



# ***How to Utilize the Potential of ICT for Economic Development? The Role of Public Policies***

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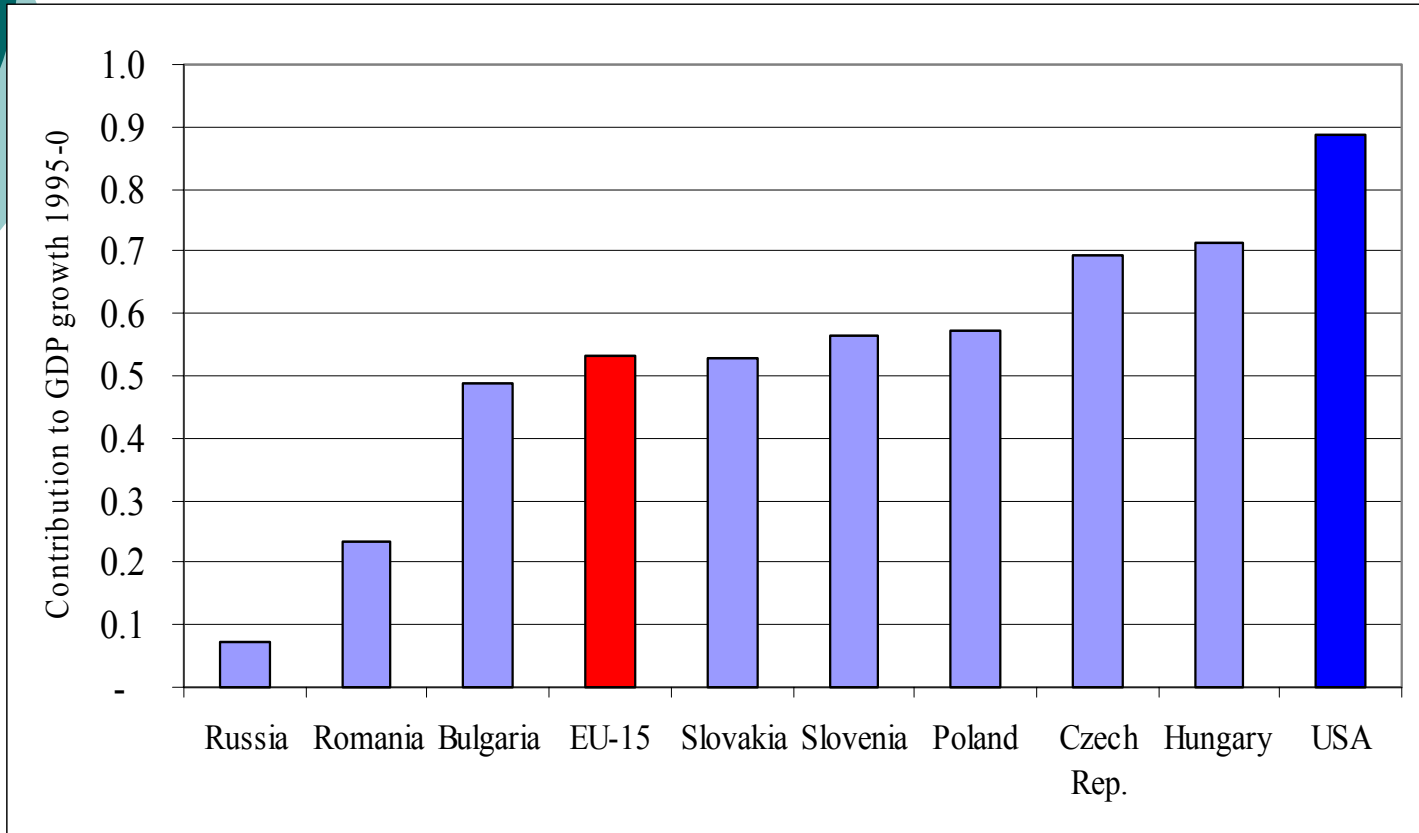
## Summary and policy recommendations

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- ICT has a large potential to accelerate economic development in CEE countries both on the macro and industry-level
- Public policies should help realize the ICT potential through:
  - Promoting more conducive economic and institutional environment
  - Changing focus from developing the ICT-producing sector to promoting ICT use in the non-ICT producing sectors, particularly in services
  - Implementing full e-government, online public services, and e-procurement (push strategy).

## The contribution of ICT investment to GDP growth can be substantial...

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



Source: Piatkowski and Bart van Ark (2005)

... But it depends on the quality of the economic and institutional environment as shown by the „New Economy Indicator”...

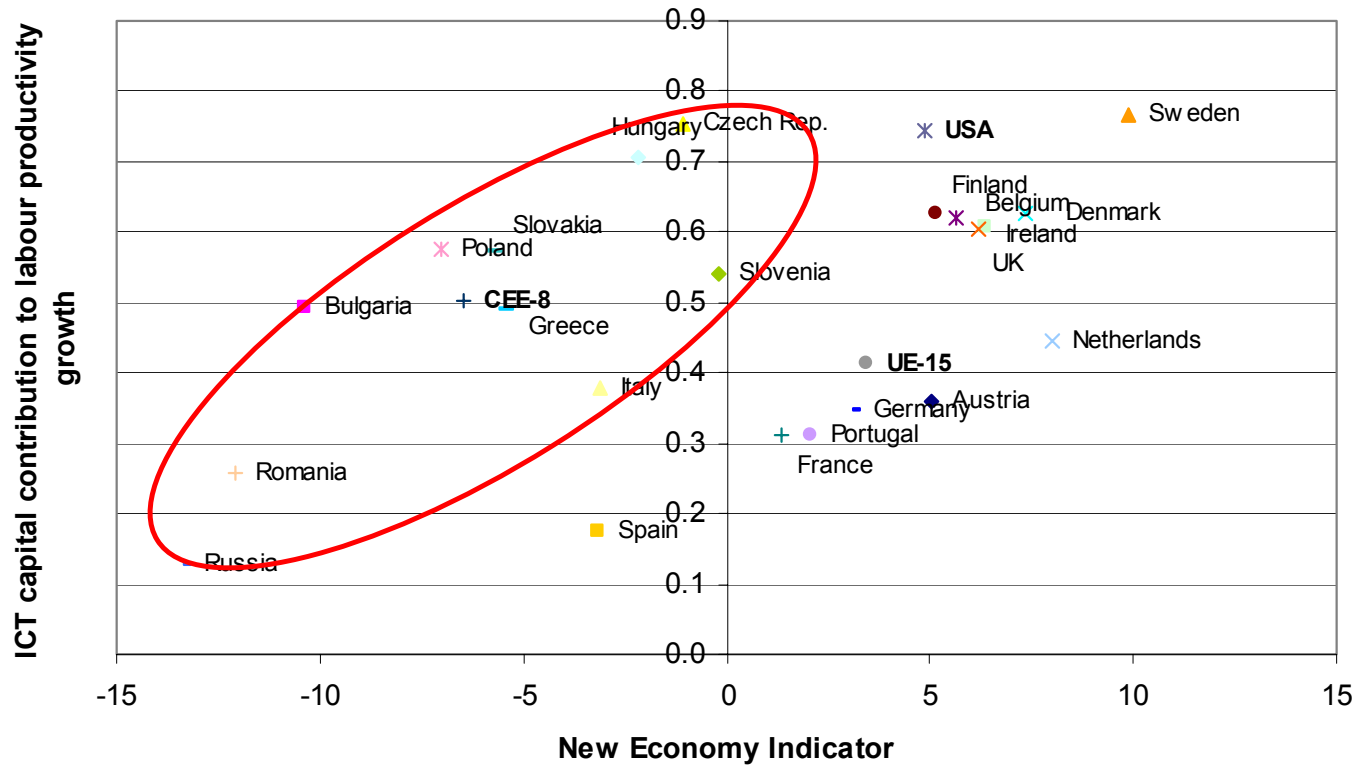
Table 1: Variables and data sources for the New Economy Indicator

Factor	Variable
1. Quality of regulations and contract enforcement	Sum of World Bank Regulatory Quality and Rule of Law Indicator
2. Infrastructure	Sum of total number of telephone lines (main and cellular) and PCs per 1000 persons
3. Trade openness	Share of trade in GDP (in %)
4. Development of financial markets	Domestic credit to private sector (% of GDP)
5. R&D spending	Annual R&D spending (% of GDP)
6. Quality of human capital	Public spending on education (% of GDP)
7. Labour market flexibility	Unemployment rate (in %)
8. Product market flexibility	Product market regulation indicator (Nicoletti et al. 2000)
9. Openness to foreign investment	FDI (% of GDP)
10. Macroeconomic stability	Inflation (CPI) (in %)

Source: Based on Van Ark and Piatkowski (2004). Data from Kaufmann et al. (2005) and WDI (2005)

... where the position in the ranking is closely related to the size of ICT contribution to productivity growth..

Figure 2. Relationship between the New Economy Indicator and the contribution of ICT to labor productivity growth, 1995-2003



... if the environment is right, ICT can have a large potential for growth in the future...

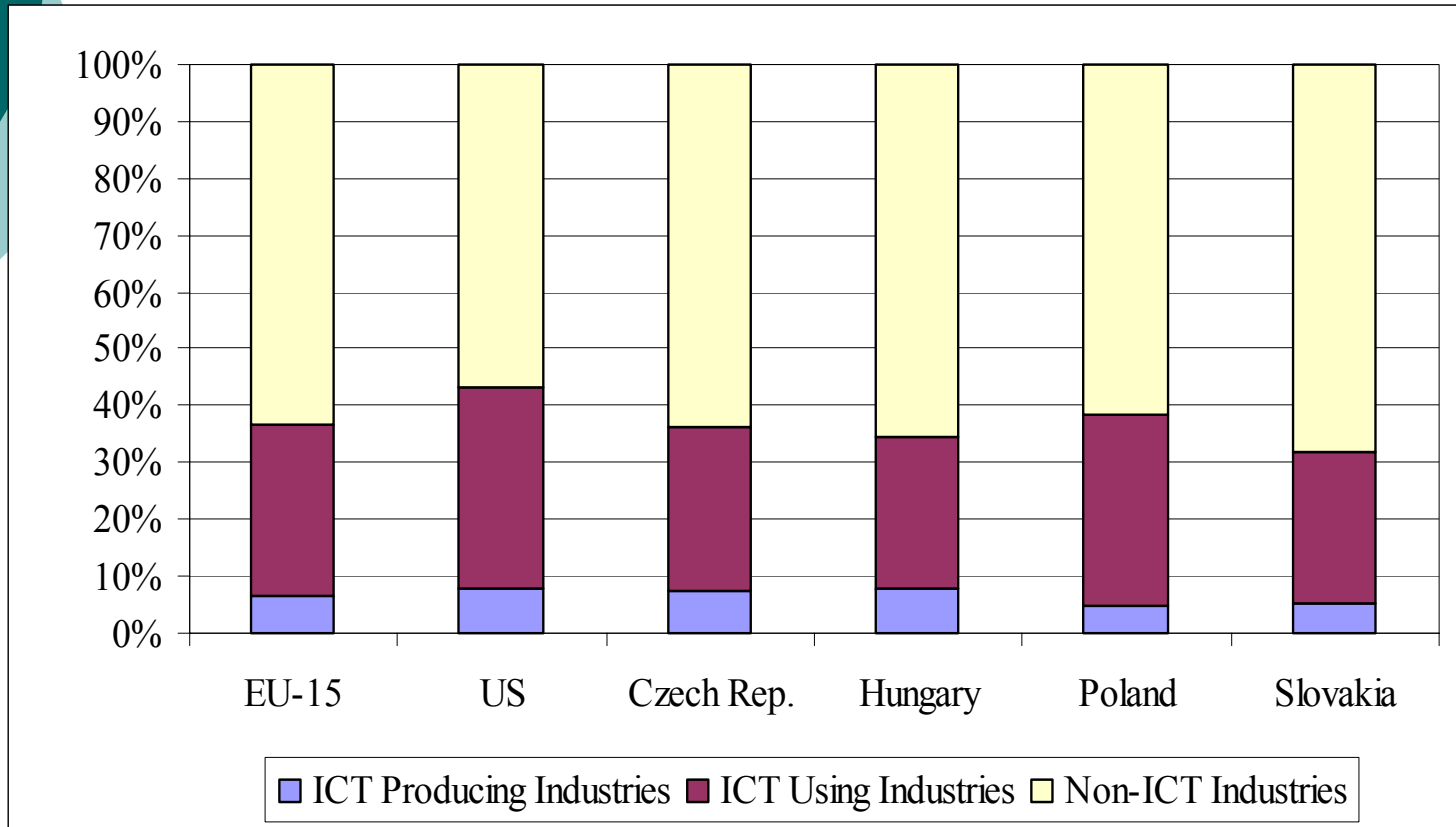
Table 2. Projected contribution of ICT capital to GDP growth in Poland until 2025

Real growth in ICT investment	GDP growth	Total capital	Non-ICT capital	ICT capital contribution	Labor	TFP	% share in GDP growth until 2025
5%	3,76	1,94	1,59	<b>0,35</b>	0,32	1,50	<b>9,3%</b>
10%	4,01	2,19	1,59	<b>0,60</b>	0,32	1,50	<b>15,0%</b>
15%	4,26	2,43	1,59	<b>0,85</b>	0,32	1,50	<b>20,0%</b>

Source: Piątkowski (2004)

## ICT production is still too small to be a driver of growth...

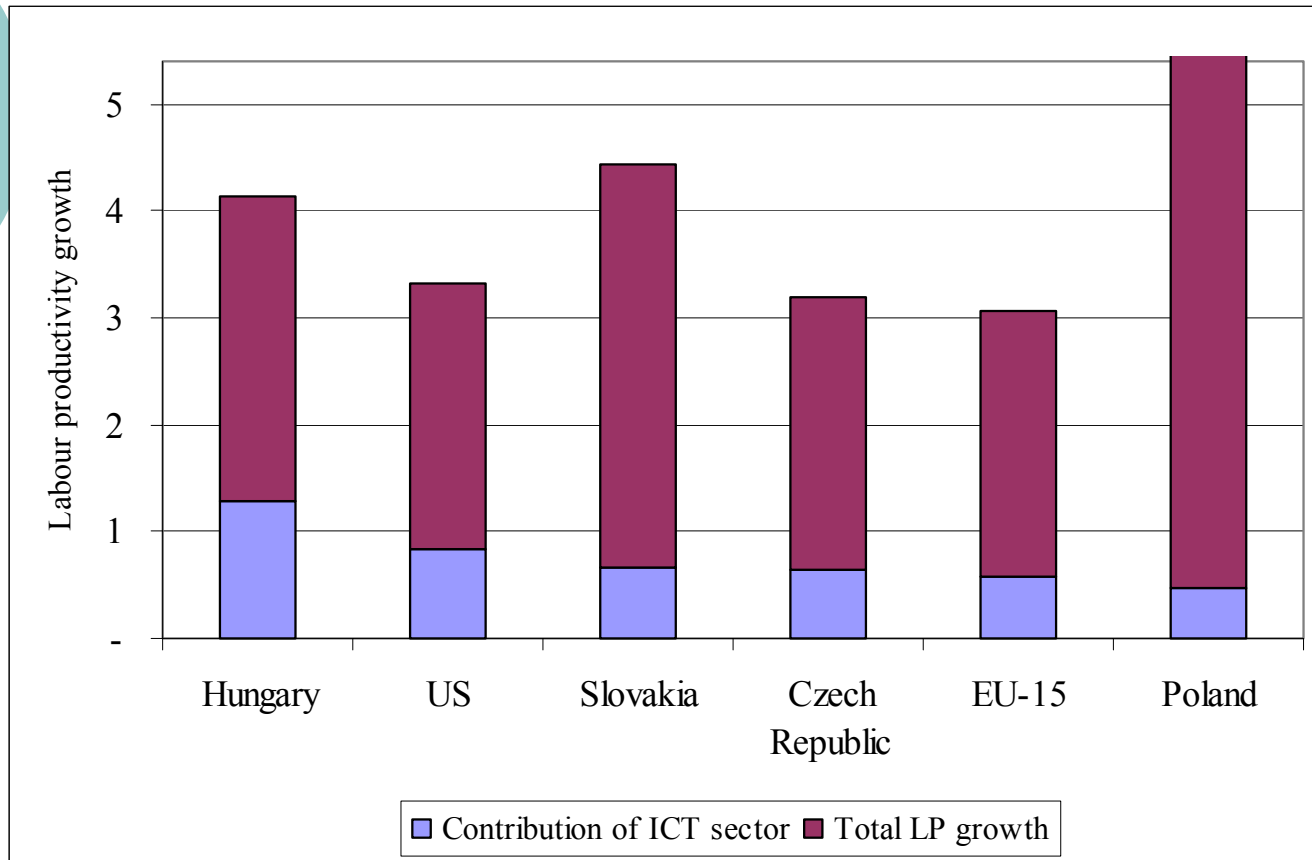
Figure 3. Share of ICT-producing, ICT-using, and non-ICT industries in GDP in 2002



Source: Van Ark and Piatkowski (2004)

... even though the ICT sector can have some positive contribution to productivity, as evidenced by Hungary...

Figure 4. ICT-producing sector contribution to labour productivity growth, 1995-2003 average



Source: Van Ark and Piatkowski (2004)





Since ICT production is too small, ICT use will have to be one of the main drivers of growth. This is particularly so as...

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Simple, post-transition growth reserves are by now almost exhausted (institution-building mostly complete, managerial skills upgraded, macroeconomic stability, EU accession etc.)

- There is a large potential for further ICT investment in CEE countries as the level of ICT diffusion is still low.
- Productivity levels in CEE industries are less than half the EU average.

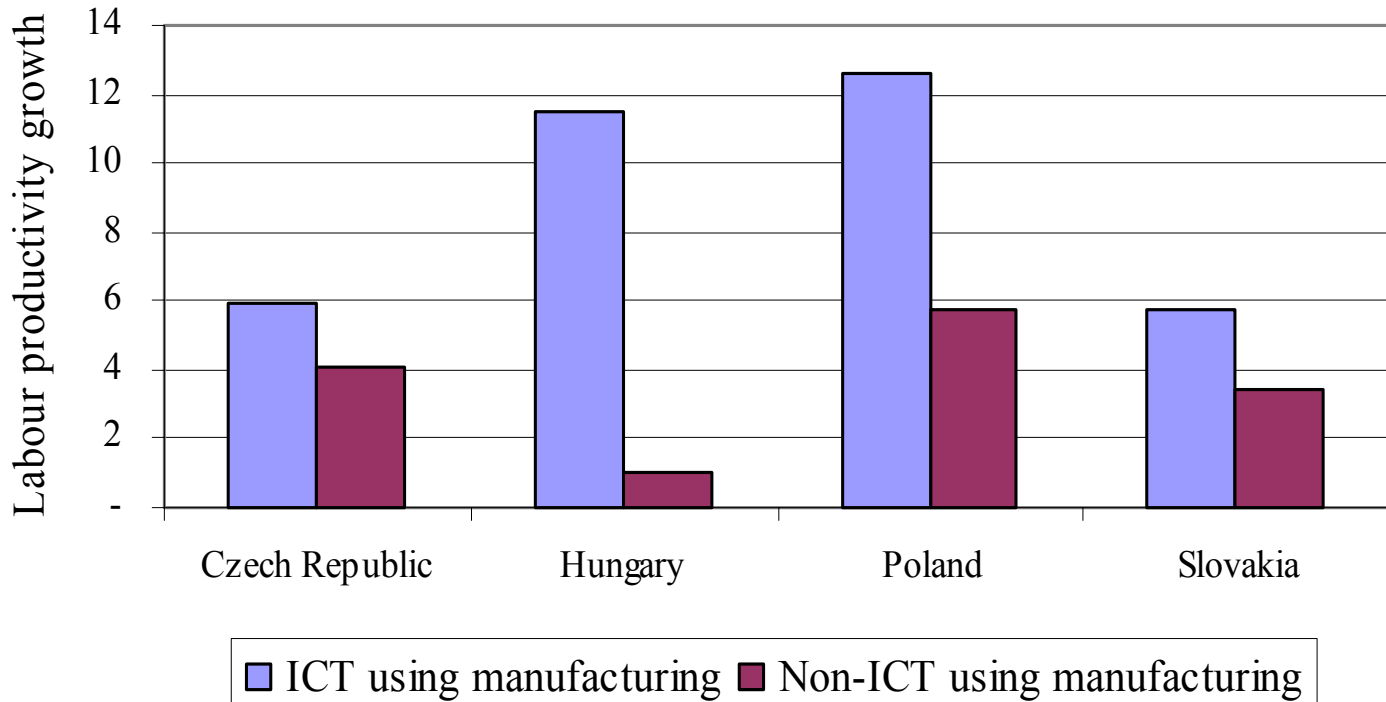
## There is evidence that ICT use increases productivity growth on the industry-level...

Table 3. Labour productivity growth in ICT producing, using and non-ICT using industries, 1995-2003 average

	EU-15	US	Czech Republic	Hungary	Poland	Slovakia
Total Economy	1.61	2.49	2.73	2.61	5.31	4.34
ICT Producing Industries	8.9	11.4	5.5	11.3	9.3	10.9
ICT Producing Manufacturing <sup>a</sup>	18.5	24.8	11.1	16.1	14.0	6.4
ICT Producing Services	5.6	4.9	5.1	9.4	7.3	12.1
ICT Using Industries <sup>b</sup>	1.5	4.4	6.4	3.9	4.1	2.4
ICT Using Manufacturing	1.9	2.1	6.0	11.5	12.6	5.8
ICT Using Services	1.4	4.8	6.7	1.7	1.4	0.3
Non-ICT Industries	0.9	0.4	0.7	1.1	5.3	4.5
Non-ICT Manufacturing	2.1	2.4	4.1	1.0	5.7	3.4
Non-ICT Services	0.3	0.2	-1.4	0.9	2.9	5.3
Non-ICT Other	1.9	0.7	1.3	1.6	5.9	5.3

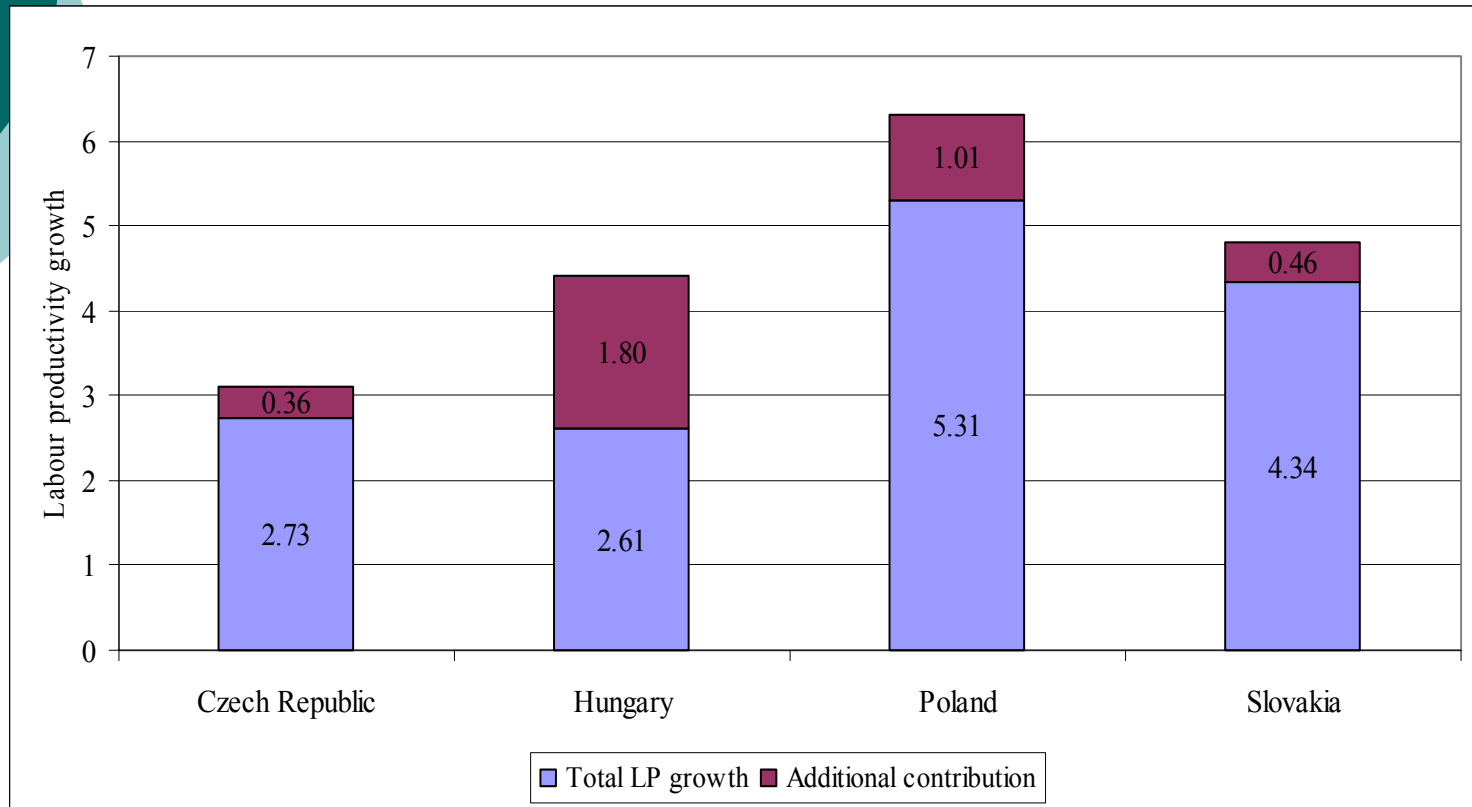
## Productivity growth in the traditional, non-ICT using manufacturing industries is much lower than in those using ICT...

Figure 6. Labour productivity growth in ICT-using and non-ICT using manufacturing industries, 1995-2003 average



## ... If they caught up with productivity growth in ICT using manufacturing, benefits would be substantial...

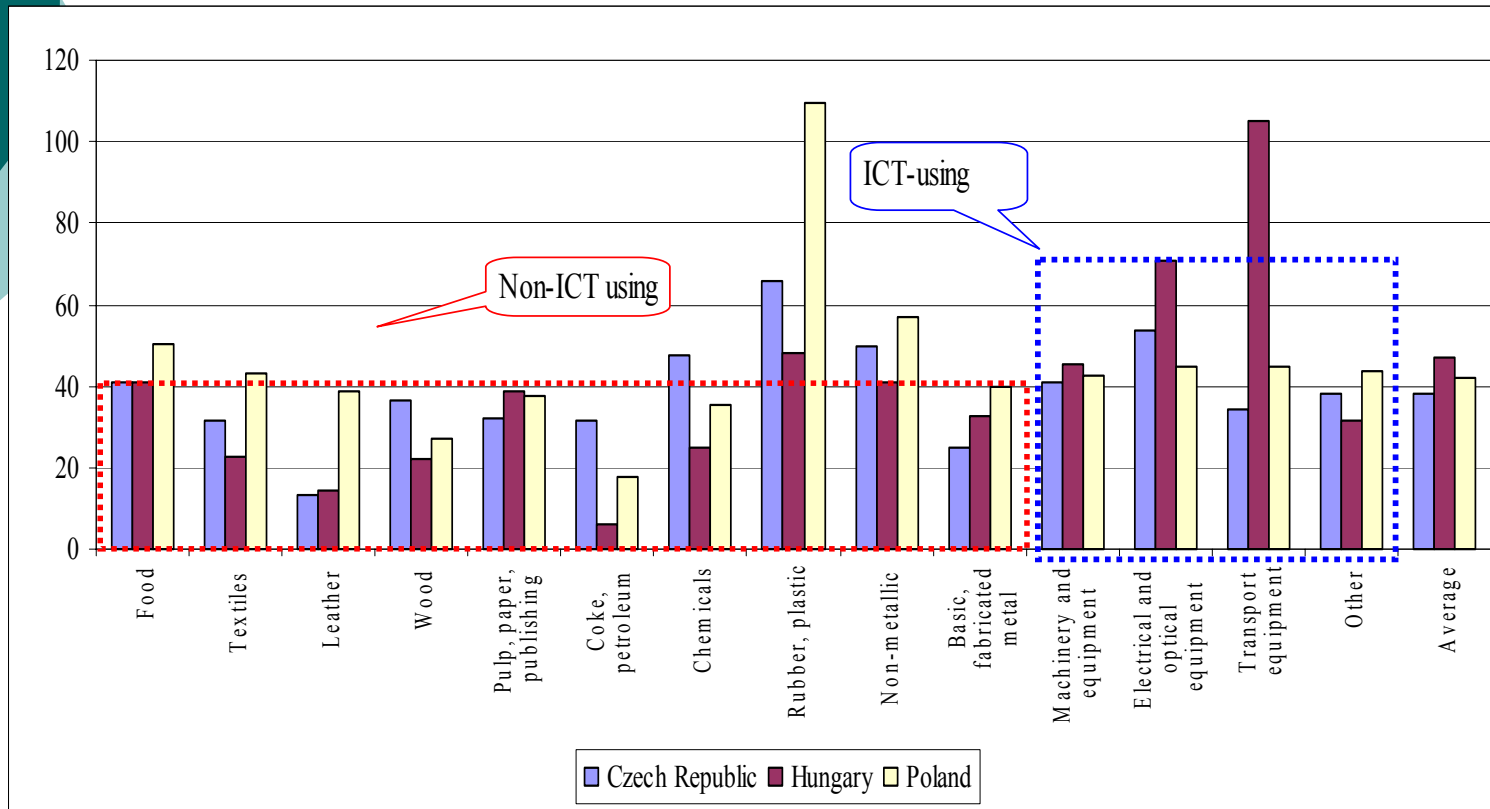
Figure 7. Contribution to labour productivity (LP) growth from faster LP growth in non-ICT using manufacturing industries, 1995-2003 average



Source: Piatkowski (2004b)

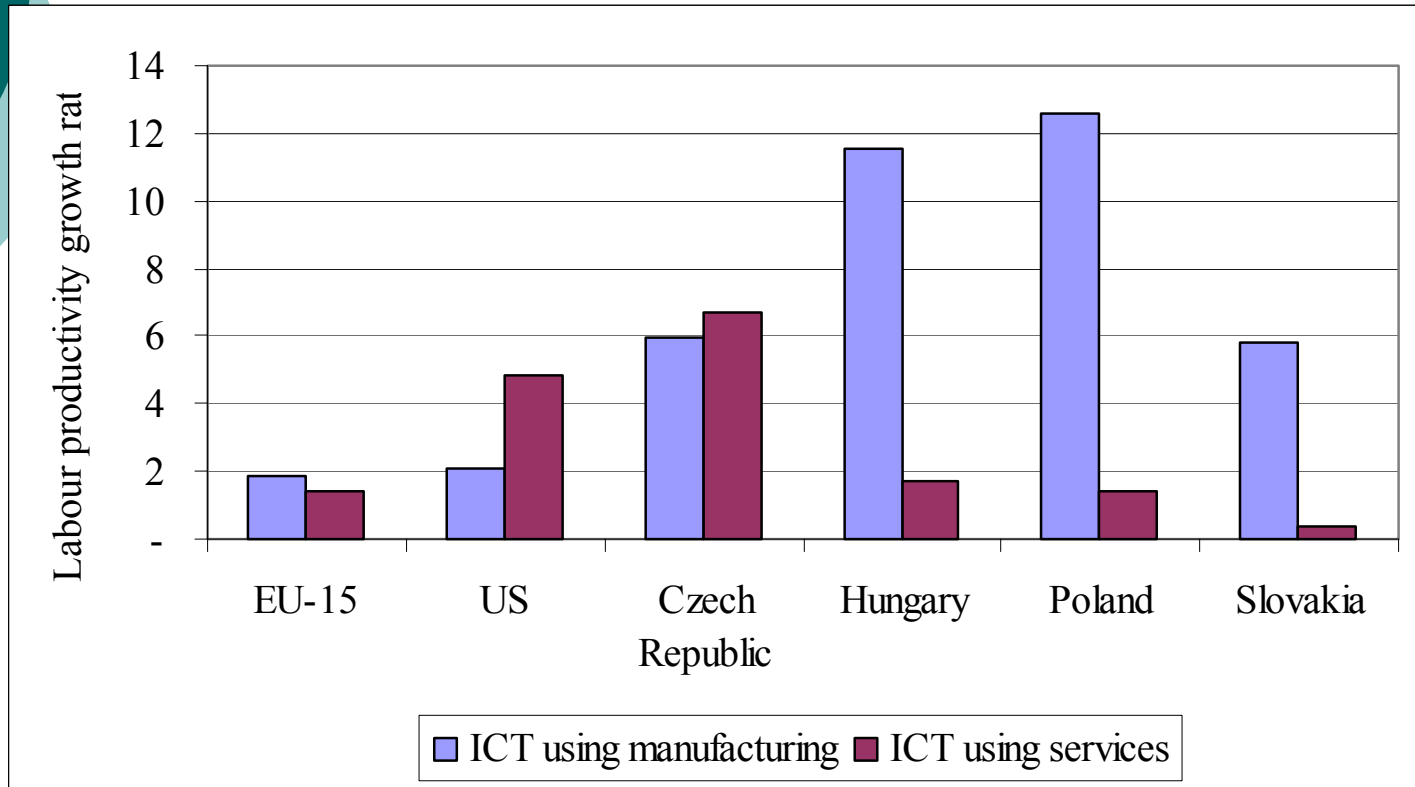
... This is feasible given the low productivity levels and thus large catching-up potential...

Figure 8. Labour productivity levels in manufacturing industry in CEE countries, 2002, Austria=100



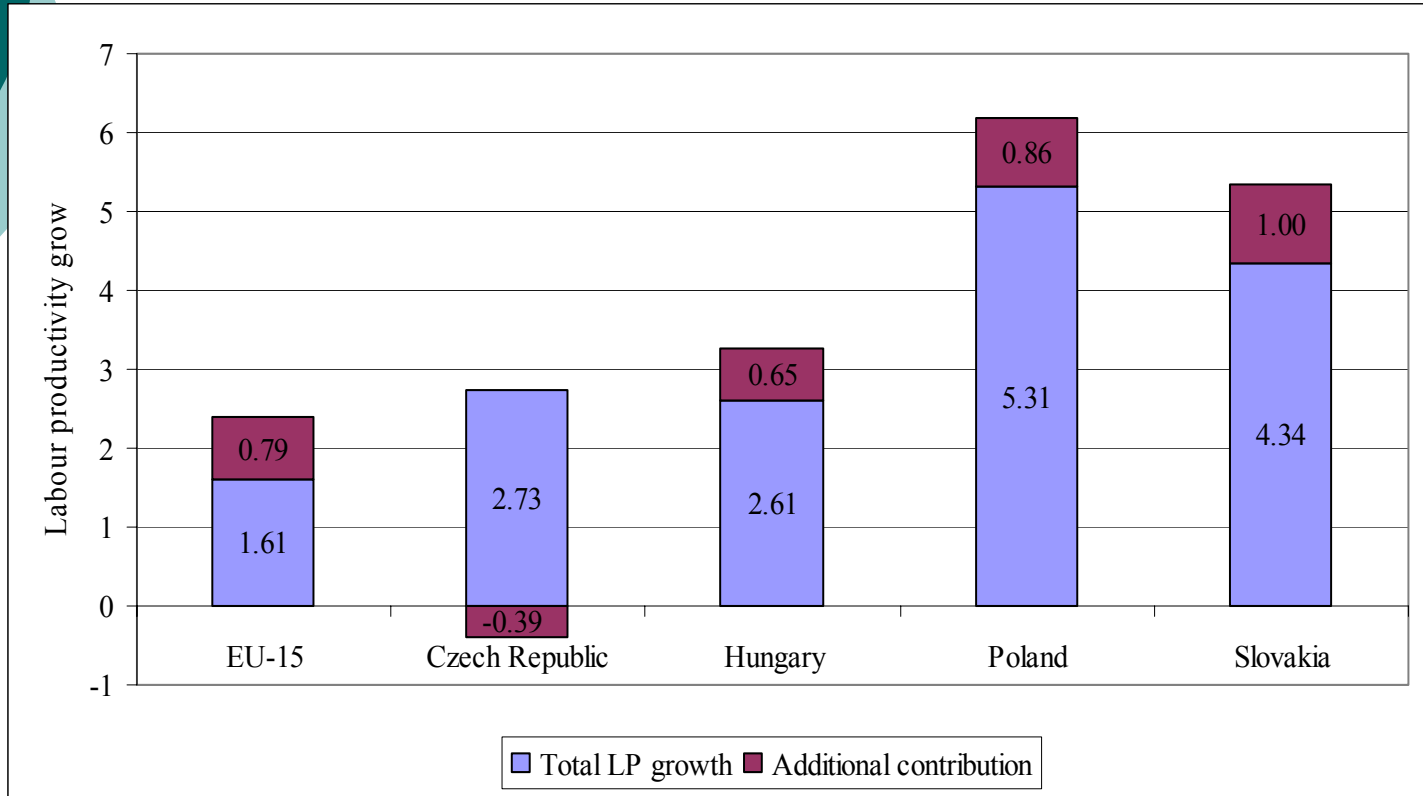
Also, productivity growth in the ICT using services in CEE countries is much lower than in the US and in manufacturing...

Figure 9. Labour productivity growth in ICT-using manufacturing and services, 1995-2003 average



# If the ICT using services caught-up with the US productivity growth rate, the contribution to productivity growth would be substantial...

Figure 10. Additional contribution to labour productivity growth due to faster growth in the service sector productivity



## For the ICT-driven modernization of traditional industries to happen, however...

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- ICT investment must further increase. It needs to be supported by basic macroeconomic stability, institutions, and competition...
- And then be complemented by improving managerial skills, better human capital, business re-organization as well as a more conducive business environment (flexible product and labor markets, competition), where the US is the leader. These reforms are hard to achieve.
- The public sector has to:
  - Become one of the leaders of the technological and organisational change
  - Promote best practices of the ICT use in industries, improve access to information.
- Lastly, time is needed for the ICT investments to affect productivity (the US productivity paradox) – enterprises need time to learn how to use ICT efficiently.





## In public administration, ICT can cut costs, improve the business climate, and increase productivity in the private sector

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- Full implementation of ICT can generate significant savings of some 2% of GDP per year:
  - Poland - according to the Ministry of Finance, streamlining the existing 300 IT tax databases and creating a single treasury management account could generate annual savings of up to 6 billion PLN a year, that is approx. 1.5% of GDP. It can also increase tax revenue through better tax enforcement.
  - UK – the government’s IT plan projects reductions in administrative costs of at least 5 percent in real terms over the period 2006-2008 and (2) net reduction in civil service employment by 13.5% in the central govt. by 2008.
  - UK – e-procurement in central government procurement delivered 2 billion pounds savings in 2003-04 alone and planned to achieve 20 billion pounds (1.5% of GDP) by 2007-08.
  - Israel – unified e-procurement implemented in 2005 is projected to save between 10 to 20 percent on the annual bill of NIS 30 billion (0.6-1.2% GDP)
- Improve the quality of services and the business climate:
  - Faster and better access to information=>increase in productivity of both the public and private sector
  - Lower costs for the private sector of dealing with public administration (online payment of tax, social security, and other duties; electronic correspondence etc.) =>increase in productivity by 5% for SMEs, 2% for large enterprises, 3% for the whole economy=> additional \$7.5 billion of GDP!
  - Faster new business registration=> faster GDP growth and productivity.

## ICT can also improve skills, save lives, and improve efficiency of spending in the whole public sector...

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### E-learning:

- Improve access to education to the handicapped, seniors, working adults
- => increase employment through reduction in skills mismatch

### ➤ E-health:

- Bring substantial cost savings
  - 0.4-0.6% of GDP a year in the US (Litan and Rivlin 2004, The Economist). More in CEE countries.
- Save lives!
  - USA - Preventable medical errors due to lack of a centralized database on patients kills between 44,000 and 98,000 people each year (The Economist)
  - Poland - the number of preventable deaths could amount to 6,000-13,000 a year (2-5% of total deaths a year)

### ➤ Enhance transparency and save billions by improving the efficiency of public spending:

- Increased productivity thanks to enhanced public oversight over the efficiency of the public sector=> "naming and shaming" for the laggards, promotion for the leaders
- Lower corruption

## To sum up recommendations for public policies...

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- **Promote more conducive economic and institutional environment**
  - ✓ Macroeconomic stability, developed financial markets (VC), flexible labor markets, low administrative barriers, transparent and effective regulations, high level of competition, FDI.
- **Do not focus on developing the ICT-producing sector**
  - It will be nice if it develops, but it is too small to matter. Also, no evidence of spillover effects.
- **Promote ICT use in the non-ICT producing sectors, particularly in traditional manufacturing and in services**
  - It can bring substantially faster productivity growth and hence catching up
- **Implement full e-government, online public services, and e-procurement (push strategy)**
  - Promote ICT investment in non-ICT using sectors through public rankings of industrial productivity, peer pressure, educational programs, public grants and co-financing,
  - Develop public e-services
  - Establish mandatory deadline for electronic communication between the administration and enterprises (the case of Poland's ZUS)
  - Implement centralized public e-procurement (spillover effects).