



Has the Japanese Economy Turned the Corner? The Role of Services and Intangibles

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Productivity in the Global Economy

Innovation in the Service Sector and the Role of Intangible Assets

- The Long Term Perspective
- Output and Productivity Growth
- A Sector Perspective on the Productivity Slowdown
- How do Intangibles Affect Productivity in Services?
- How to Strengthen Productivity in Services?

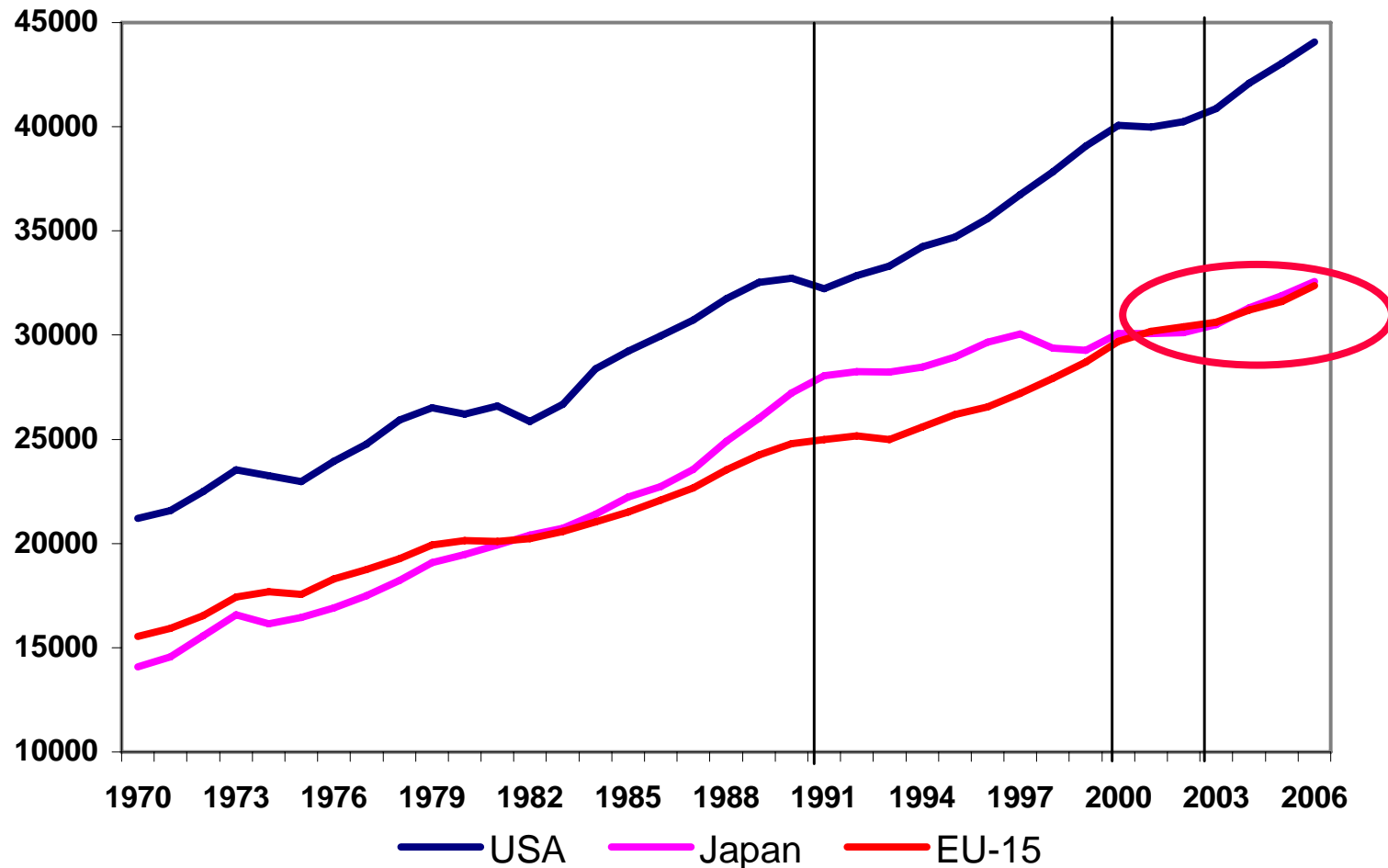


The Long Term Perspective



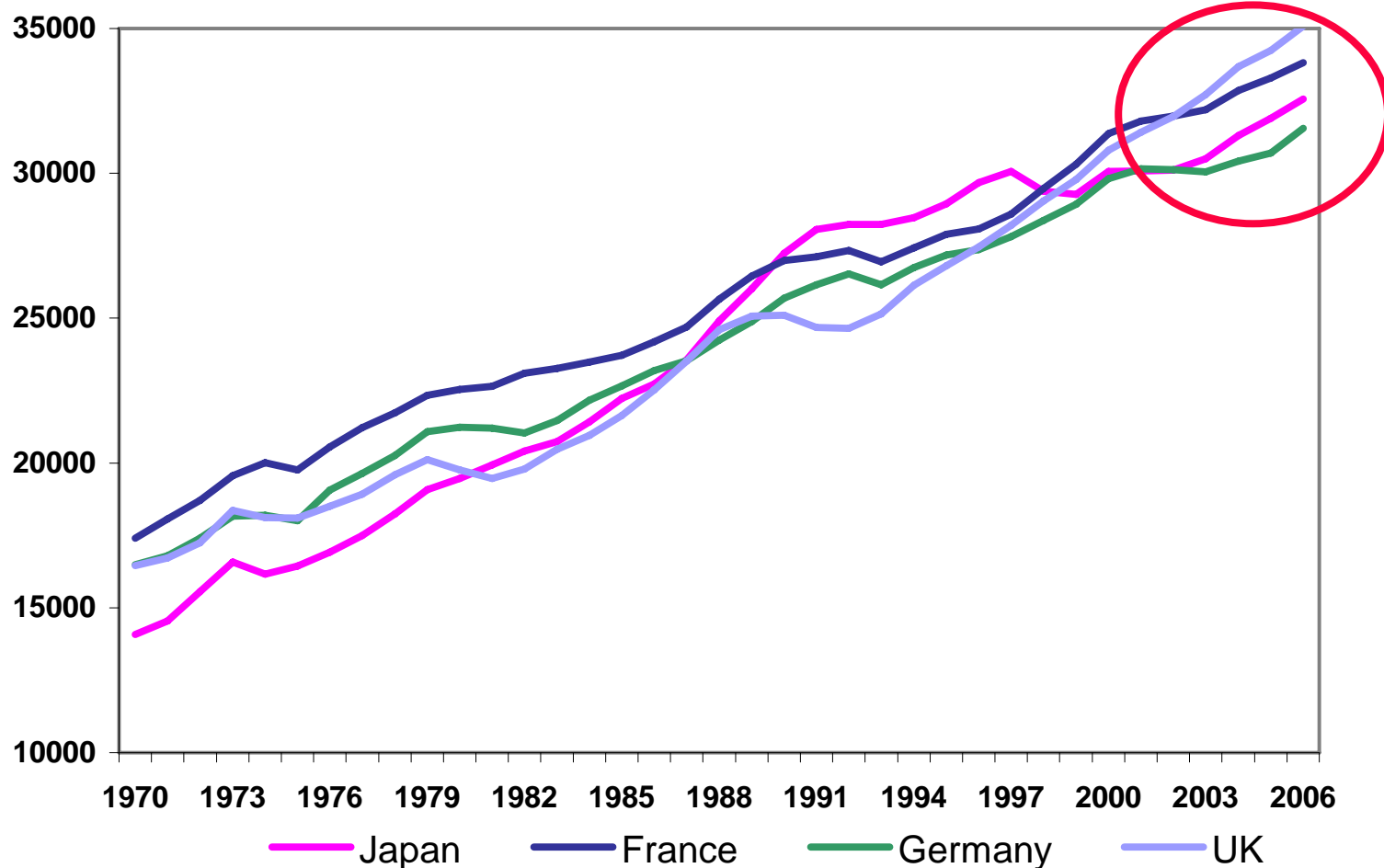
GDP per capita growth in Japan has slightly accelerated but not beyond EU or U.S.

GDP per Capita (2006 US\$ - PPP)

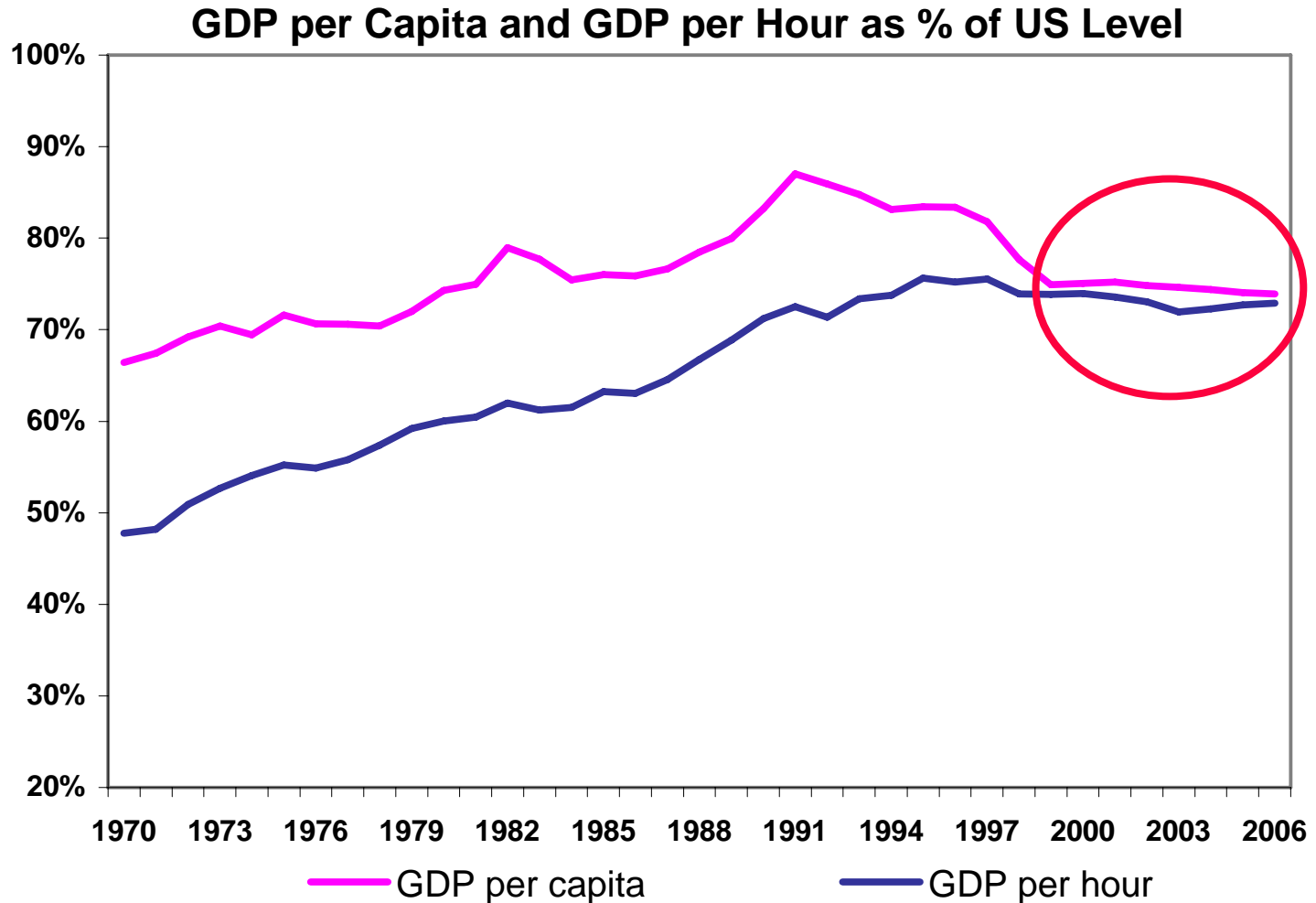


Even comparison with major European countries does not show Japan as exceptionally strong

GDP per Capita (2006 US\$ - PPP)

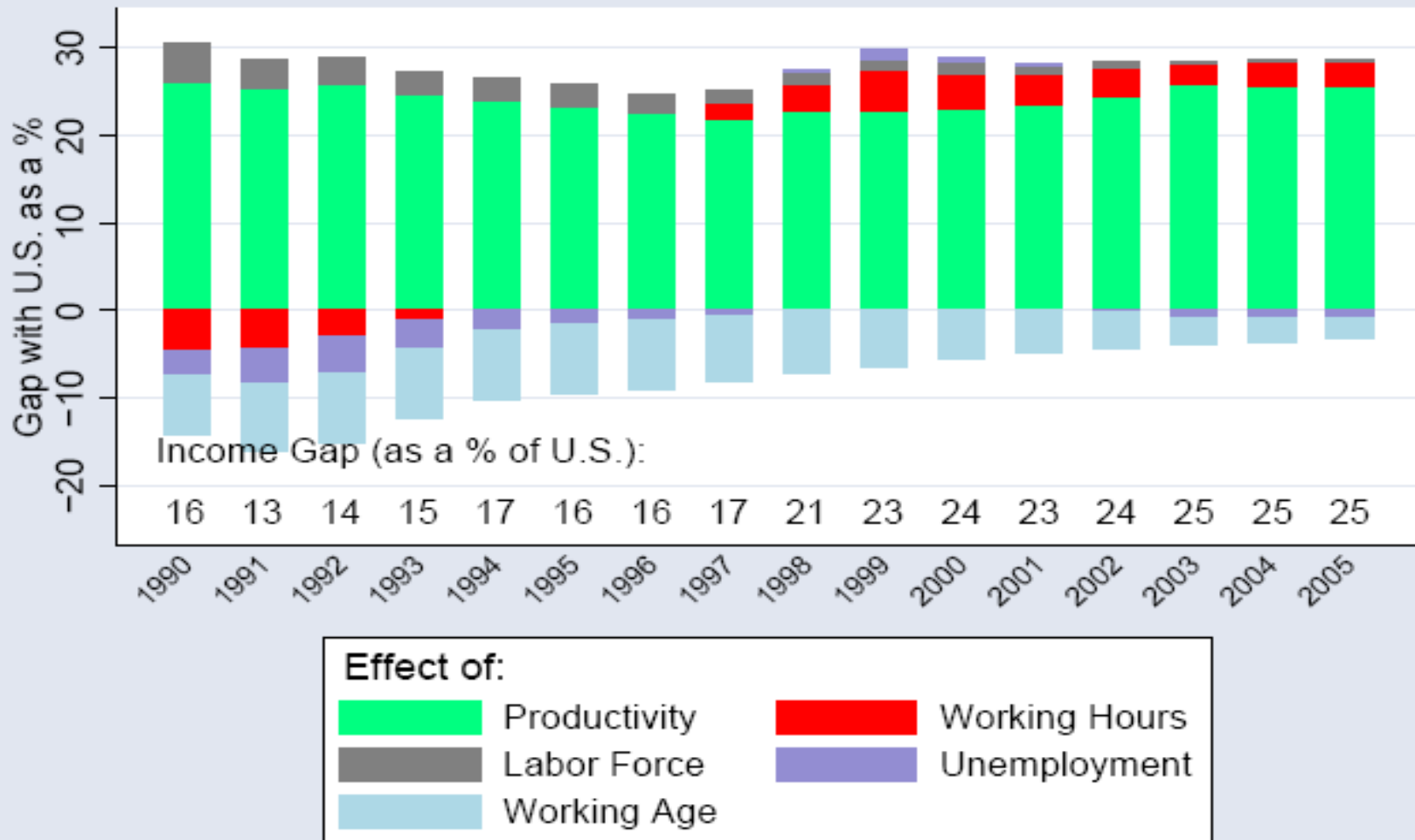


No significant improvement in productivity and per capita income gap relative to United States



Productivity gap is key driver of per capita income gap

The Income Gap for Japan from 1990 to 2005



Output and Productivity Growth



Basic Determinants of Growth Accounting Model

- Output is key measure of standard of living
- Output is driven by
 - ◆ capital (K)
 - ◆ labor (L)
 - ◆ intermediate inputs (E, M, S)
 - ◆ productivity (LP, MFP)
- Capital and labor can be divided into
 - ◆ Quantity (capital stock and hours worked)
 - ◆ Quality (ICT vs. non ICT/age, sex and skill distribution)
- Output increases that cannot be explained by these “inputs” are attributed to multifactor productivity (MFP)

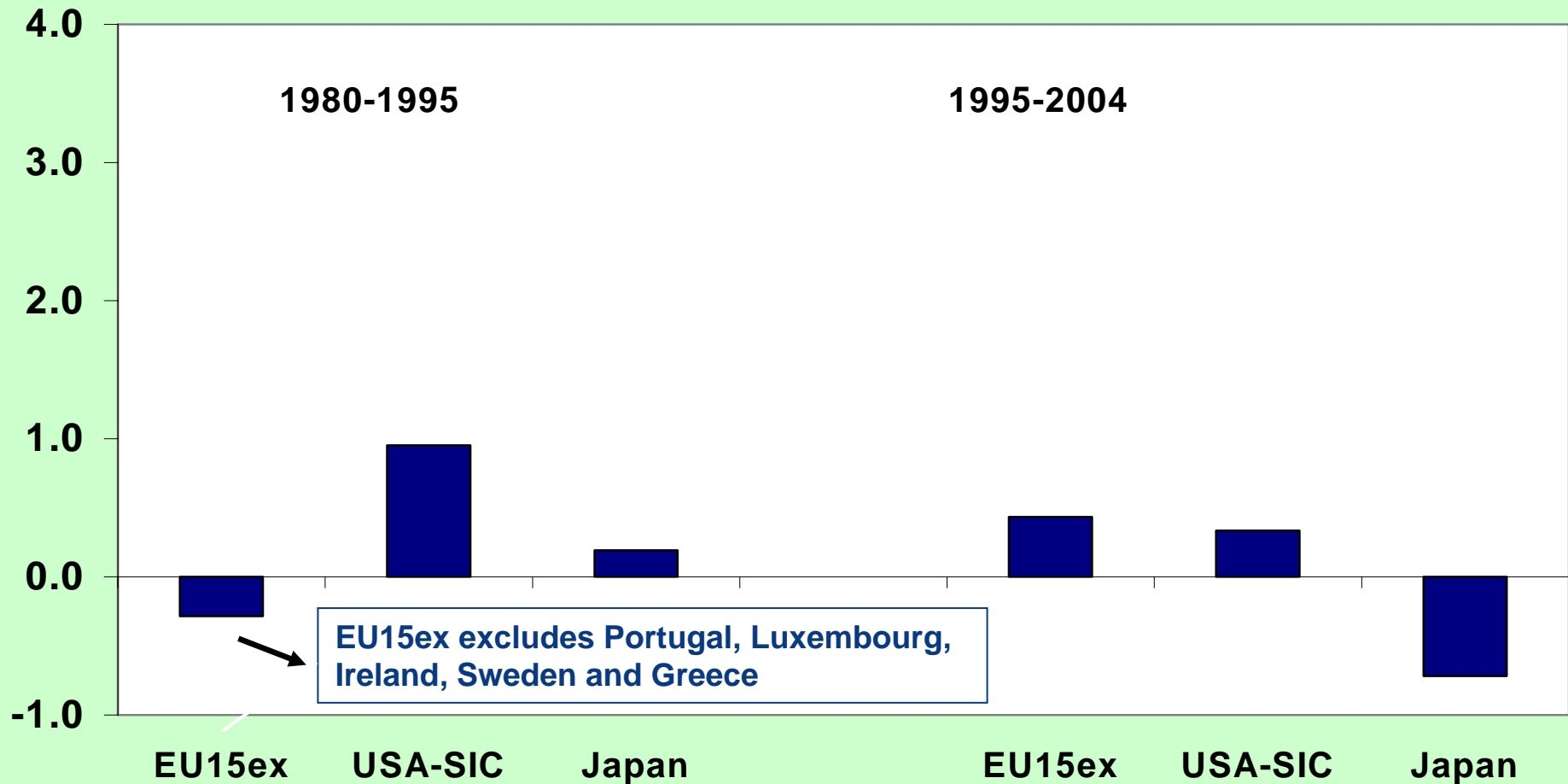


EU KLEMS Growth and Productivity Accounts

- EU KLEMS is analytical research database, based on national accounts and complementary official sources (LFS and production statistics)
- Long time coverage 1970-2004, with greatest detail for post-1995
- Harmonized industry classification, capital and labour input, deflation and industry aggregations (e.g. market economy, market services)
- Decomposition of capital and labour input:
 - ◆ Capital assets in 7 asset types
 - ◆ Labour input in 18 categories (3 x skill; 3 x age; gender)
- Broad coverage of EU countries and comparisons with U.S. and Japan
- Public database: www.euklems.net



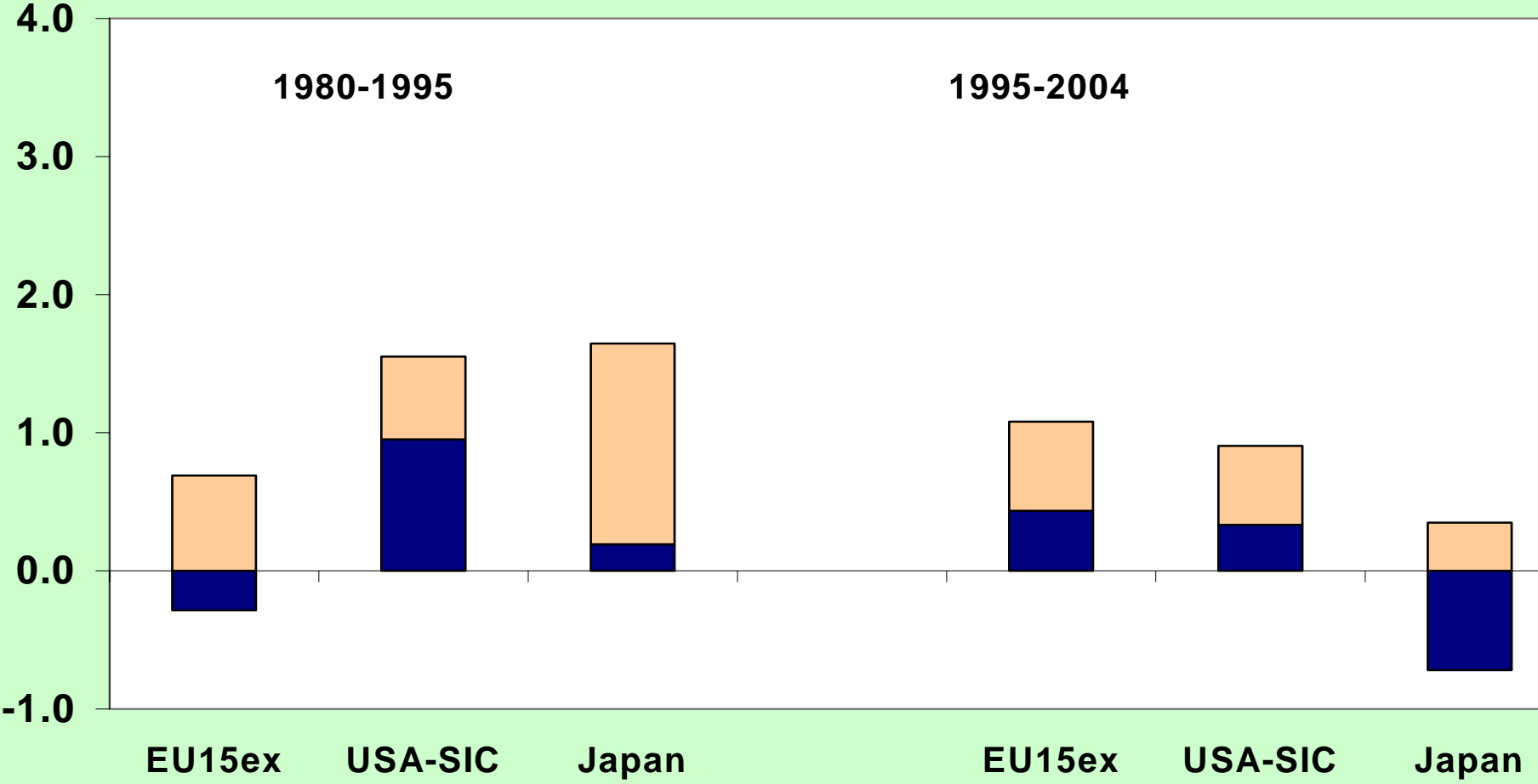
Contribution of labor input to output growth has turned negative since 1995



Source: EU
KLEMS

■ Hours worked

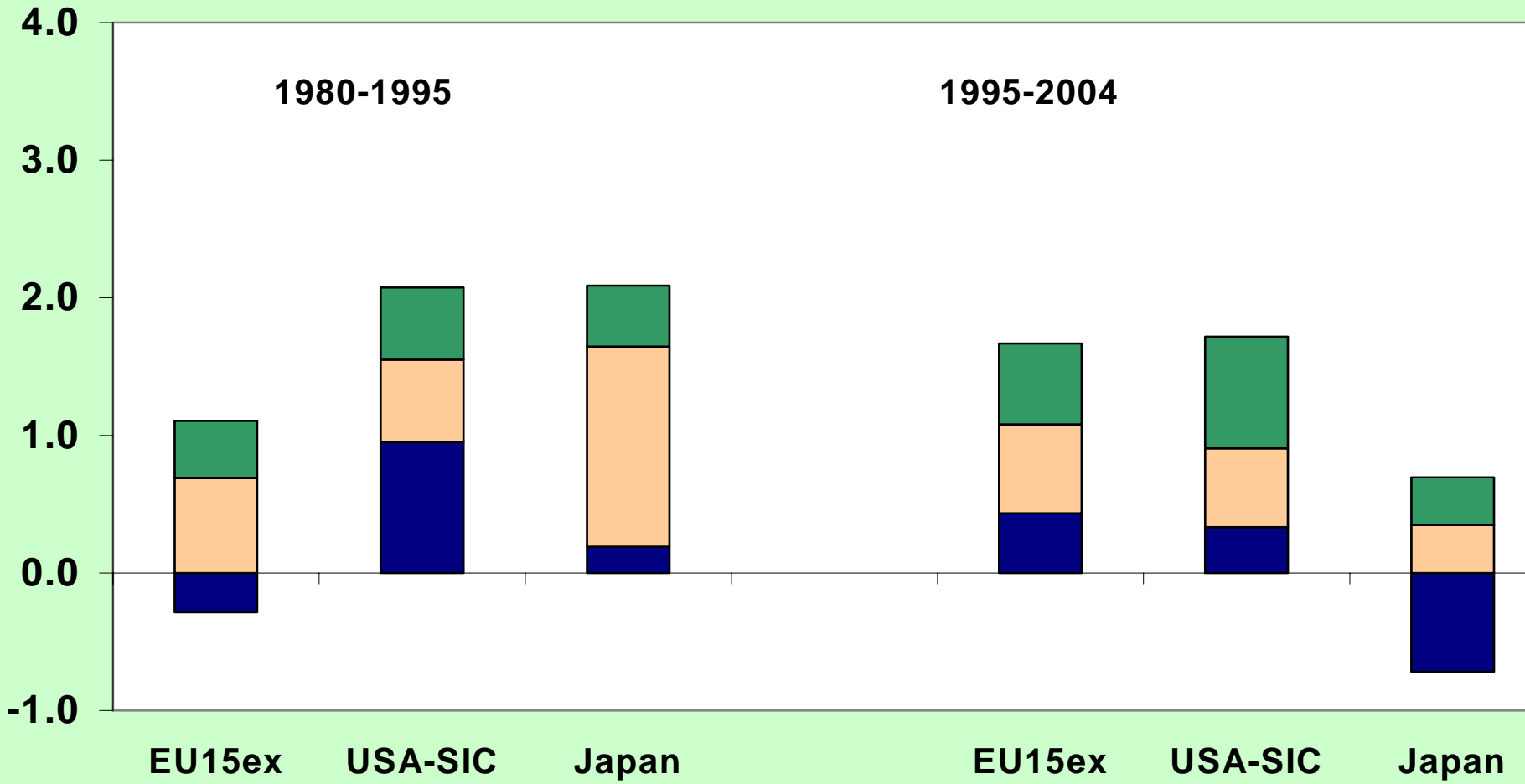
Contribution of non-ICT capital has significantly declined in Japan



Source: EU KLEMS

■ Hours worked ■ Non-ICT Capital

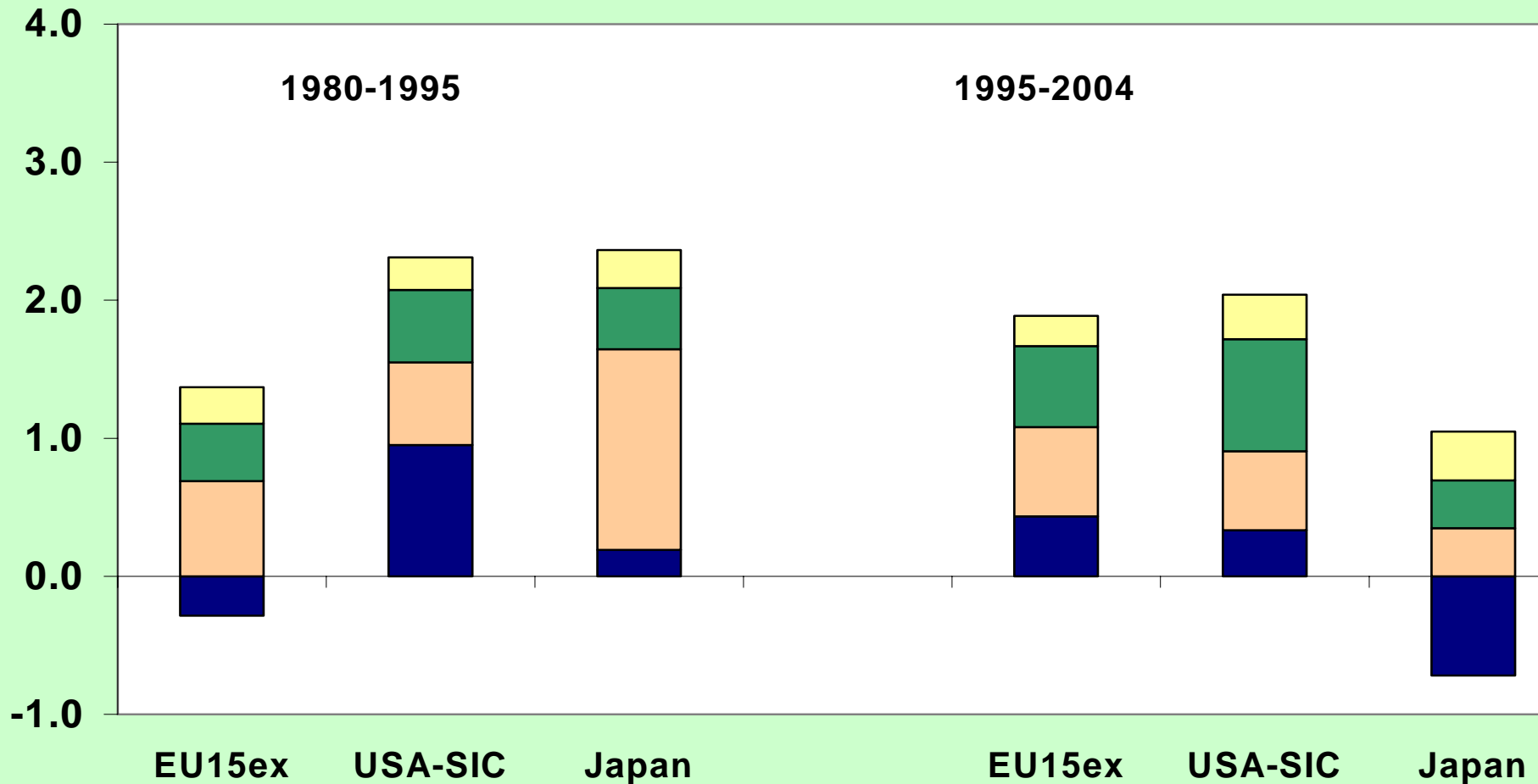
ICT investment in Japan contributed less than in EU and U.S.



Source: EU KLEMS

■ Hours worked ■ Non-ICT Capital ■ ICT Capital

The shift towards high-skilled labor use has somewhat accelerated in Japan



Source: EU
KLEMS

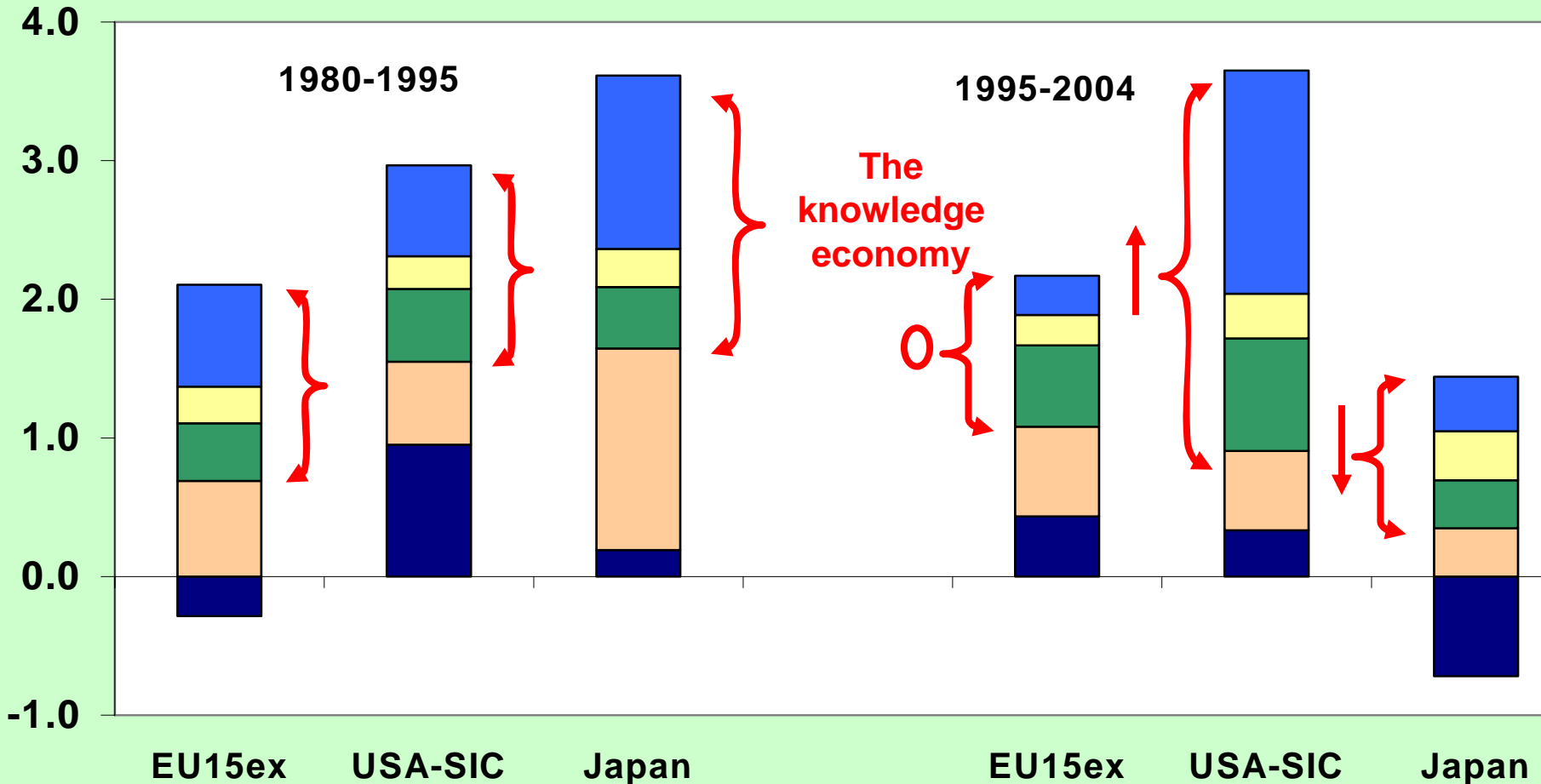
Hours worked

ICT Capital

Non-ICT Capital

Labour Composition

The overall contribution of the knowledge economy in Japan has declined



Source: EU KLEMS

Hours worked
ICT Capital
MFP

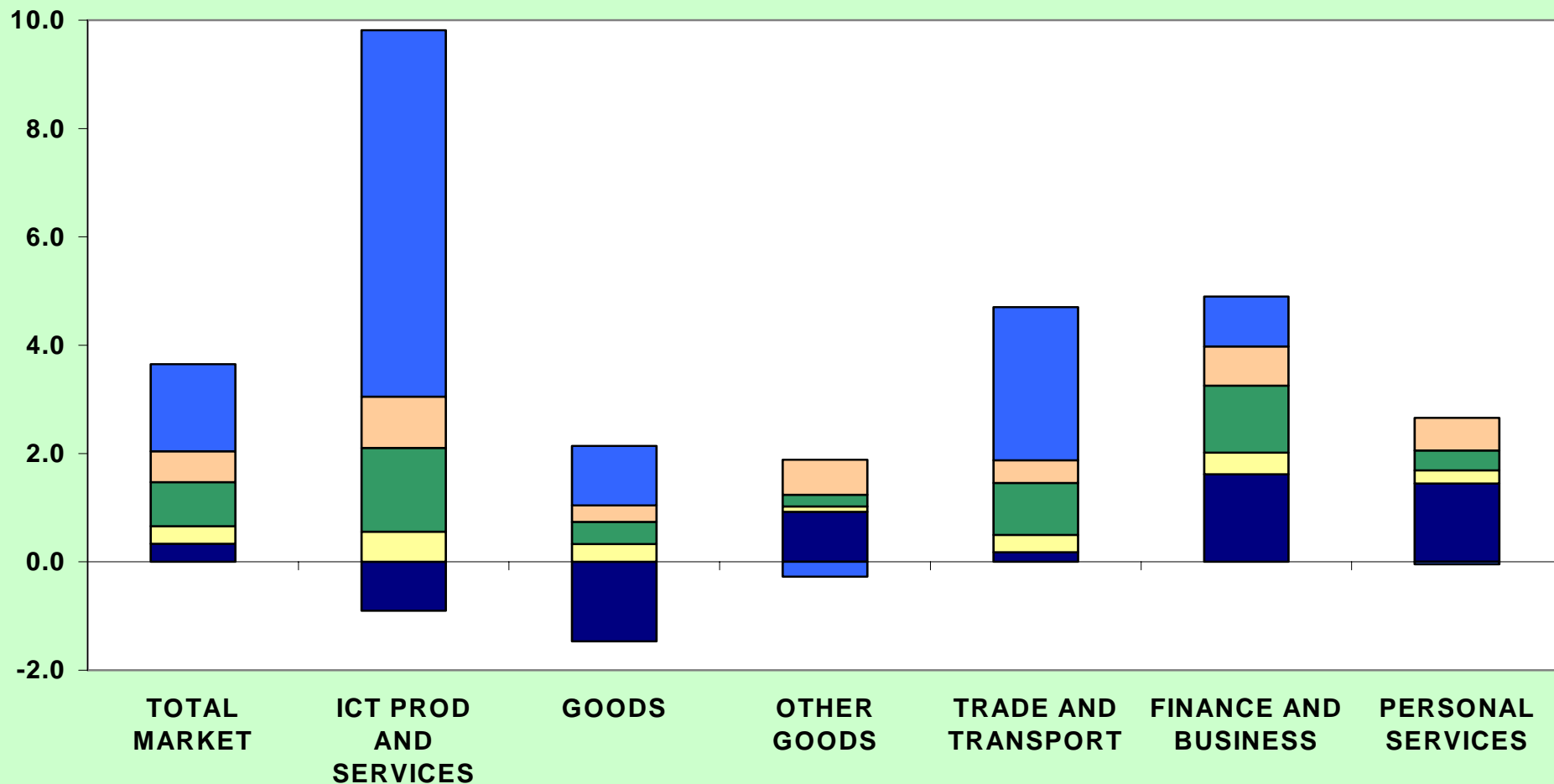
Non-ICT Capital
Labour Composition

A Sector Perspective on the Productivity Slowdown



Multi factor productivity growth in U.S. was leading growth driver in most sectors, including services !

Contributions to Gross Value Added Growth in U.S., 1995-2004 (in %)



Hours worked

Labour composition

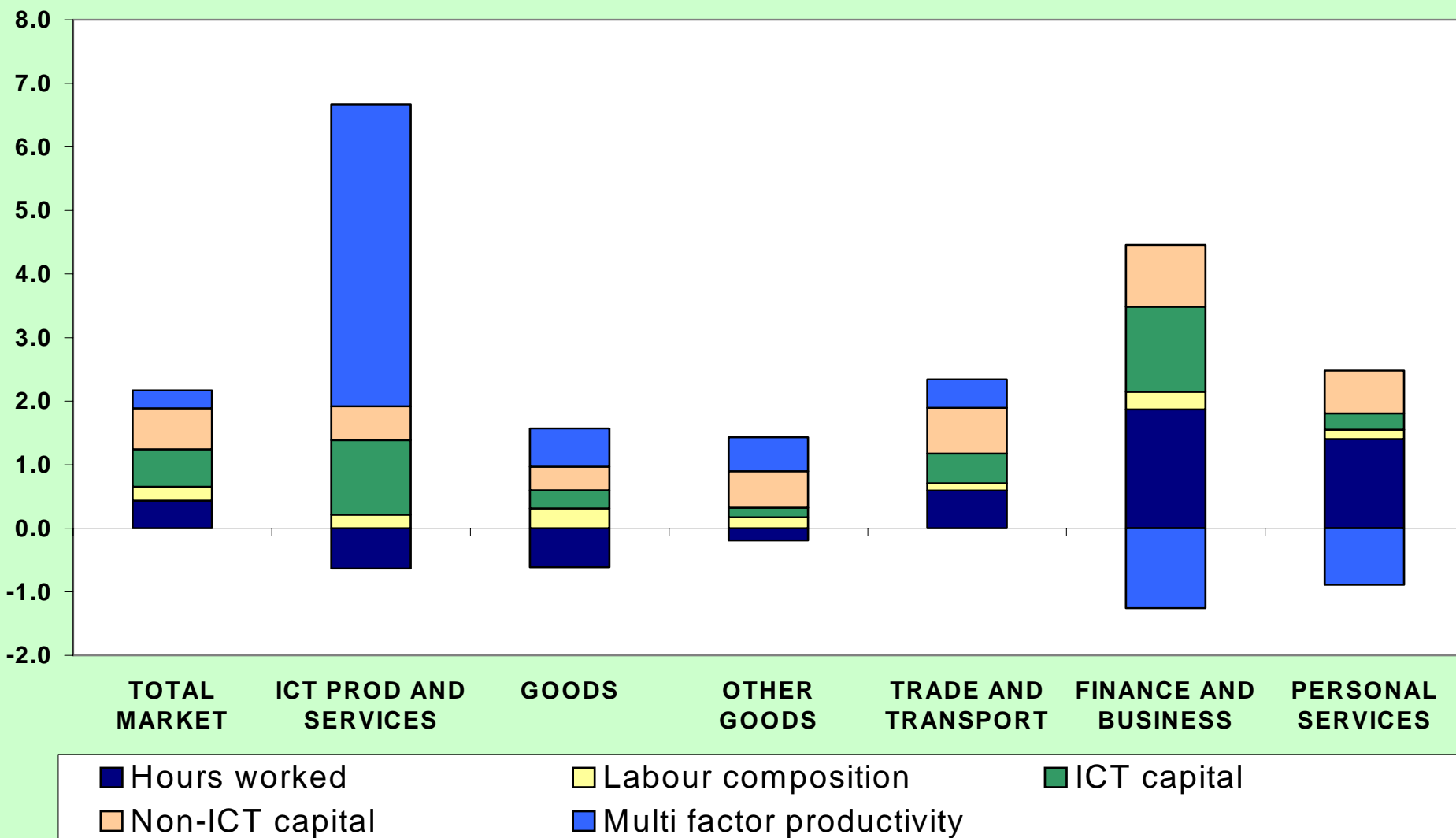
ICT capital

Non-ICT capital

Multi factor productivity

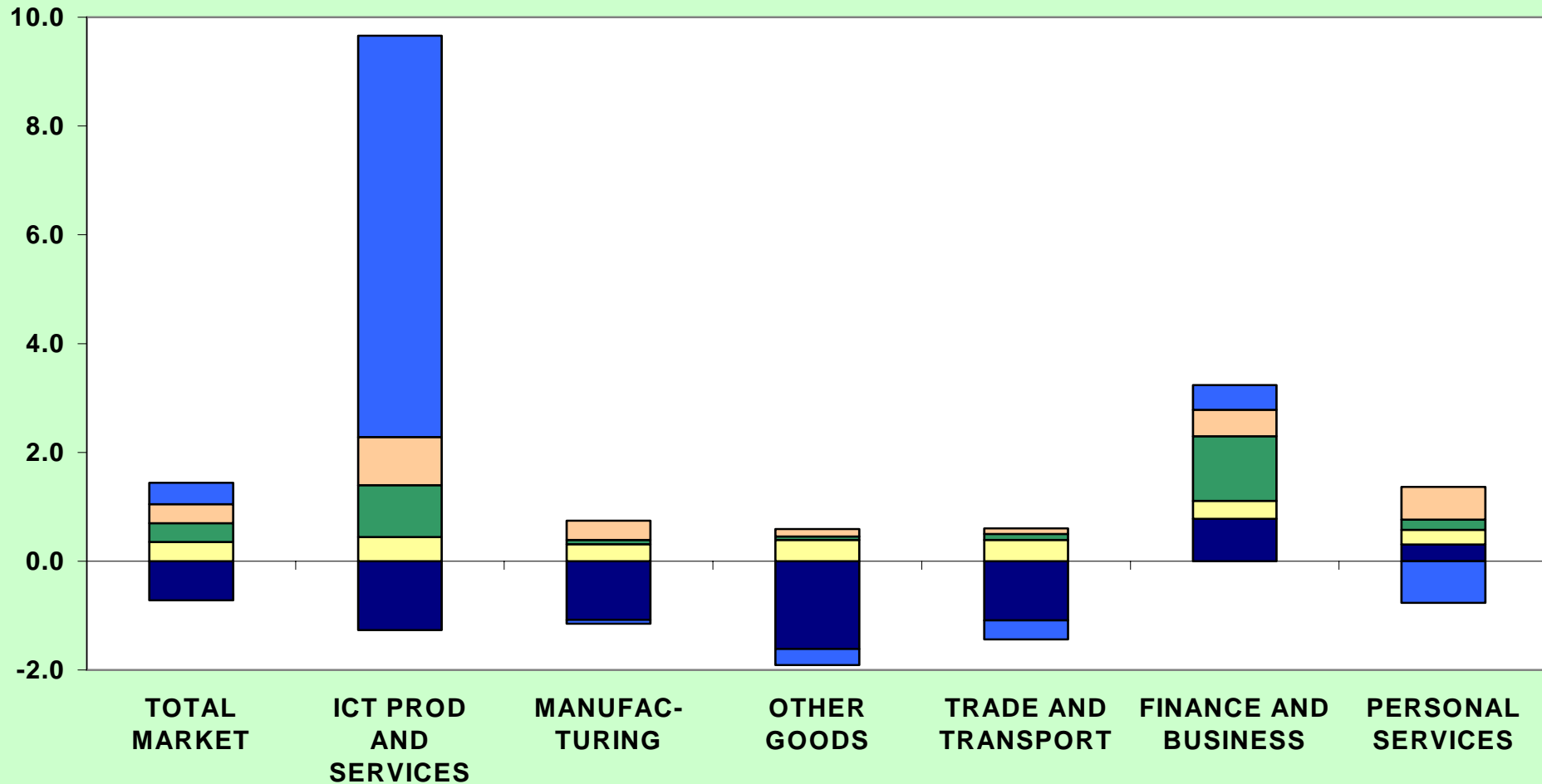
In Europe, the growth rates are slower and MFP in finance and business services is strongly negative

Contributions to Gross Value Added Growth in EU, 1995-2004 (in %)



Slowdown in Japan is across the board, except for ICT and slight MFP growth in finance and business services

Contributions to Gross Value Added Growth in Japan, 1995-2004 (in %)



Hours worked

Labour composition

ICT capital

Non-ICT capital

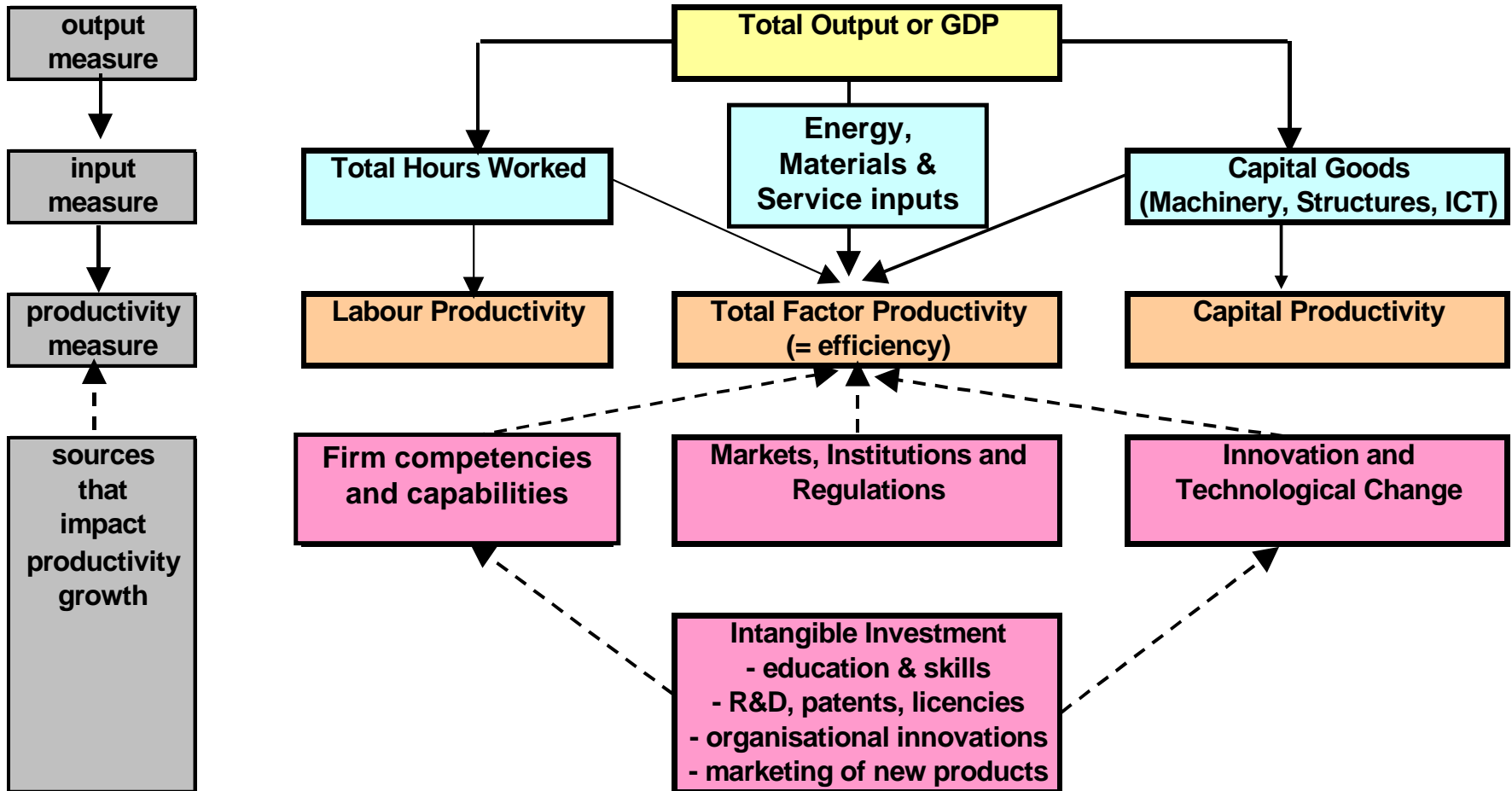
Multi factor productivity

How do Intangibles Affect Productivity in Services?

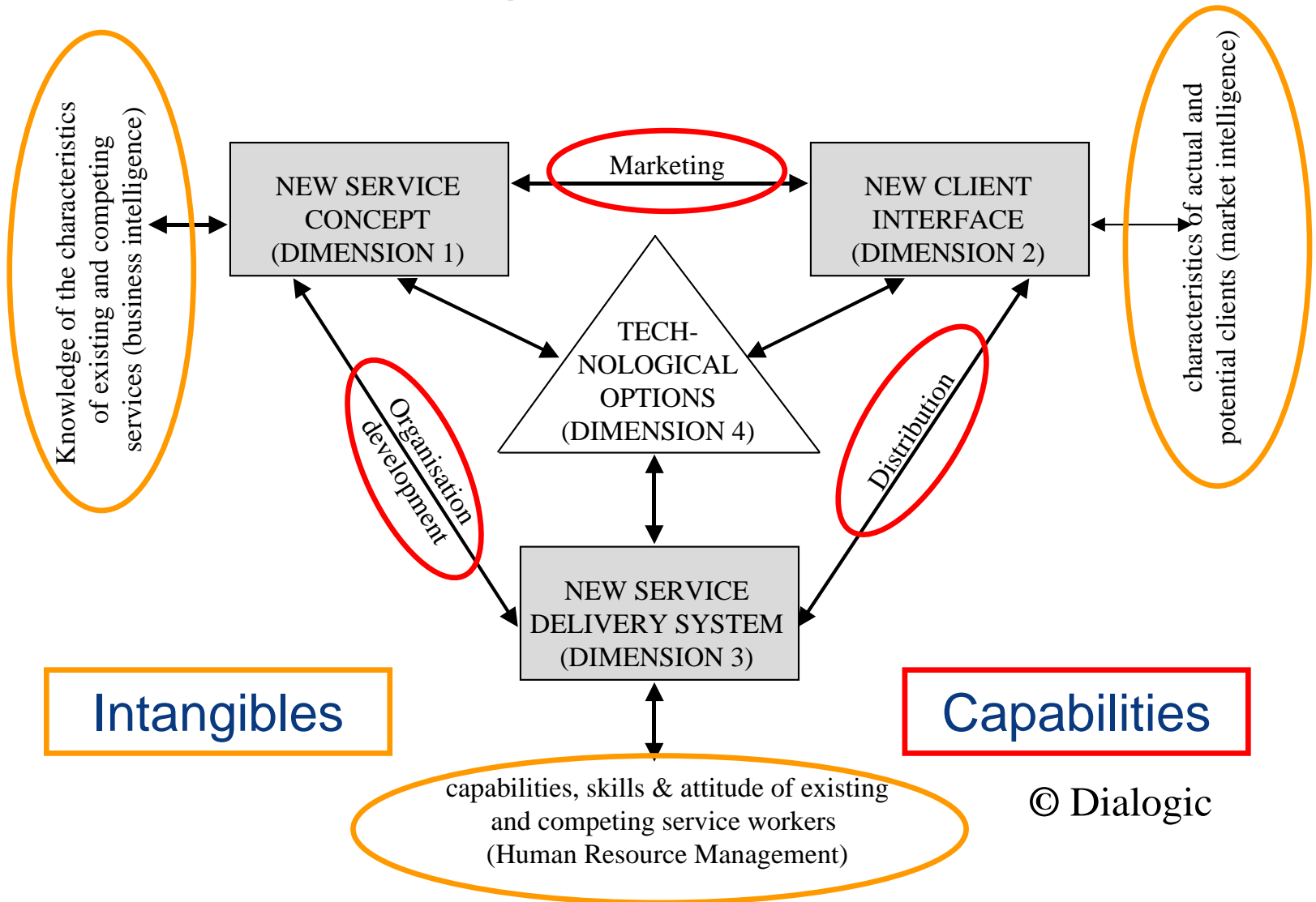


The multi factor productivity residual is key to understand impact of innovation and intangibles on productivity

Measures of Productivity, Input Variables and Sources of Growth



ICT (and other technologies) go together with non-technological innovation



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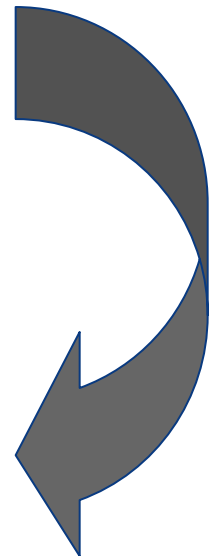
Unmeasured intangible capital is hidden in MFP

a) Physical Capital

- a1) ICT capital (IT hardware, communications equipment)
 - a2) Other capital (plant, machinery, buildings)
-

As long as intangible investments remain unmeasured, its productivity effects are hidden in MFP

Multi Factor Productivity (residual)



Factor
Inputs
(tangible
capital)

a) *Physical Capital*

- a1) ICT capital (IT hardware, communications equipment)
 - a2) Other capital (plant, machinery, buildings)
-

b) *Human Capital*

- b1) Formal Education
- b2) Company training

c) *Knowledge Capital*

- c1) Research and Development
- c2) Patents
- c3) Licenses, brands, copyrights
- c3) Other technological innovations, not related to b1) to b3)
- [c4) Software]*
- c5) Mineral Exploration
- c6) Experience

d) *Process Capital*

- d1) Engineering design
- d2) Organisation design
- d3) Construction and use of data bases
- d4) Remuneration of innovative ideas

e) *Customer Capital*

- e1) Brands
 - e2) Marketing of new products
-

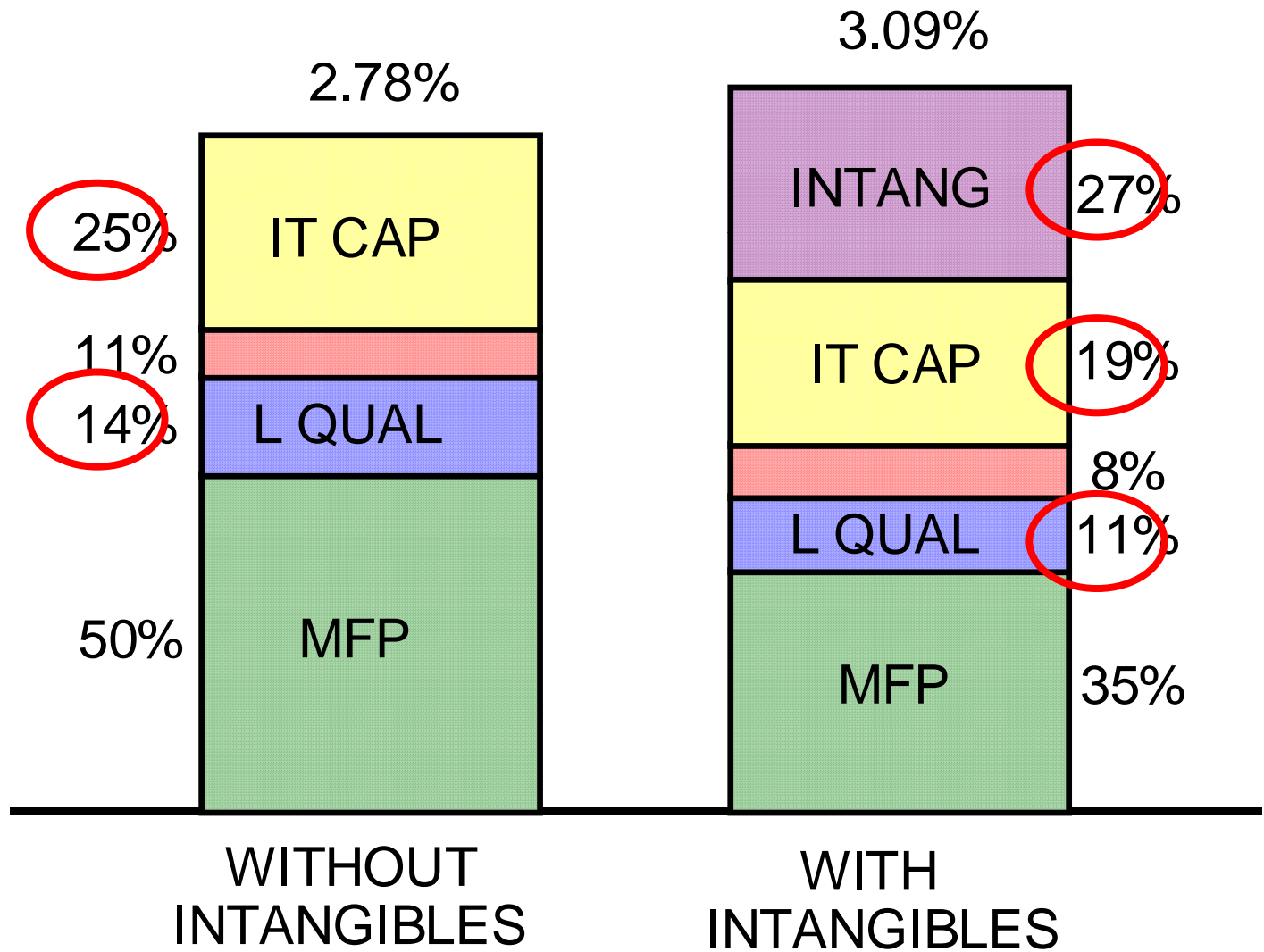
Firm
Specific
Resources
(intangible
capital)

Why treat intangibles as investment?

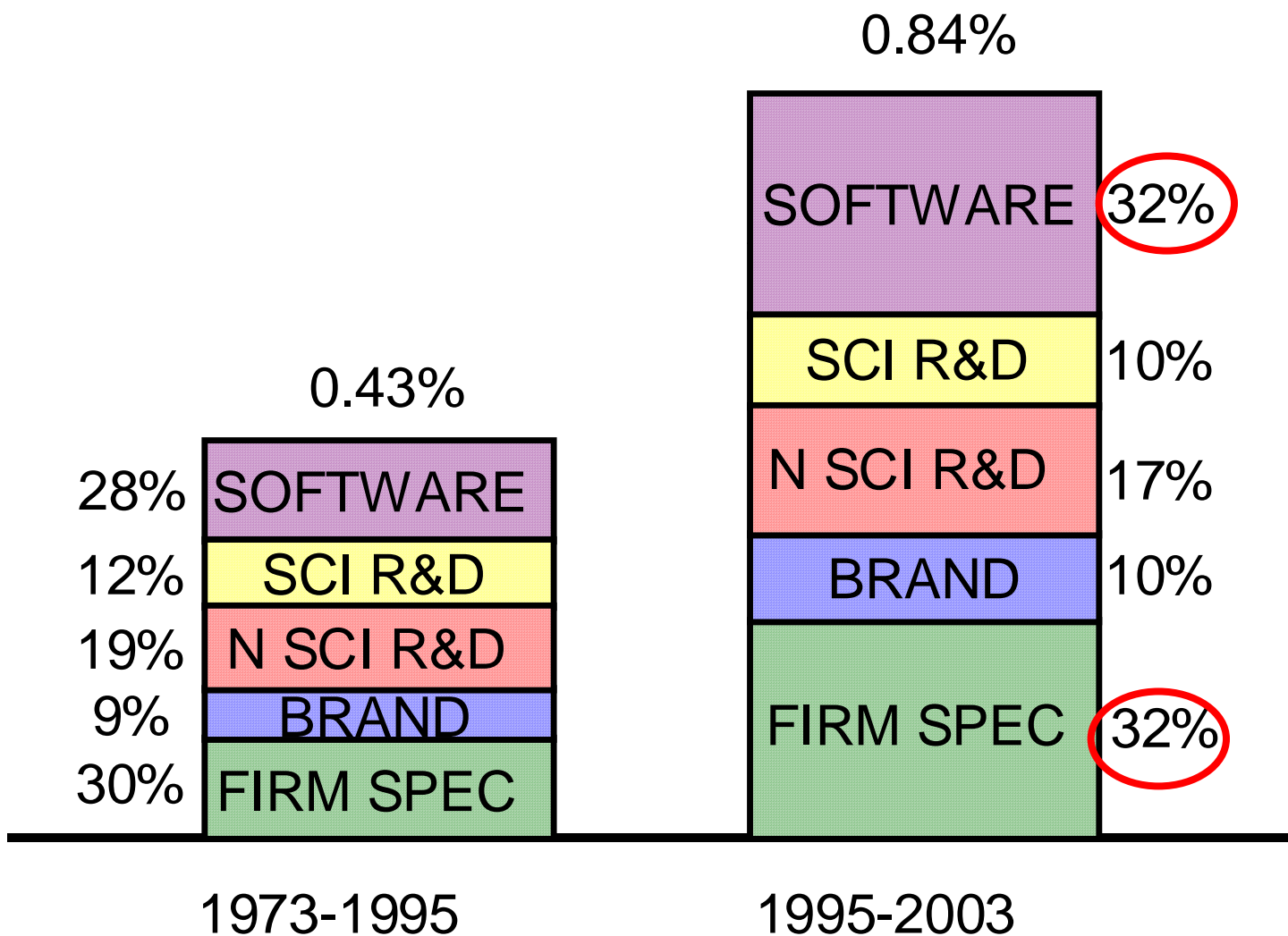
- Inherent measurement difficulties of intangible capital going beyond those of tangible capital as follows:
 - ◆ The knowledge-input problem
 - ◆ The knowledge-investment problem
 - ◆ The quality improvement problem
 - ◆ The obsolescence problem(Howell, 1996)
- But no clearcut distinction between tangibles and intangibles that justify a distinction between capitalizing and expensing
- “Any outlay than is intended to increase future rather than current consumption is treated as a capital investment”



In U.S. the contribution of the knowledge economy increases due to measurement of intangibles



The contribution of software and firm specific intangible sources is especially important



Intangible capital that may affect ICT-MFP relationship

- No evidence of a direct relationship between ICT and MFP at industry level (Stiroh, 2004; Inklaar, Timmer and van Ark (2007))
- But ICT is general purpose technology (GPT) so that productivity effects may come with a time lag
 - ◆ Need to raise intangible investments (human capital, knowledge, etc.)
 - ◆ Organizational innovations important, in particular in services
- In overregulated environment, firm resources are locked in the firm and deliver lower returns than in competitive markets



More Research on Intangibles is Needed

- Extend studies to more countries
 - ◆ UK: Haskell and Marrano
 - ◆ Japan: Miyagawa, Fukao et al.
 - ◆ Ongoing work for Finland, France and Netherlands
- Price and output statistics that explicitly recognize product innovations (“quality” change).
- Uncover the subtleties of interaction between tangibles/intangibles and innovation/productivity growth
- A stronger link in the data between human capital and worker competencies
- More detailed study at industry level (mnf/services)
- Intangibles need more accurately represented in the financial data of the innovators themselves



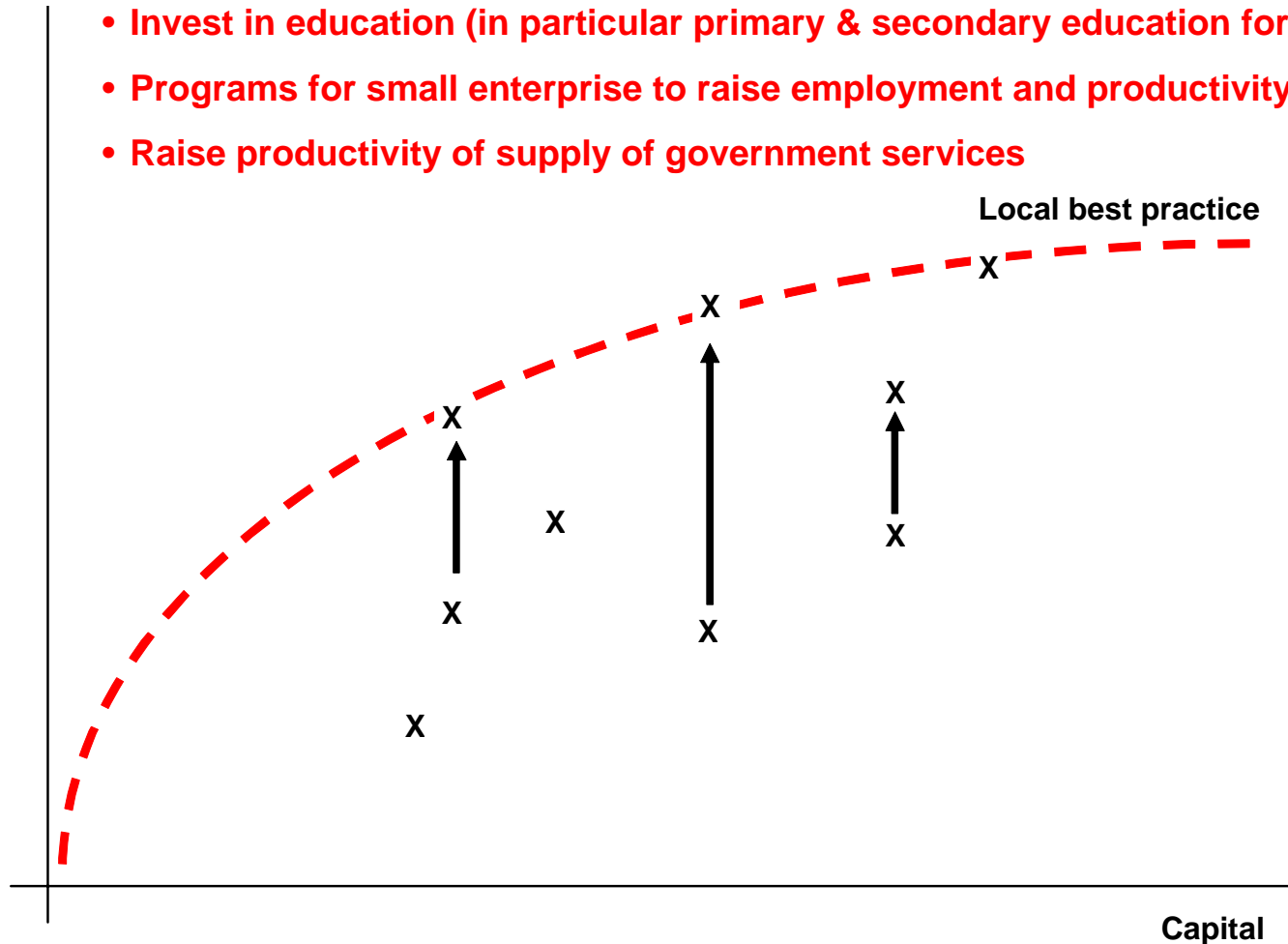
How to Strengthen Productivity in Services?

Improve Operational Efficiency by Bringing Firms Closer to Local Best Practice

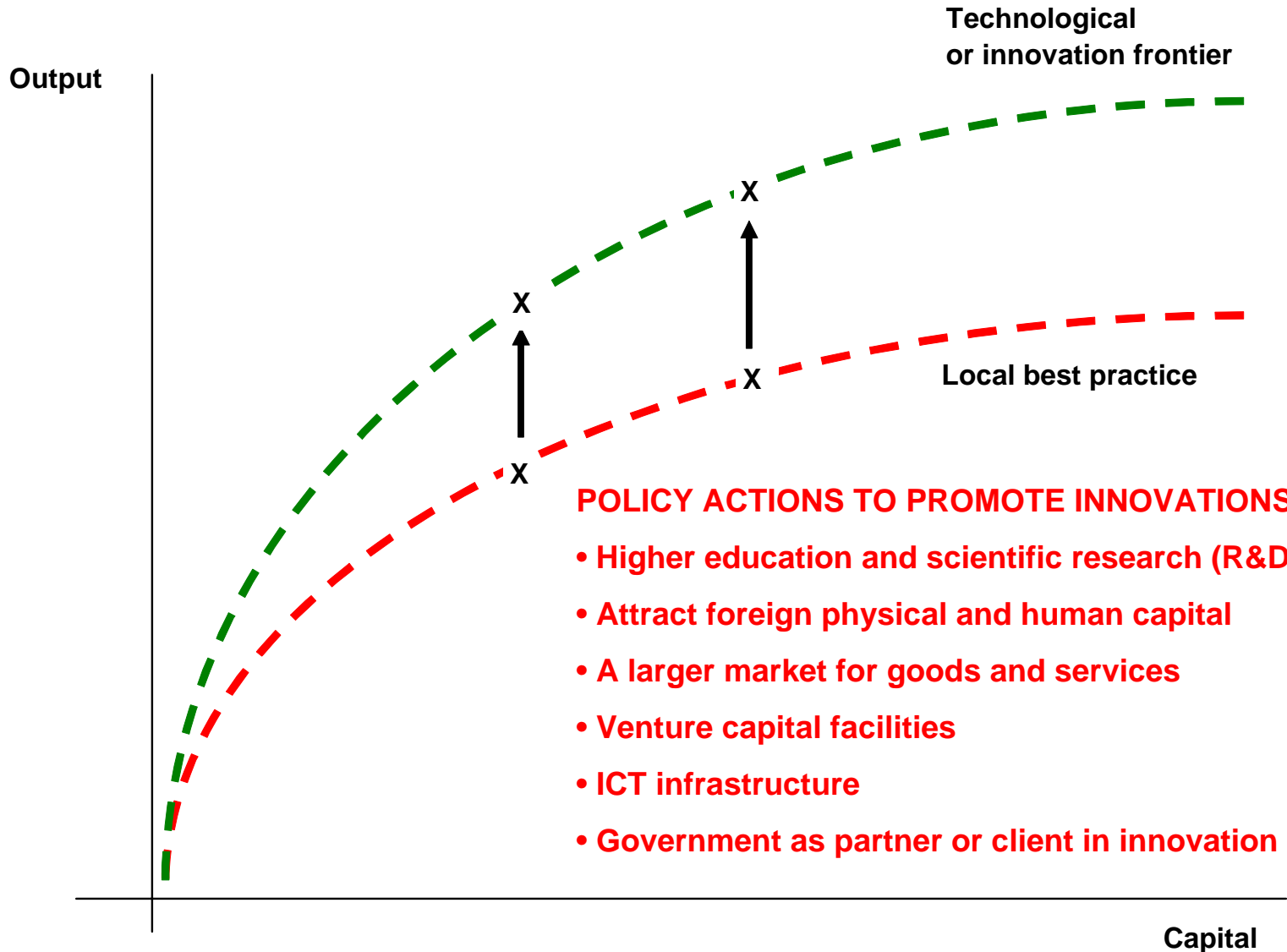
POLICY ACTIONS TO IMPROVE BEST PRACTICES

- Remove local restrictions in labor and product markets
- Invest in hard infrastructure (transport, etc.)
- Invest in education (in particular primary & secondary education for low skilled)
- Programs for small enterprise to raise employment and productivity jointly
- Raise productivity of supply of government services

Output



Move out Innovation Frontier by Becoming Part of International Best Practices



Management is key to exploit productivity benefits from intangibles

TANGIBLE INPUTS

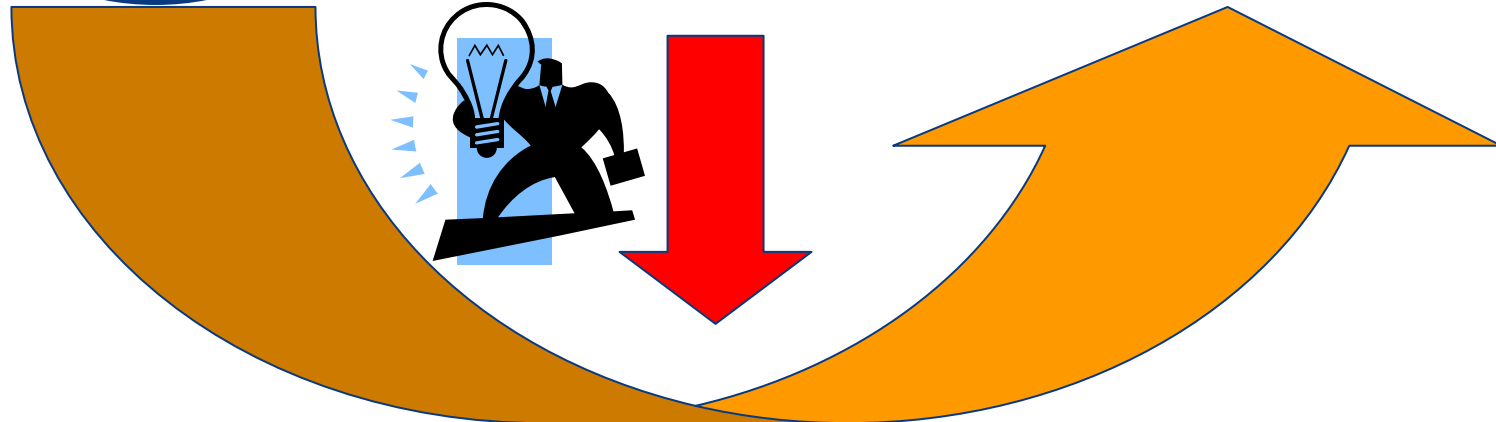
- * Machinery and equipment
- * ICT and software
- * Materials and natural resources

INTANGIBLE INPUTS

- * Human capital
- * Knowledge capital
- * Organisational capital
- * Marketing capital

OUTPUT

- * Profit
- * Sales growth
- * Value creation, incl. value from intangibles



Regulatory environment creates incentives for management to exploit intangibles for productivity

- Government focus should be on supporting competition:
 - ◆ help increase intensity of entry and exit
 - ◆ make prices-quality relationships transparent
 - ◆ put pressure on margins in existing markets ...
 - ◆ allow firms to exploit new markets
 - ◆ allows firms to exploit but not abuse scale advantages
- Reform management is complex:
 - ◆ many measures are industry-specific
 - ◆ reforms need to be comprehensive & complementary
 - ◆ time lags before productivity effects emerge
 - ◆ political capital needs to be substantial to deal with vested interests and convince the voter

