

ICT, Productivity and Growth in Hungary and in the NMS-8

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ICEG European Center

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The Structure of the Presentation

- I. Contribution of IST to Growth and Productivity: International and NMS-8 Evidence**
- II. The position of Hungary and the NMS-8 in ICT Production and Diffusion**
- III. How to Enhance the Contribution of IST to Competitiveness in the NMS?**

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I. Contribution of IST to Growth and Productivity: International and NMS-8 Evidence

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I.1. Contribution of IST to economic growth

$$Dy = vl * dl + vict * dict + vnict * dnict + dtfp,$$

where vl, vict, vnict- share of labour, ict and non-ict capital in income,

Empirical evidences:

- Colecchia-Schreyer (2001): in past twenty years, ICT contributed between 0,2 and 0,4 percentage points per year to economic growth, depending on the country.
- OECD (2003): the contribution of the ICT sector to the 2,5% growth (between 1990 and 1995) was 0,4-0,5%, while to the 4% growth (between 1995 and 2002) was 1%
- Jorgenson, Ho and Stiroh (2003): US growth increased by 1.85% points between 1995-2000 compared to 1990-1995, of which ICT contributed 0.93 % points
- OECD (2003): in the last decade ICT investments contributed to annual GDP growth by 0.3% - 0.8%
- Growth of the ICT sector: it contributed 1% annually to GDP growth in Korea, Ireland and Finland
- Increased employment: Finland 7,2% of the labour force (Daveri (2004))

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I.2. Contribution of IST to productivity growth

Three major channels:

- increase of TFP through the spread of innovation, knowledge and related spill-over effects
- capital deepening both in ICT producing and due to new investments in ICT using sectors
- technical progress in ICT producing industries and its spill-over effects (all purpose technology)

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I.2. Contribution of IST to productivity growth

Empirical evidence

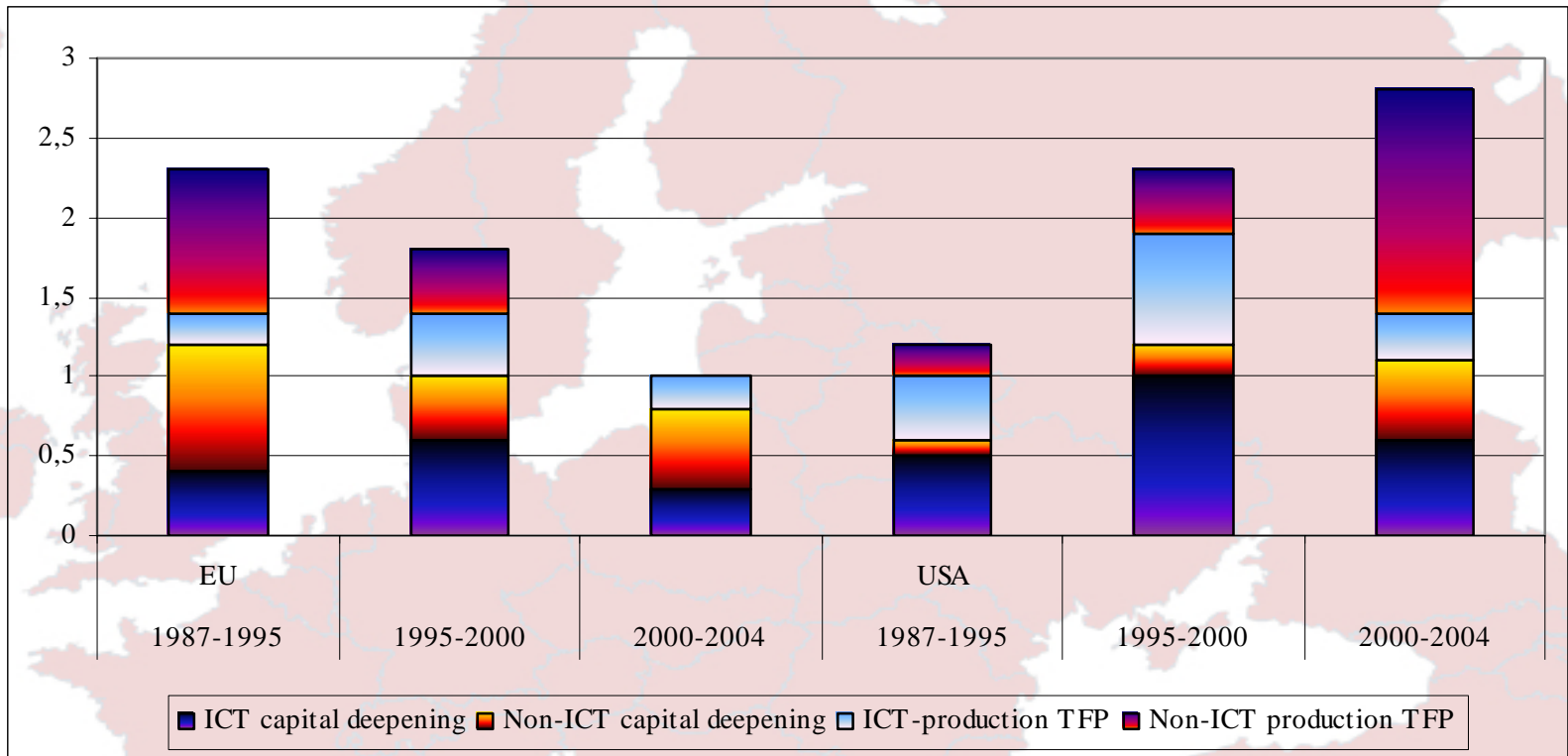
- Basu et al (2003) marked shift in TFP growth in the US, linked to a relatively higher ICT capital growth in the first half of the 1990s
- Van Ark, Inklaar and McGuckin (2003) found that most European economies showed lower investment in ICT than the US, and a deceleration of productivity growth in contrast to the acceleration in the US
- Pilat-Lee-van Ark: In most OECD countries, the contribution of ICT manufacturing to overall labour productivity growth has risen over the 1990s
- EU Commission (2004): productivity level vis-à-vis the US 97% (mid 90s), and 88% (2005), the decline was caused up to 50% from declining K/L and 50% from declining overall efficiency of production

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Sources of Labour Productivity Growth

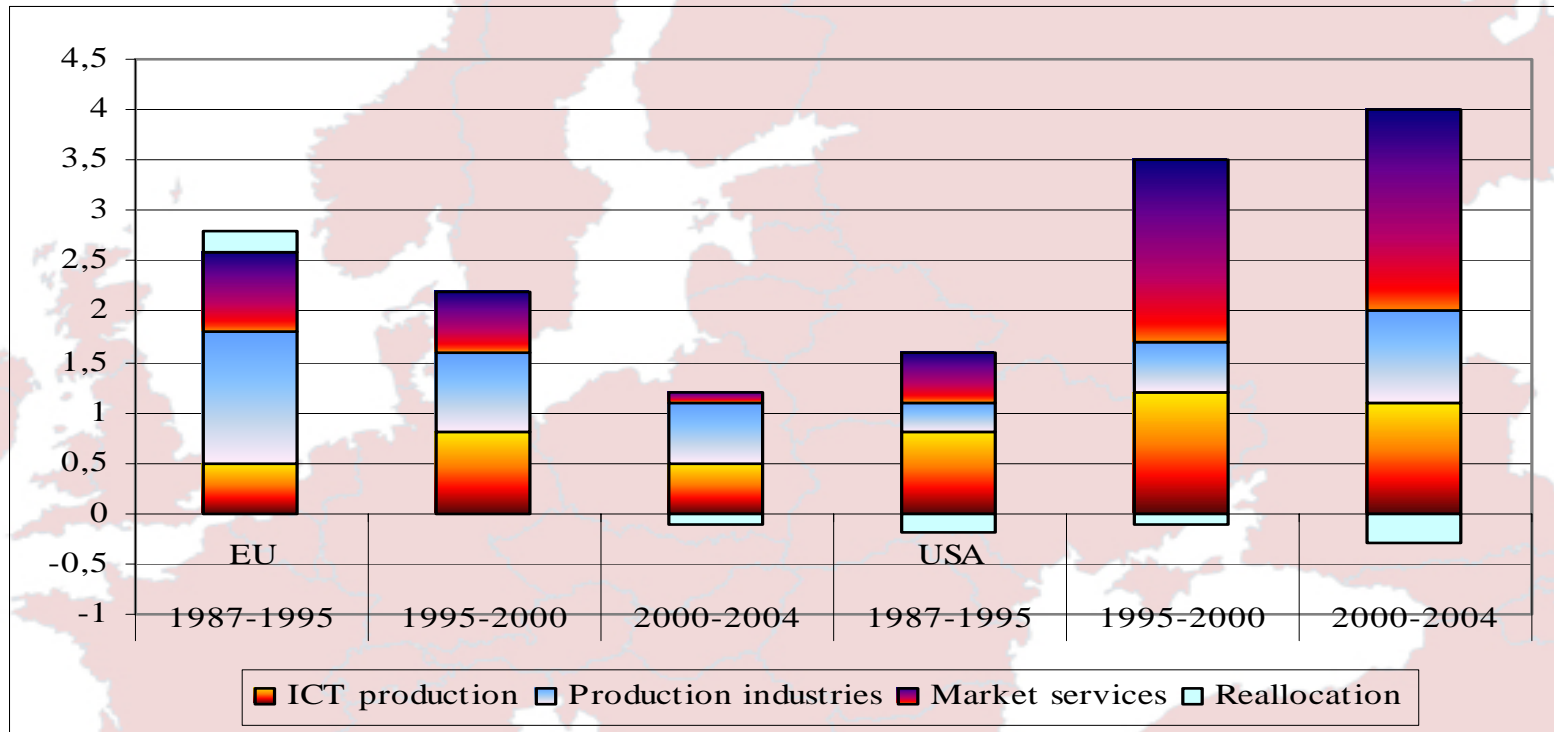


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Industry Contribution to Market Economy Labour Productivity Growth



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I.3. Direct or indirect channels are more important

Three hypothesis:

- ICT usage matters (Blanchard (2003), Art-Inklar- van Guckin (2003), McKinsey Global Institute (2002), Stiroh (2003)). Between EU and US the major difference is in Y/L in retail, banking and wholesale
- ICT production matters (Gordon (2004), Daveri (2004)): not the diffusion matters, but the presence of few very active producers in IT with their strong spillovers
- ICT irrelevance: if reclassified then other factors are more important: labour and product market regulation

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I.3. Direct or indirect channels are more important

Indirect effect is stronger:

- Basu et al (2003): in US about 75% of the overall increase in GDP growth was indirect
- Van Ark et al (2003): ICT intensive usage sectors had driven the jump in US productivity
- Jorgenson et al.(2002): while the structure of output is shifting towards the ICT producing industries, but even more substantially towards the ICT using industries
- Colecchia-Schreyer (2001): "ICT diffusion plays a key role and depends on the right framework conditions, not necessarily on the existence of an ICT producing sector"

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I.4. Growth and productivity contribution of ICT in NMS:

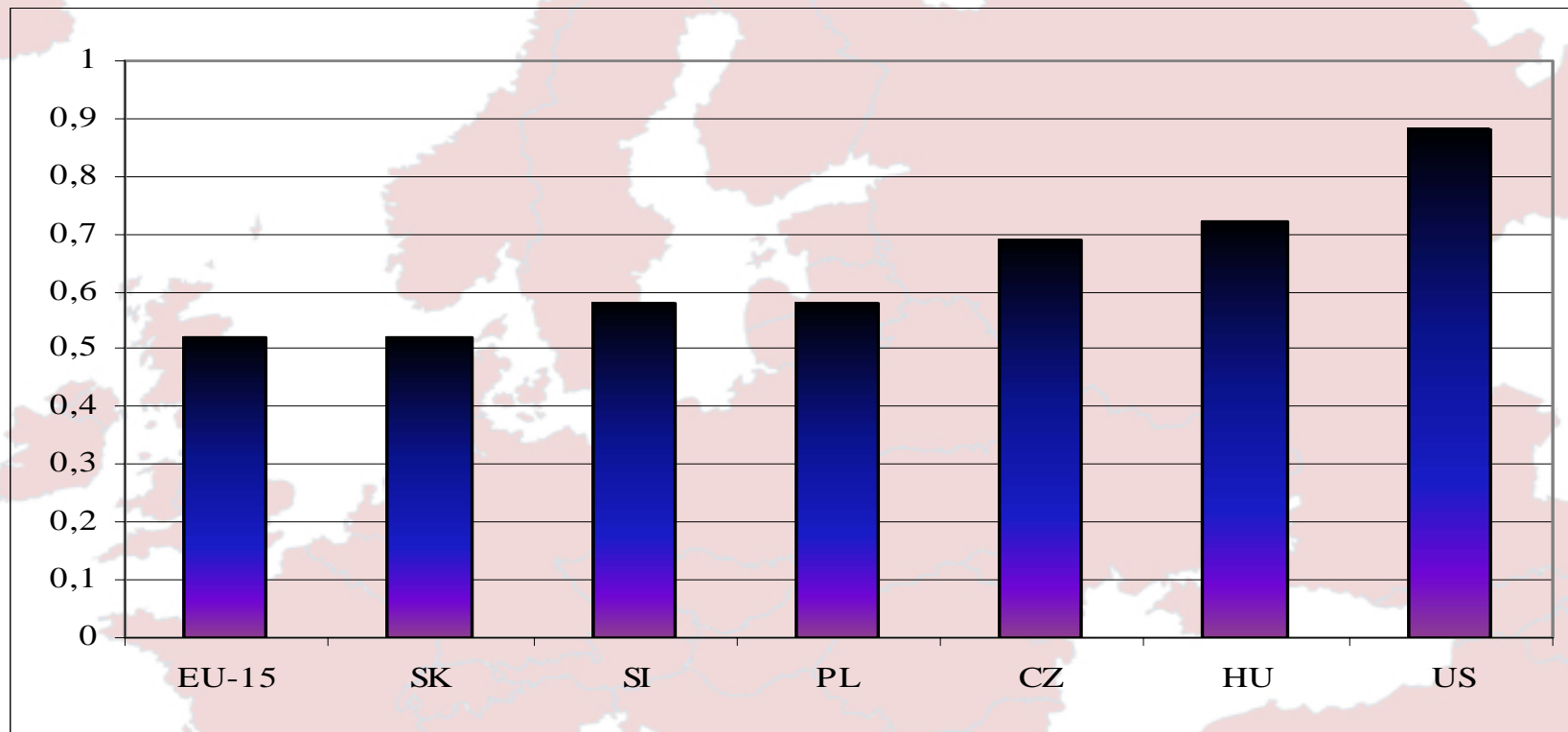
- Empirical evidence is scarce: Piatkowski-van Art (2004), World Bank (2004): ICT-producing and ICT-using sectors have both contributed, but more the ICT-using ones
- Much faster increase in growth and TFP in NMS than in the EU-15, while investment rates and capital accumulation or labour contribution is similar or less than in the EU-15. Productivity was driven mainly by labour cuts and TFP increases
- On the other hand the share of ICT producing, using sectors quite similar to EU-15: ICT producing sectors 4%, using 27% and non-ICT 68% in the EU in 2002, in HU 5%, 25% and 70%, SK 4%, 24%, 72% and PL 2%,24%,74%
- ICT contributed mainly to TFP growth and less to non-ICT or ICT capital intensity in measuring its contribution to growth

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The Contribution of ICT Investment to GDP Growth, 1995-2003

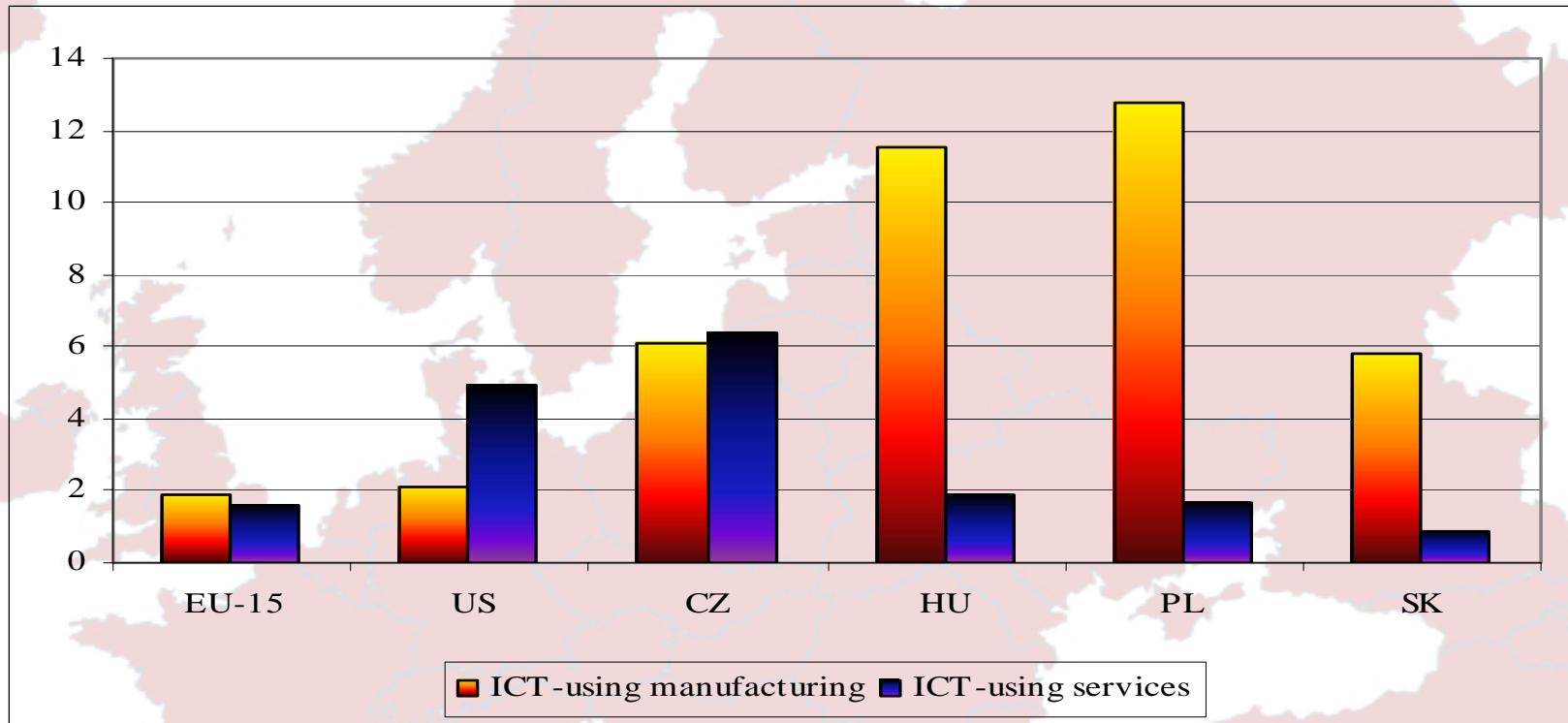


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Productivity Increases in ICT-using Manufacturing and Services, 1995-2003



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I.5. Conclusions:

1. Growth in NMS-8 driven less by capital and labour supply but by the rise of TFP
2. The share of ICT producing sector (except HU, EE) is smaller or similar to EU-15 and ICT contributes to growth mainly indirectly through the TFP rise
3. But as penetration and other IST indicators are low in NMS-8, while structural reforms (leading to higher capital and labour productivity) were fast, the contribution of IST has been relatively small either to TFP increase or to capital stock
4. There is a double possibility of increased contribution of IST to growth and competitiveness: higher investments due to ICT needs, and also higher productivity due to capital deepening and accompanying organisational etc. changes leading to faster rise in TFP

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I.5. Conclusions:

5. The role of ICT expansion for competitiveness and growth

- a) returns and spill-over effects from ICT application are higher
- b) expansion of ICT may allow more efficient savings at the level of general governments
- c) link between IST and Lisbon indicators, the expansion of the ICT use may provide additional boost to meet the competitiveness-driven Lisbon indicators.

6. What explains the differences between NMS-8 and EU-15 in IST indicators?

- Gaps in income levels and speed of catch up: affordability problems, low level of public sector use, high regional disparities, etc.
- Market structures: lack of competition, monopolistic markets
- Policy issues and priorities: while some policies support IST (FDI promotion, liberalisation), most of them are weak and incoherent

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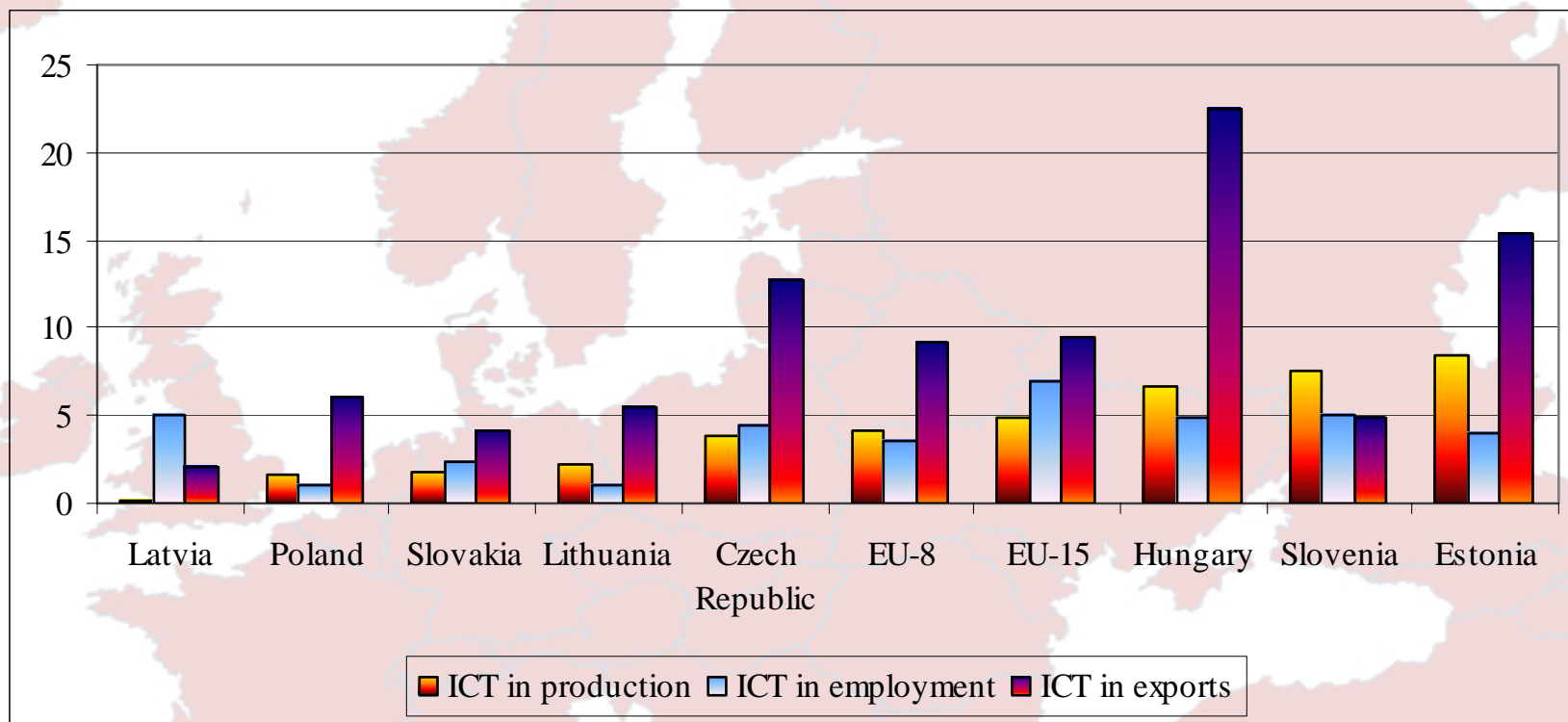
II. The position of Hungary and the NMS-8 in ICT Production and Diffusion

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The Contribution of the ICT Sector to Output, Employment and Exports, 2004

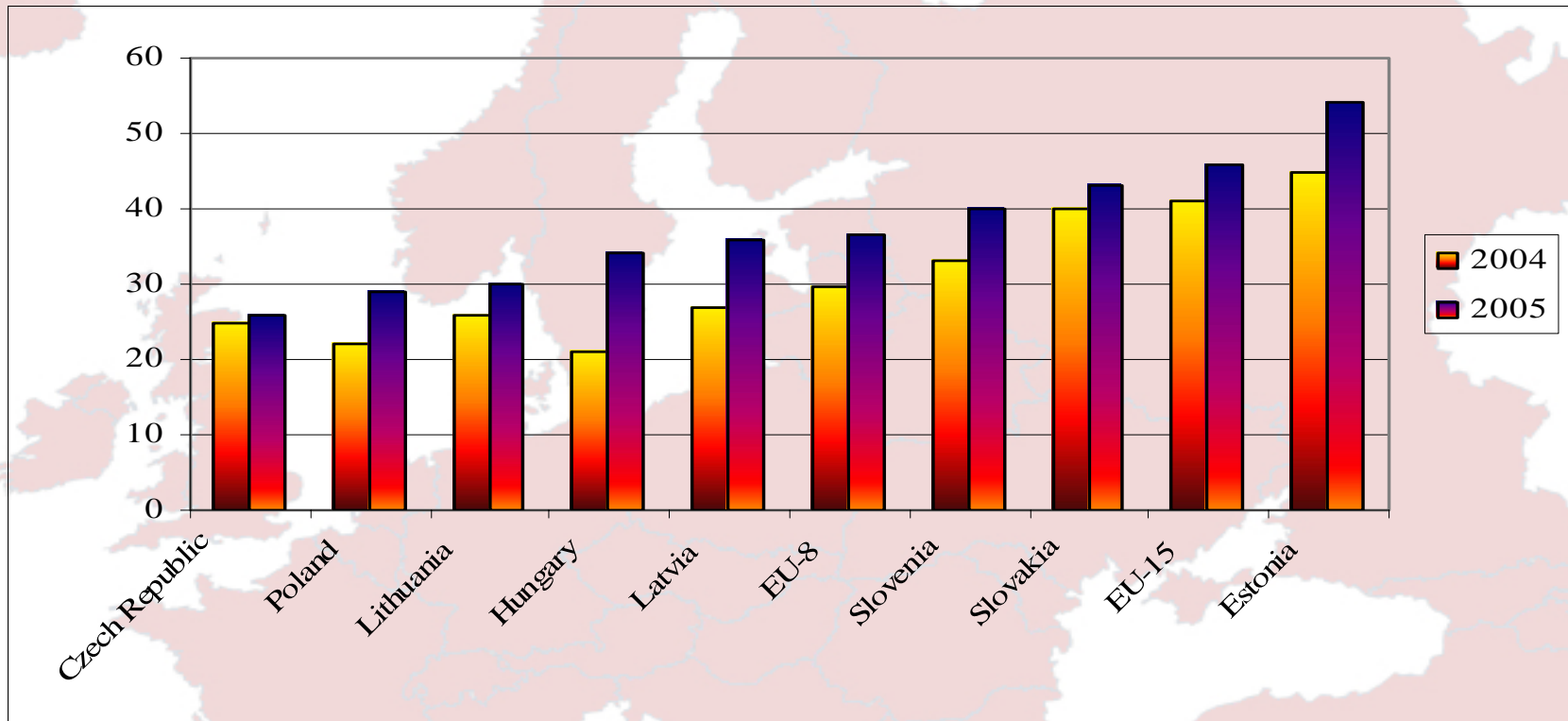


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Share of Individuals Regularly Using the Internet

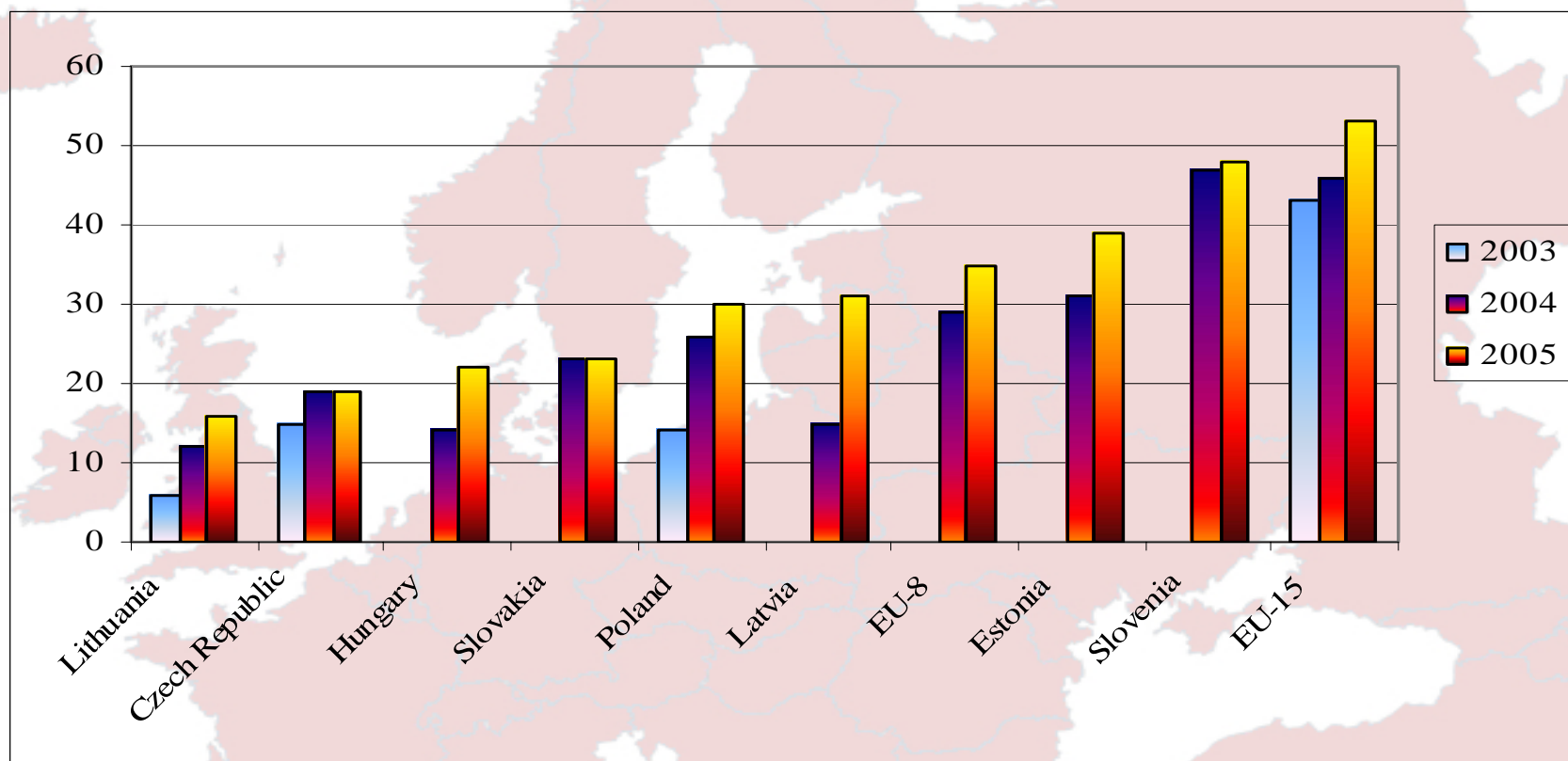


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Share of Households Connected to the Internet

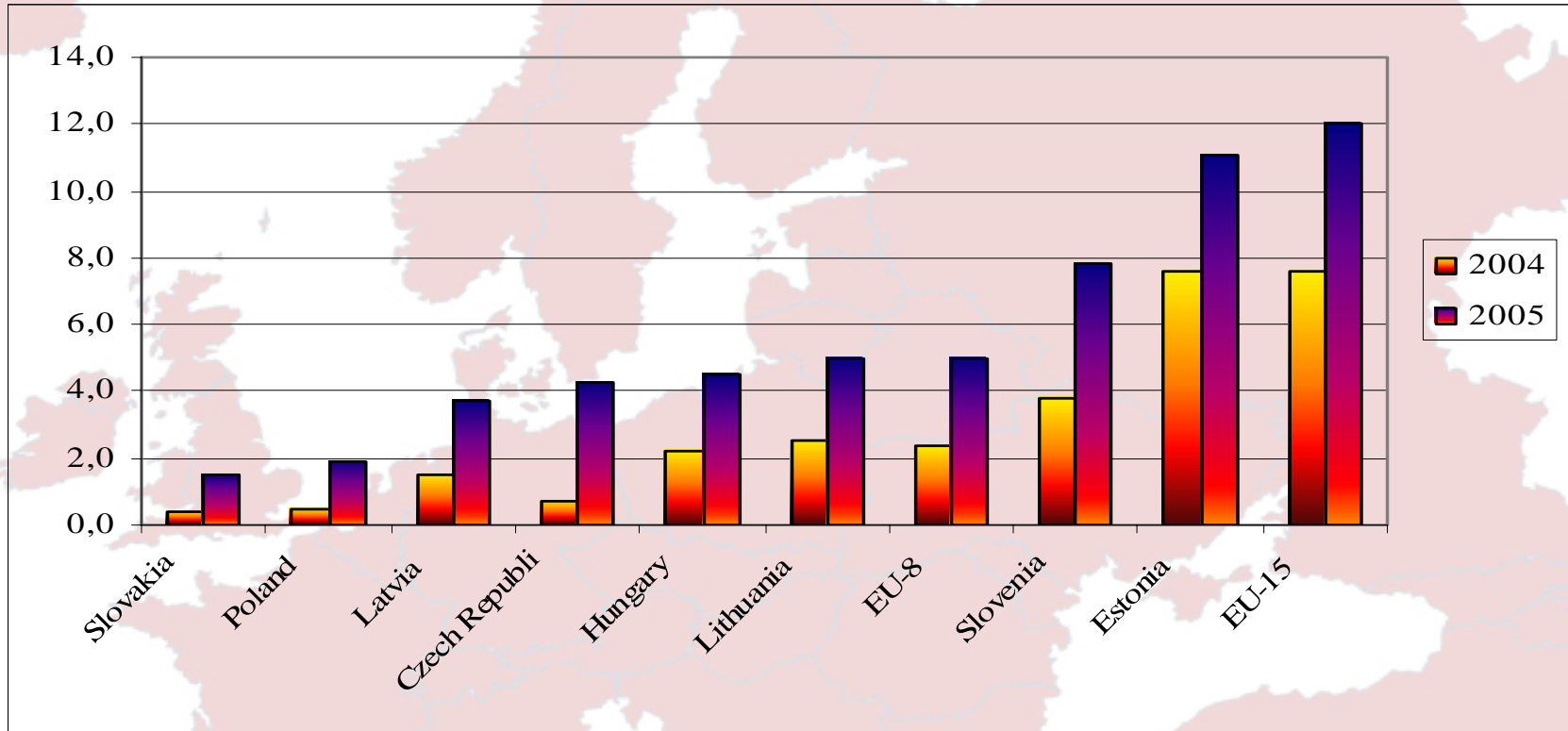


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Broadband Penetration Rates

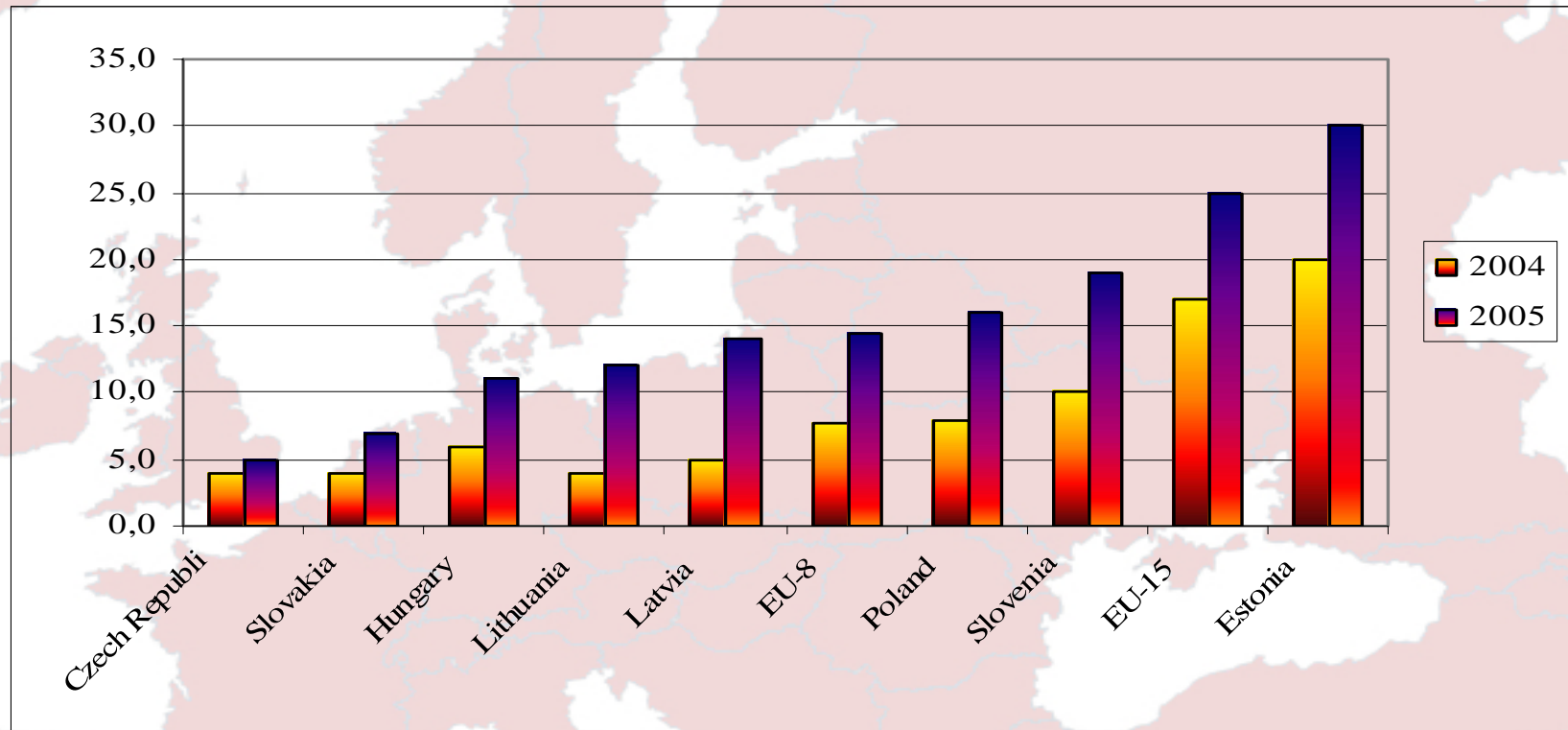


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Share of Households with Broadband Connection

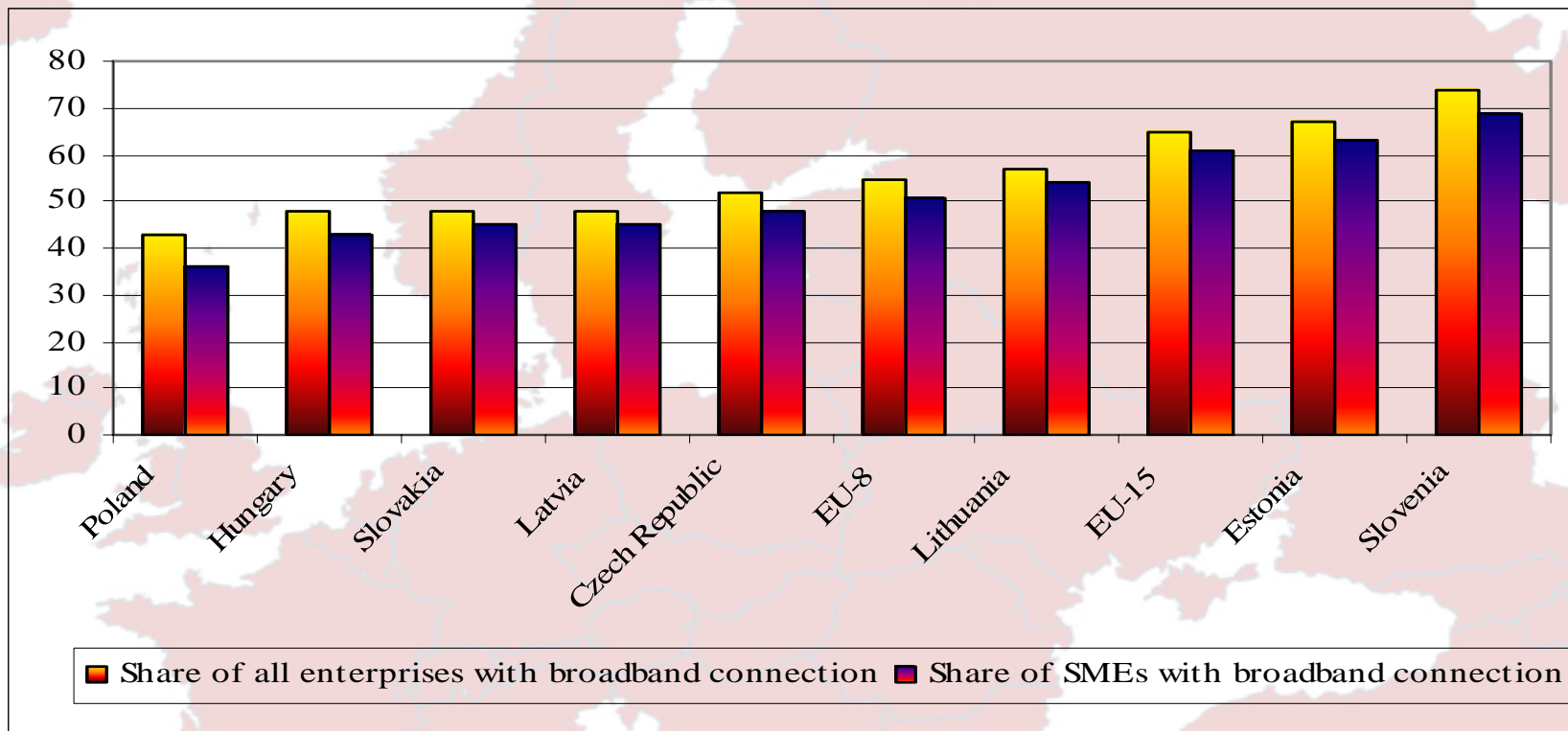


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Broadband Connections in the Enterprise Sector

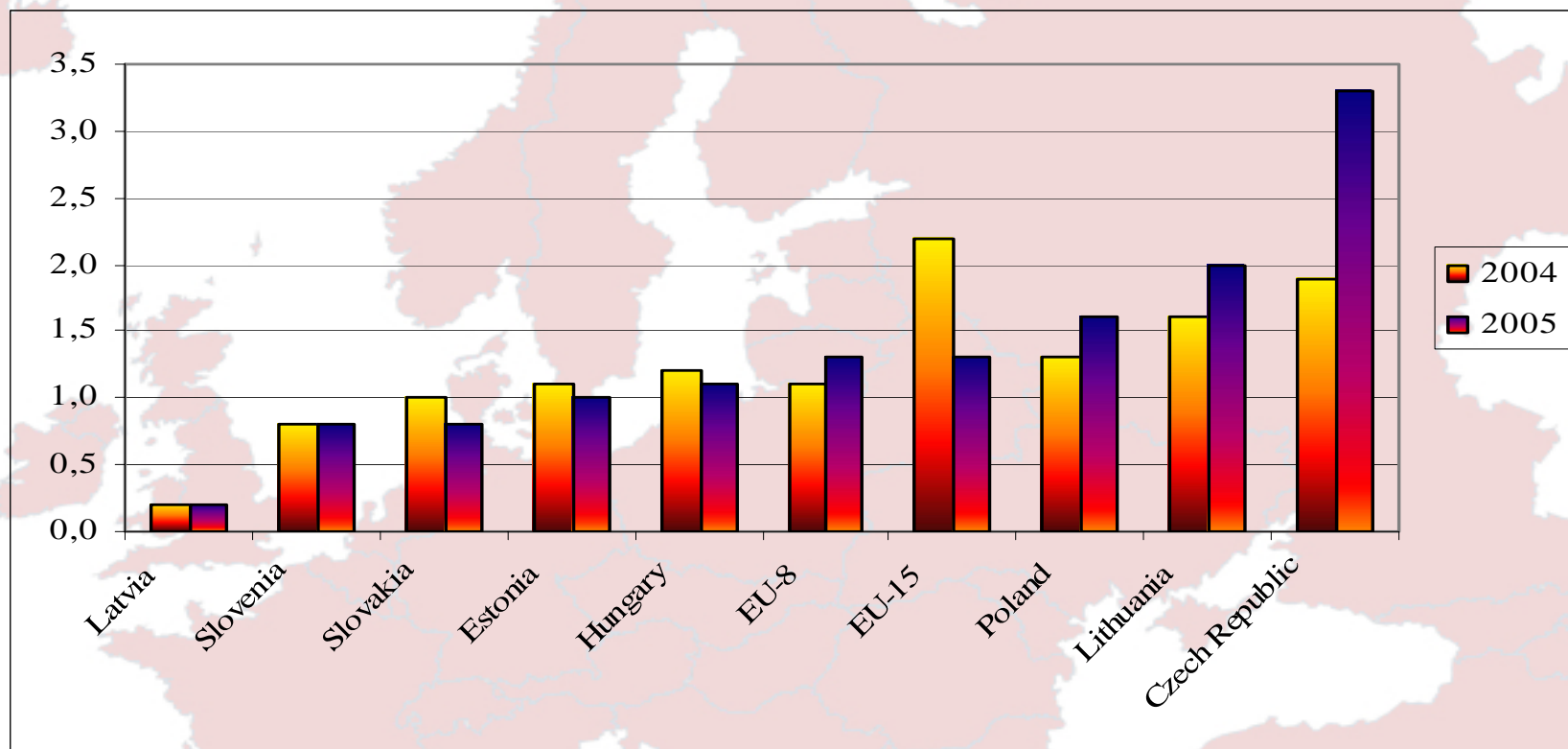


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Share of eCommerce Revenues in total of Enterprises

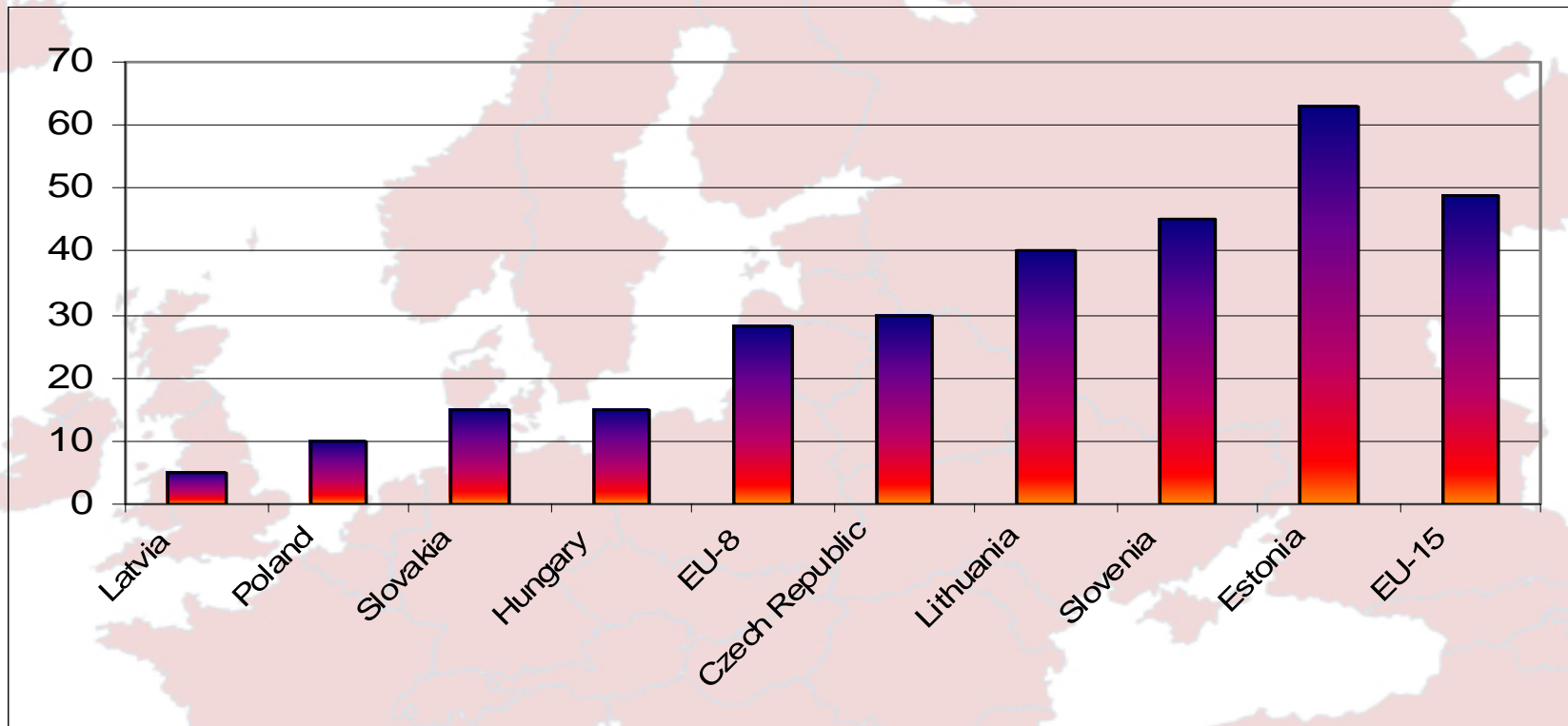


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eGovernment Services: Online Availability in 2004 (%)

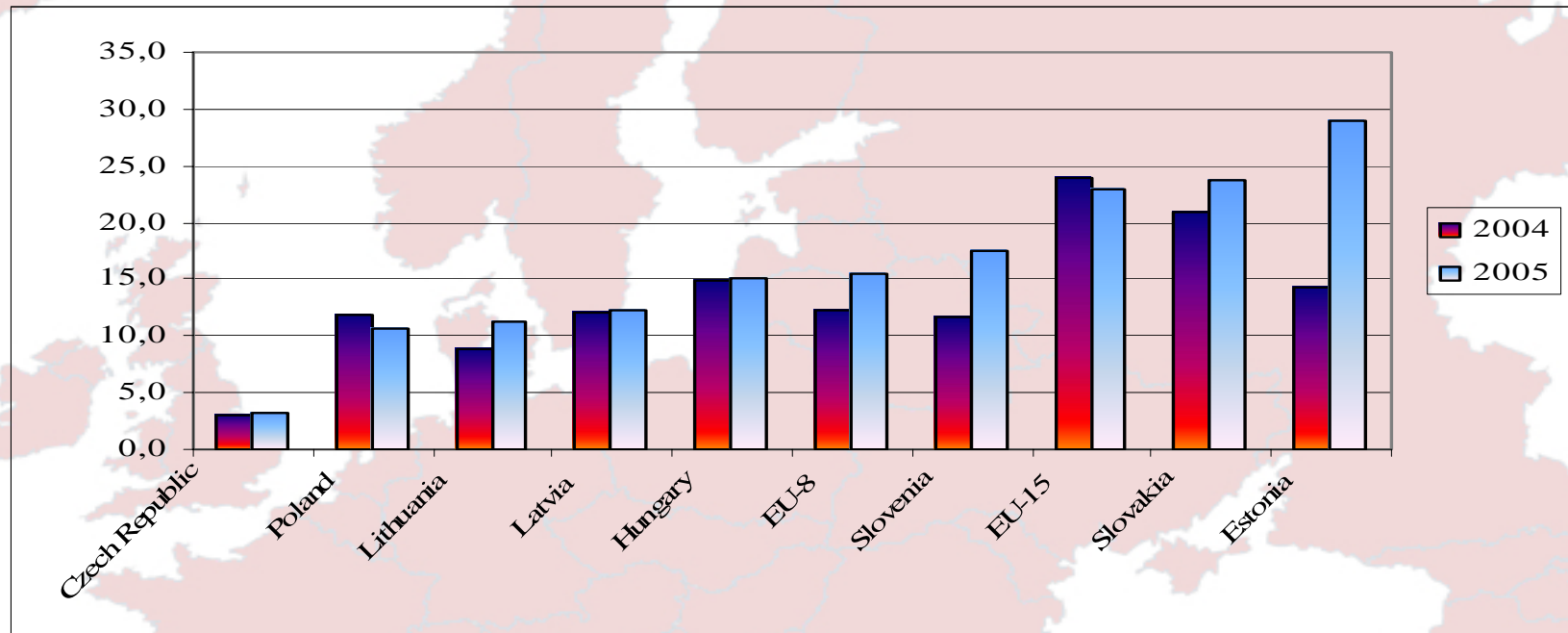


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Households Interacting with Public Authorities Online (%)

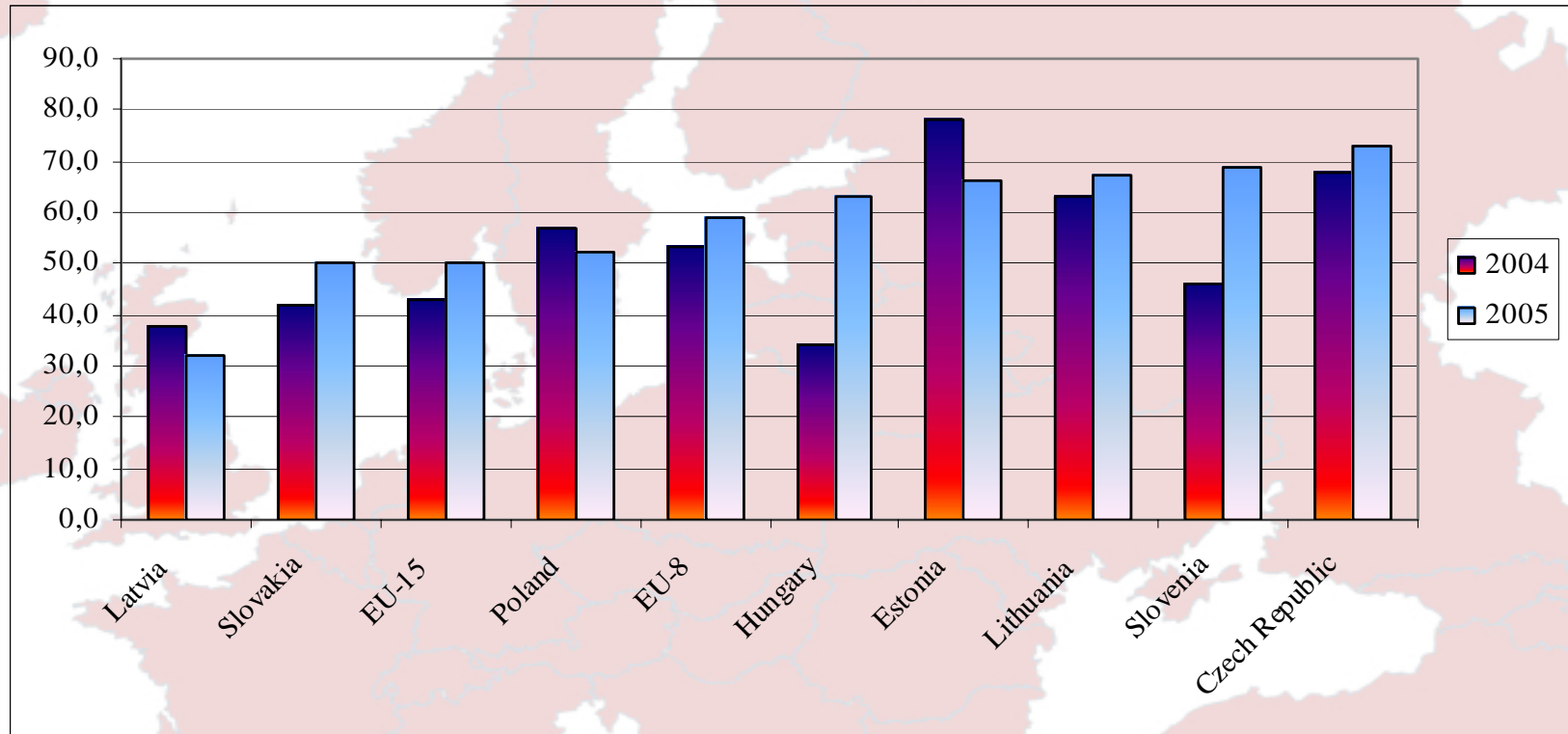


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Enterprises Interacting with Public Authorities Online



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III. How to Enhance the Contribution of IST to Competitiveness in the NMS?

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III.1 Three major issues to support ICT diffusion and contribution to and growth in NMS -8:

- a) public sector reform**
- b) product market reforms**
- c) policy reforms**

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III.2 Public sector reform:

- streamlining and changing structurally public sectors in NMS and their role in fostering IST developments in NMS
- redistribution side:
 - a) health care and eHealth,
 - b) education and eLearning,
 - c) public (local and national) administration and eGovernment,
- centralisation side: tax competition already in progress with simplifying tax administration also with IST

Outcome of reforms:

- more funding for IST,
- higher level of eGovernment and more efficient public sector,
- contribution to Lisbon indicators (human capital spending, R+D)

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III.3 Product market reforms:

- labour market reforms allowing atypical, flexible employment structures, increased labour mobility and supply
- liberalising network industries: more competitive market conditions,
- product market deregulation especially in terms of market entry and exit

Outcome:

- direct positive effect on the use of factors of production and increased efficiency leading to higher demand for IST,
- stronger competition, lower prices, better affordability, etc., the usual benefits

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III.4 General and IST related government policies:

Besides the earlier mentioned areas:

- use of structural funds for IST related developments
- dismantling all obstacles in front of household and corporate sector investments in IST
- Simultaneous priority given to access and content in IST policies

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Thank You!

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