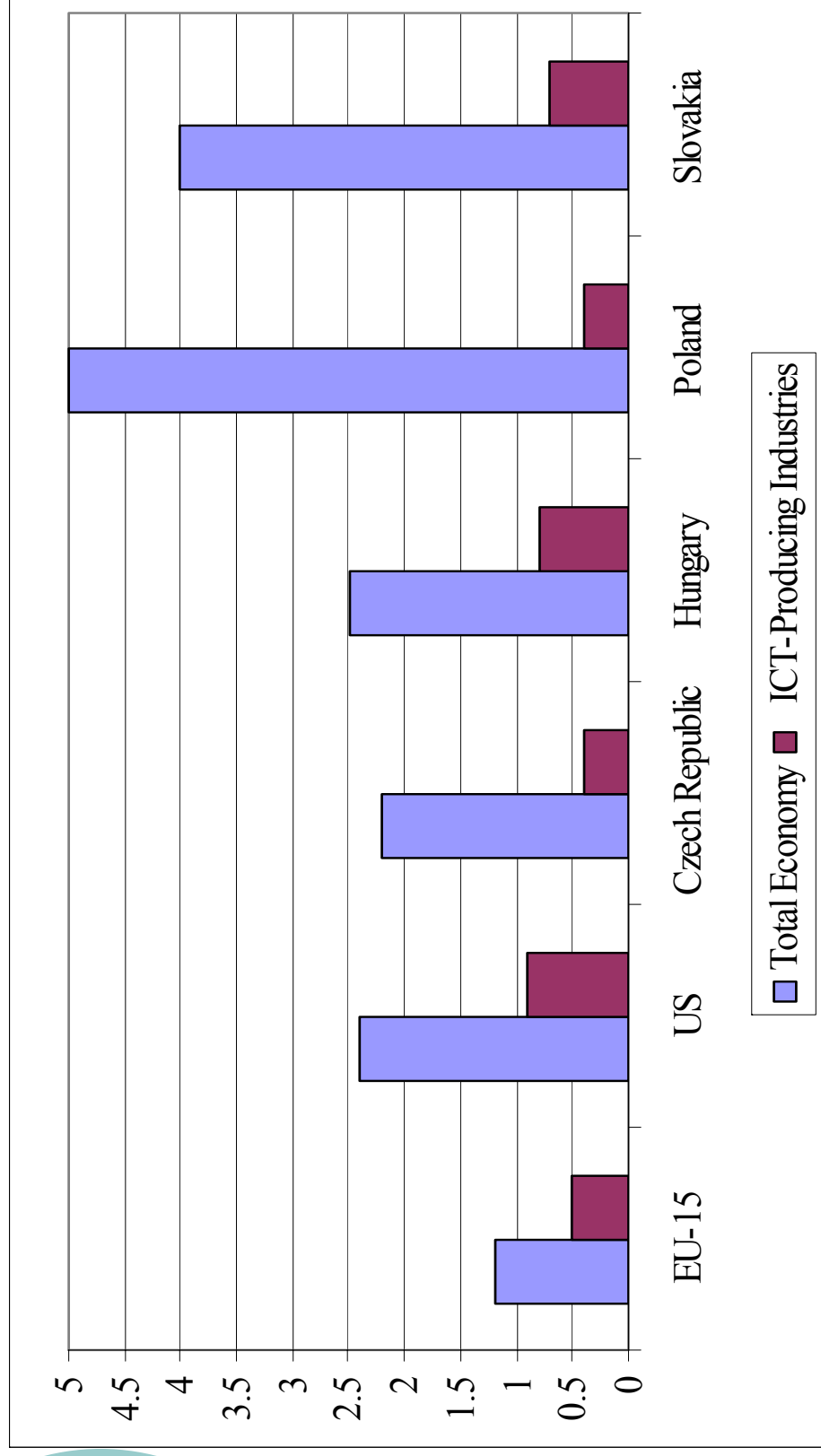
The ICT producing sector had particularly high productivity growth rates...

Figure 2. ICT-producing sector labour productivity growth, 1995-2003 average



.. But it is too small to drive convergence.

Figure 3. ICT-producing sector contribution to labour productivity growth, 1995-2003 average



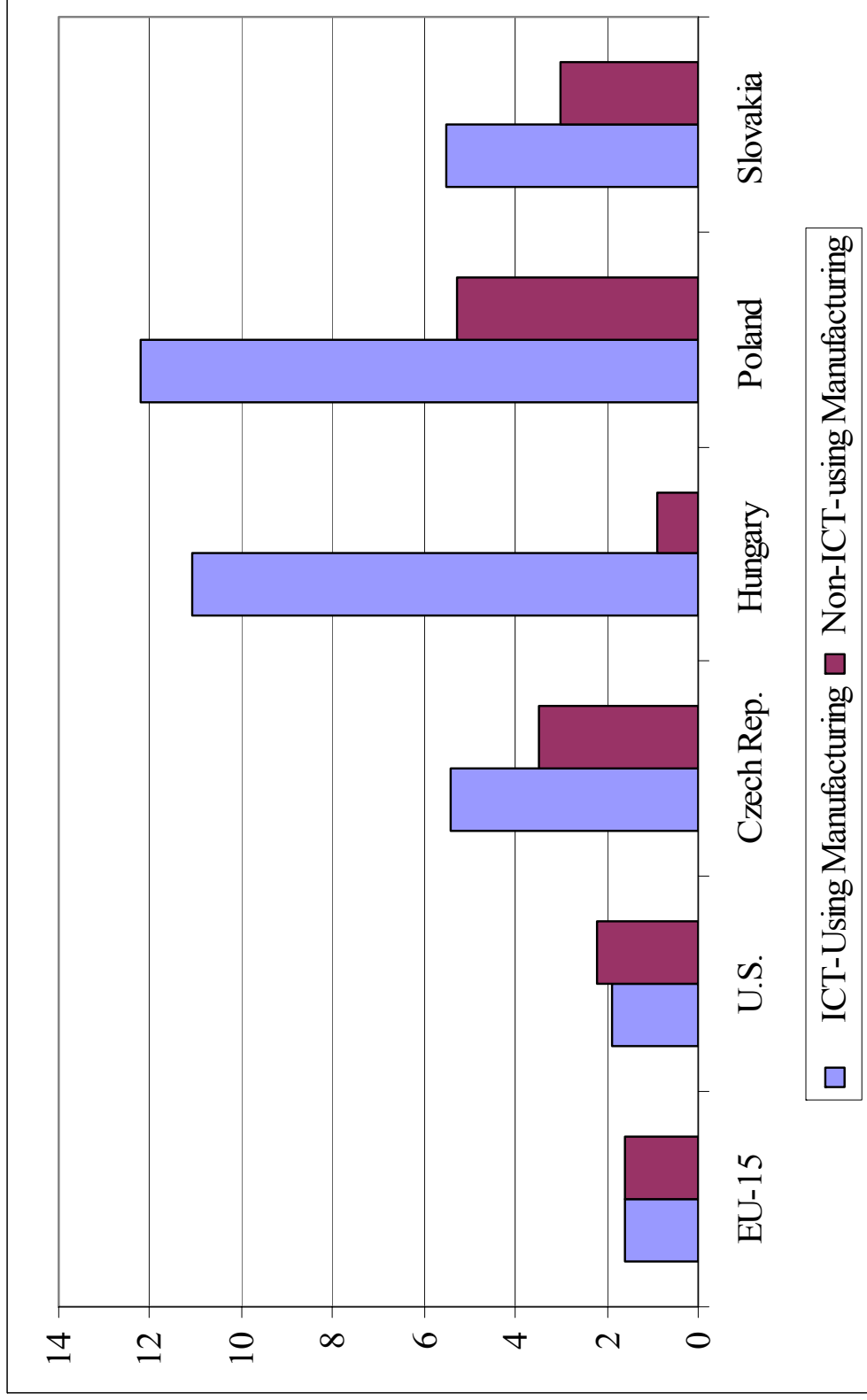


... Particularly as there is no conclusive evidence for ICT-
production spillover effects.

- Trajtenberg (2005) - since 1990, the ICT sector in Israel grew at a double-digit rate per year, while at the same time the rest of the economy stagnated. Productivity in some non-ICT producing sectors even declined.

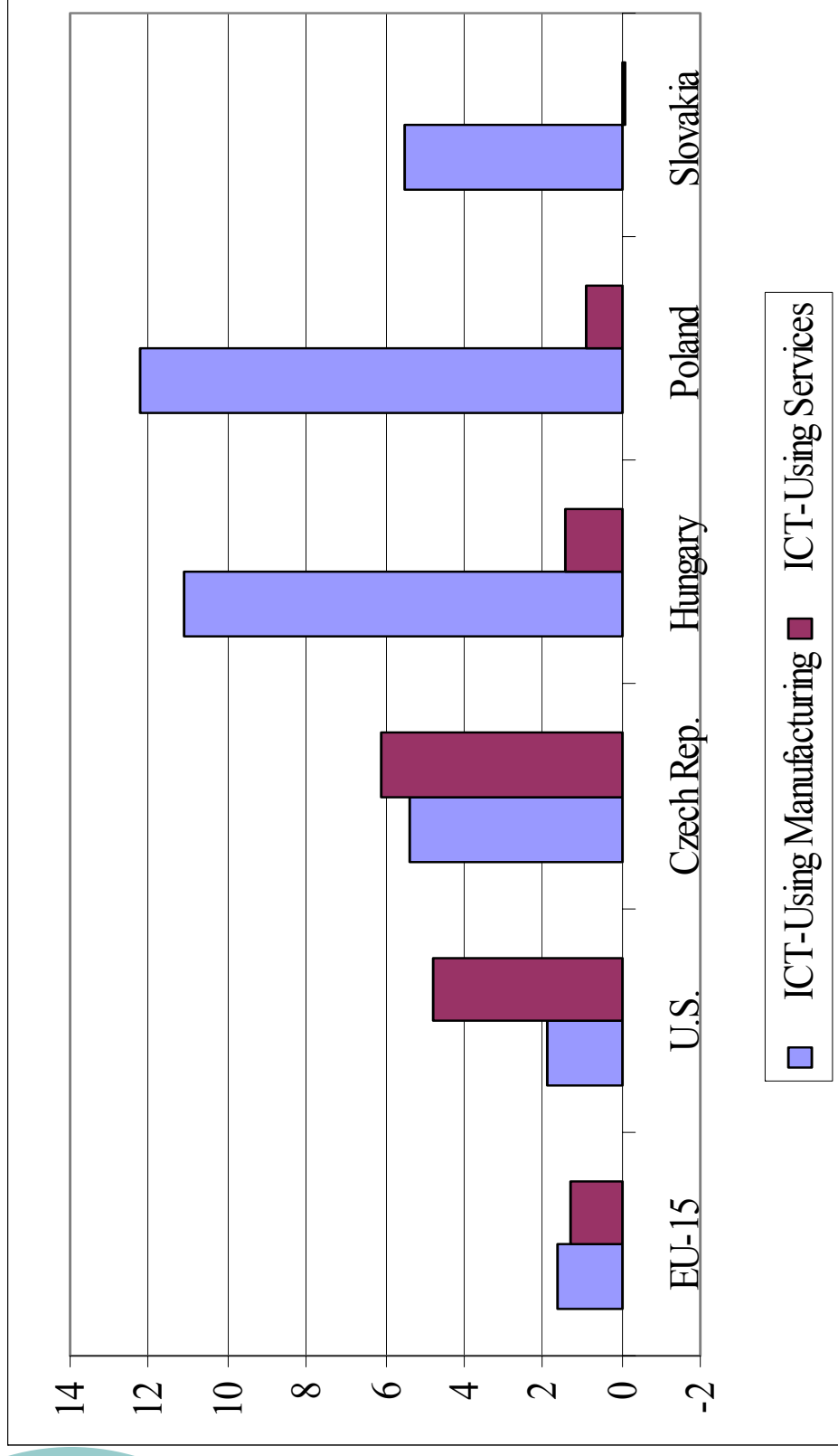
ICT use seems to stimulate productivity growth in manufacturing...

Figure 4. Labour productivity growth in ICT-using and non-ICT using manufacturing industries, 1995-2003 average



... but not so much in services: productivity growth is much lower than in US services and in CEE manufacturing...

Figure 5. Labour productivity growth in ICT-using manufacturing and services, 1995-2003 average



This may suggest that ICT-led growth and convergence is a “two-phase” process...

In the first “restructuring” phase, convergence is driven by productivity growth in ICT-using manufacturing and a rise in ICT production (mainly through FDI) and seems to be dependant on basic macroeconomic and structural reforms;

- Later, however, productivity growth slows as the restructuring process in ICT-using manufacturing nears completion and simple post-transition growth reserves become exhausted (largely completed institution-building and privatization, macroeconomic stability, elimination of loss-making SOEs etc.).

Hence, in the second “expansive” phase...

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- Faster productivity growth must be dependent on productivity growth in services and non-ICT using industries...
 - ... which, however, requires that ICT investment, especially in services, is complemented with more sophisticated structural reforms: flexible product and labor markets, higher quality of human capital, business re-organization around ICT and better managerial skills. These are much harder to achieve (socially sensitive).

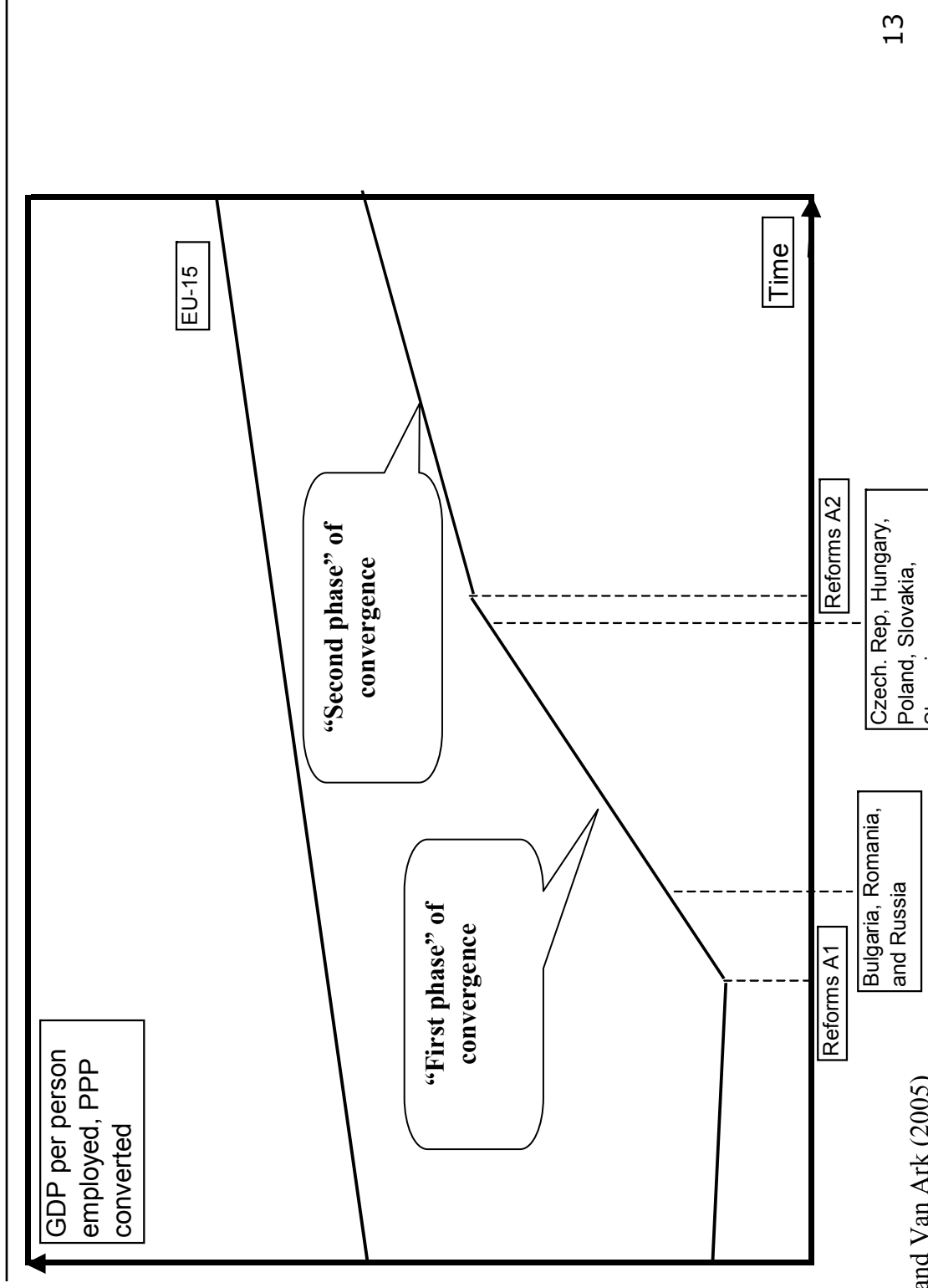
High-quality management practices seem to be essential to ensure productive use of ICT...

Table 2. Changes in firm-level productivity based on a survey by LSE and McKinsey on 100 manufacturing companies in France, Germany, UK and USA

			IT investment has to go hand-in hand with management skills
		+8%	+20%
MANAGEMENT PRACTICE	HIGH (top 25%)		
	LOW (bottom 25%)	0	+2%
		LOW (bottom 25%)	HIGH (top 25%)
		IT USE	

Source: Dorgan and Dowdy (2004)

The “two-phase” convergence can be shown as the following...



So, what needs to be done?

- **Implement second-stage structural reforms**
 - ✓ Develop financial markets (VC), implement flexible labor markets, low administrative barriers, transparent and effective regulations, high level of competition, attract FDI.
- **Improve corporate governance to enhance the quality of management**
- **Develop public e-services and e-procurement (spillover and network effects);**
 - Promote ICT investment in non-ICT using sectors through public rankings of industrial productivity, peer pressure, educational programs, public grants and co-financing,
 - Establish mandatory deadlines for electronic communication between public administration and the private sector (the case of Poland's ZUS)
 - Implement centralized public e-procurement (spillover effects).