ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The macro-economic modelling of
the Digital Economy
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Measuring ICT for Policy

Some thoughts from the OECD perspective

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Outline

- ICT impacts
- ICT policy approaches
- Review of the main issues
- Some final thoughts

Did you say “impact”?

ICT as an output:

- From ICT production sectors
- To the whole economy

ICT as a production input:

- Investment
- Intangibles

ICT as an enabler of “innovation” in:

- Business
- Government
- Society

Did you say “policy”?

Policy approach

- Does it make a difference?
- How big?
- What factors matter? Policy targets

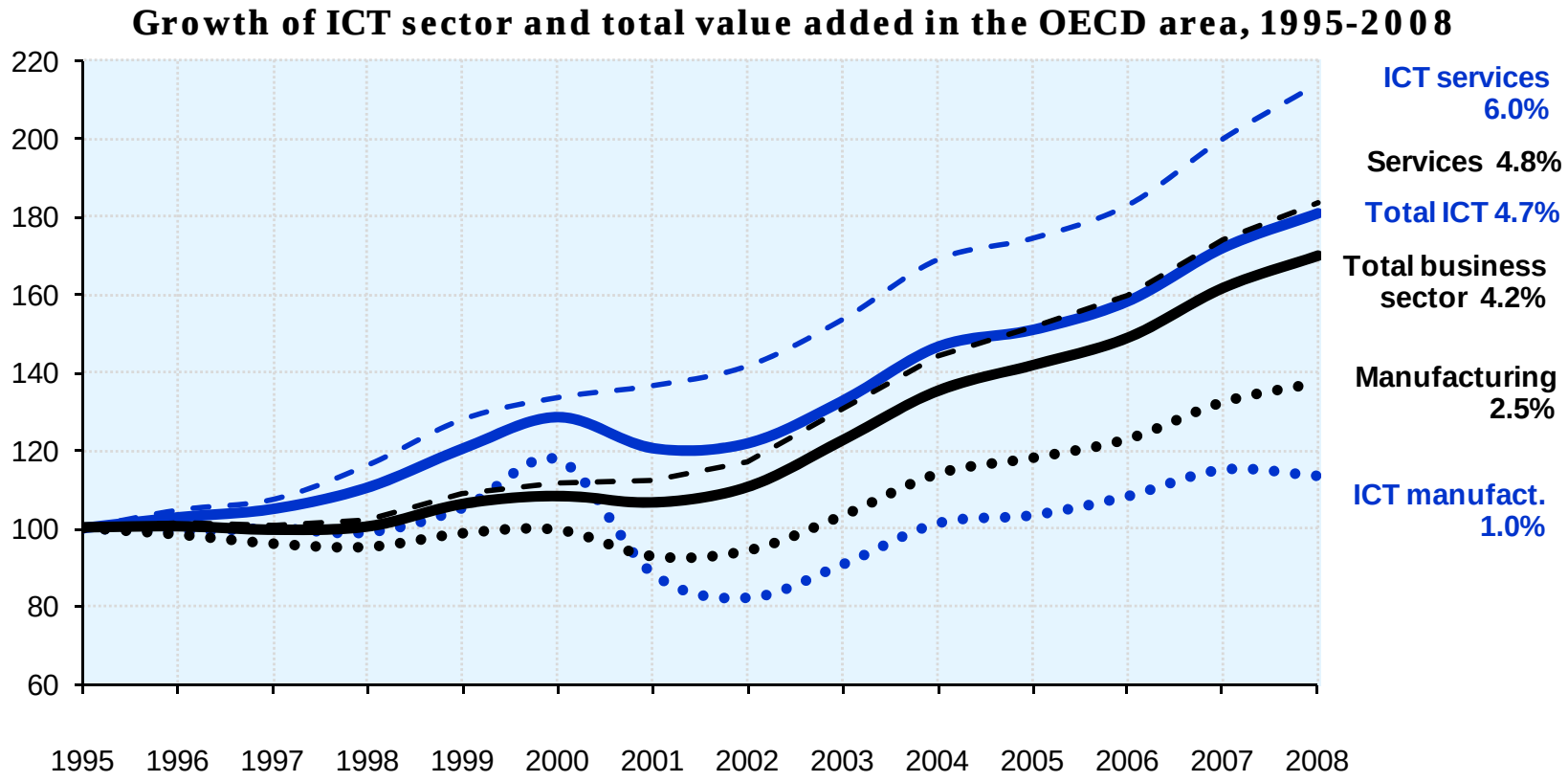
Accounting approach (= after crisis)

- What is the return from 1 € public expenditure on ICTs?

ICT as an Output

ICTs area major driver of GVA growth in OECD

- ICT manufacturing has been growing faster than non-ICT until 2001
- ICT services continue to grow faster
- Similar trend for employment growth



Multiplier effects

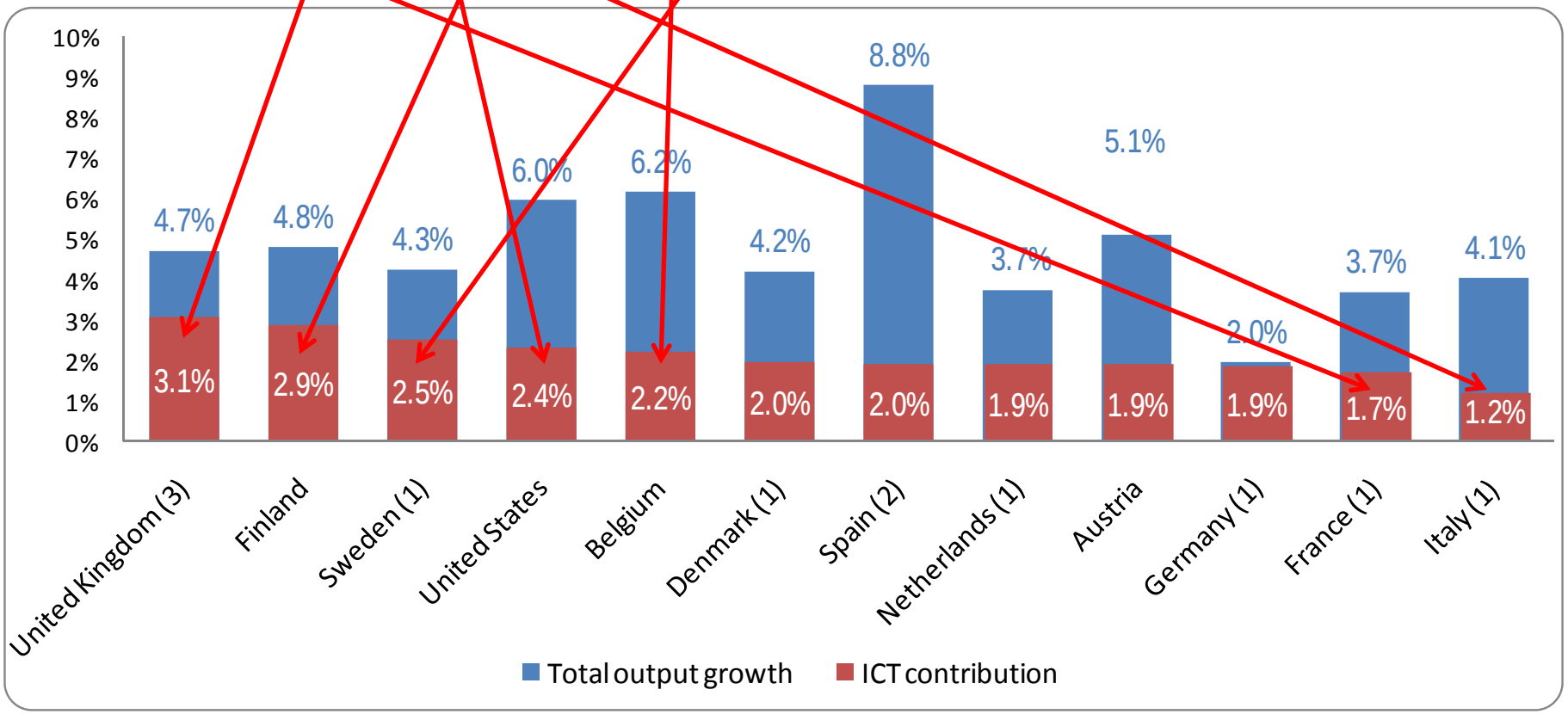
- ***Final demand***: ICT offers new goods and services for consumers;
- ***Demand multiplier***: ICT supply increases demand for the output of other industries;
- ***Supply multiplier***: ICT supply creates new opportunities for production in other industries.

Multiplier Effects of ICT on Growth 2001-06

Largest in UK, Finland and Sweden

Large also in US and Belgium

Small in France and Italy



ICT as an Output

- Both the policy approach and the accounting approaches are feasible
- Policy channels are clear: final demand, ICT producing sectors
- “The future like the past” is a strong assumption

ICT as an Input: Growth Accounting

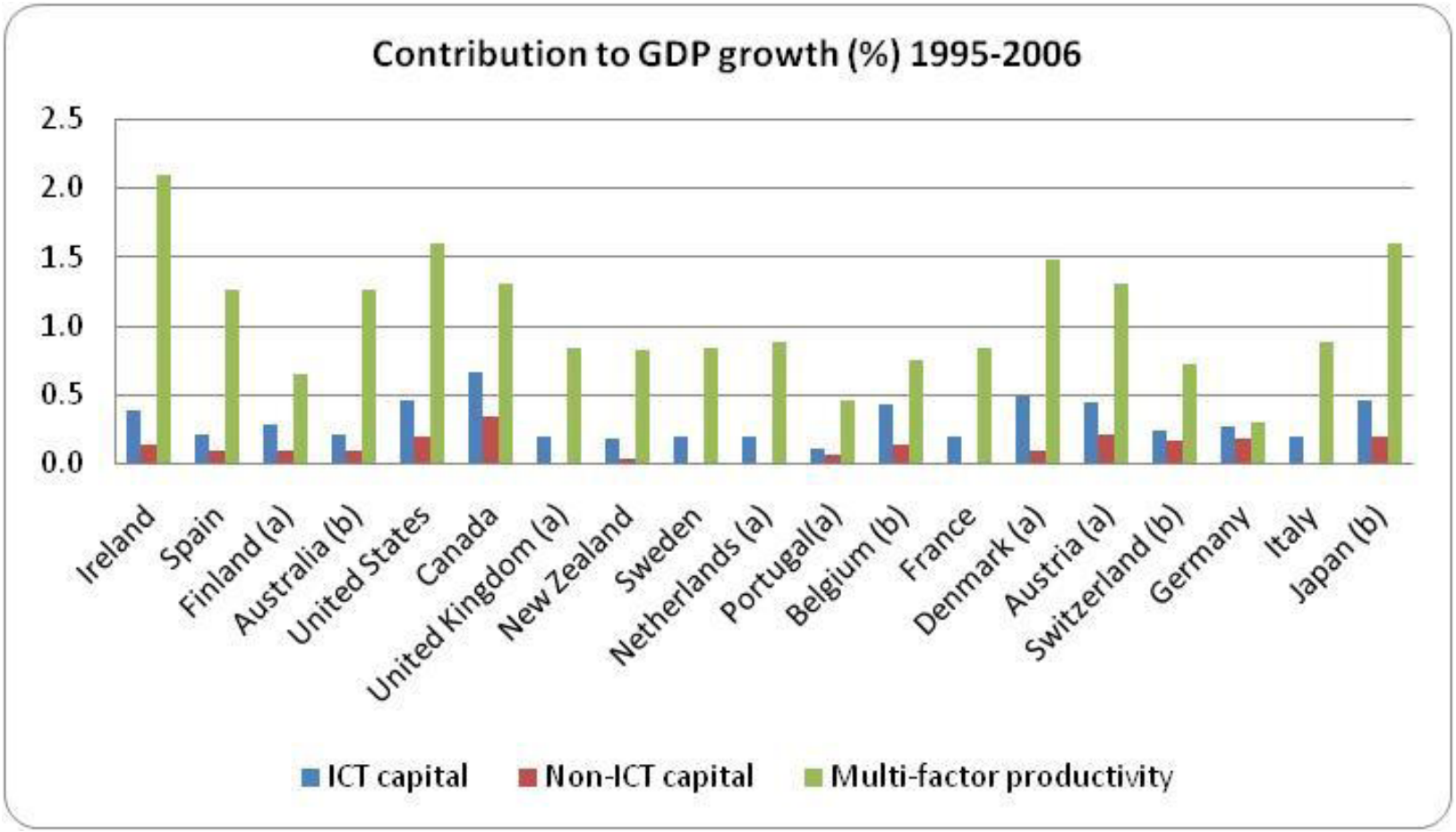
What is the contribution of ICT investment to growth?

GDP = Labour + ICT capital + Non-ICT capital +…

- Solow's paradox / large MFP
- Progress in measurement: Hedonic prices, Capital services, Software, Output in services, STAN Database, Productivity database
- OECD Manual on Measuring Capital

ICT and Productivity

- ICT investment matters more than non-ICT...
- ...but MFP growth remains the main driver
- ICT investment has no impact on MFP growth since 1995(Van Ark, 2007)

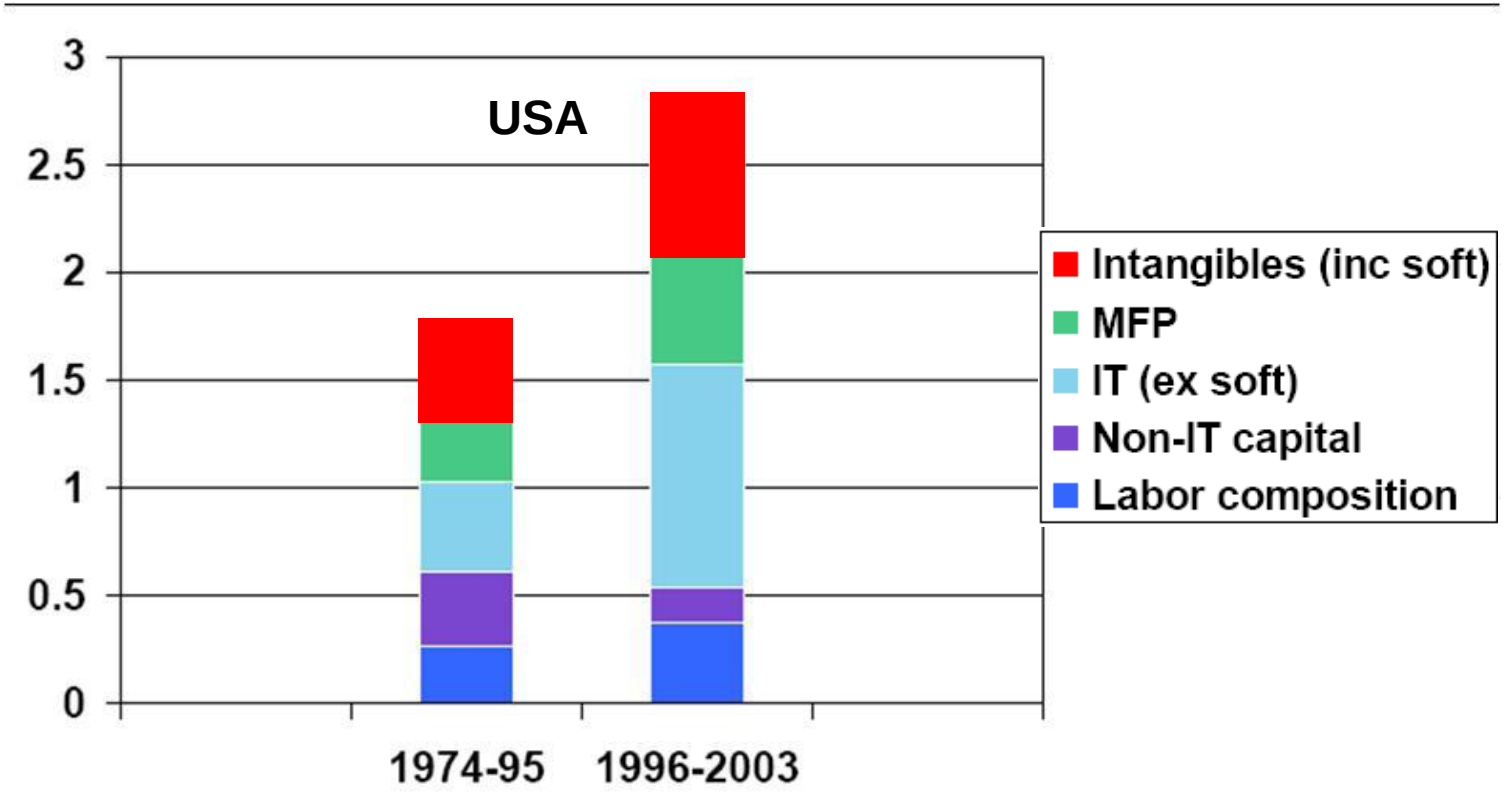


Intangibles

The Knowledge Capital of the Firm

Type of intangible investment	Includes the following intangibles	Treatment in SNA
Computerised information	(1) Computer software (2) Computer databases	Both now treated as investment
Innovative property	(1) Scientific R&D (2) Mineral exploration (3) Copyright and license costs (4) New product development costs in the financial industry (5) New architectural and engineering designs (6) R&D in social science and humanities	Only (2) and (3) treated as investment
Economic competencies	(1) Brand Equity (2) Firm-specific human capital (3) Organisational structure	None of these treated as investment

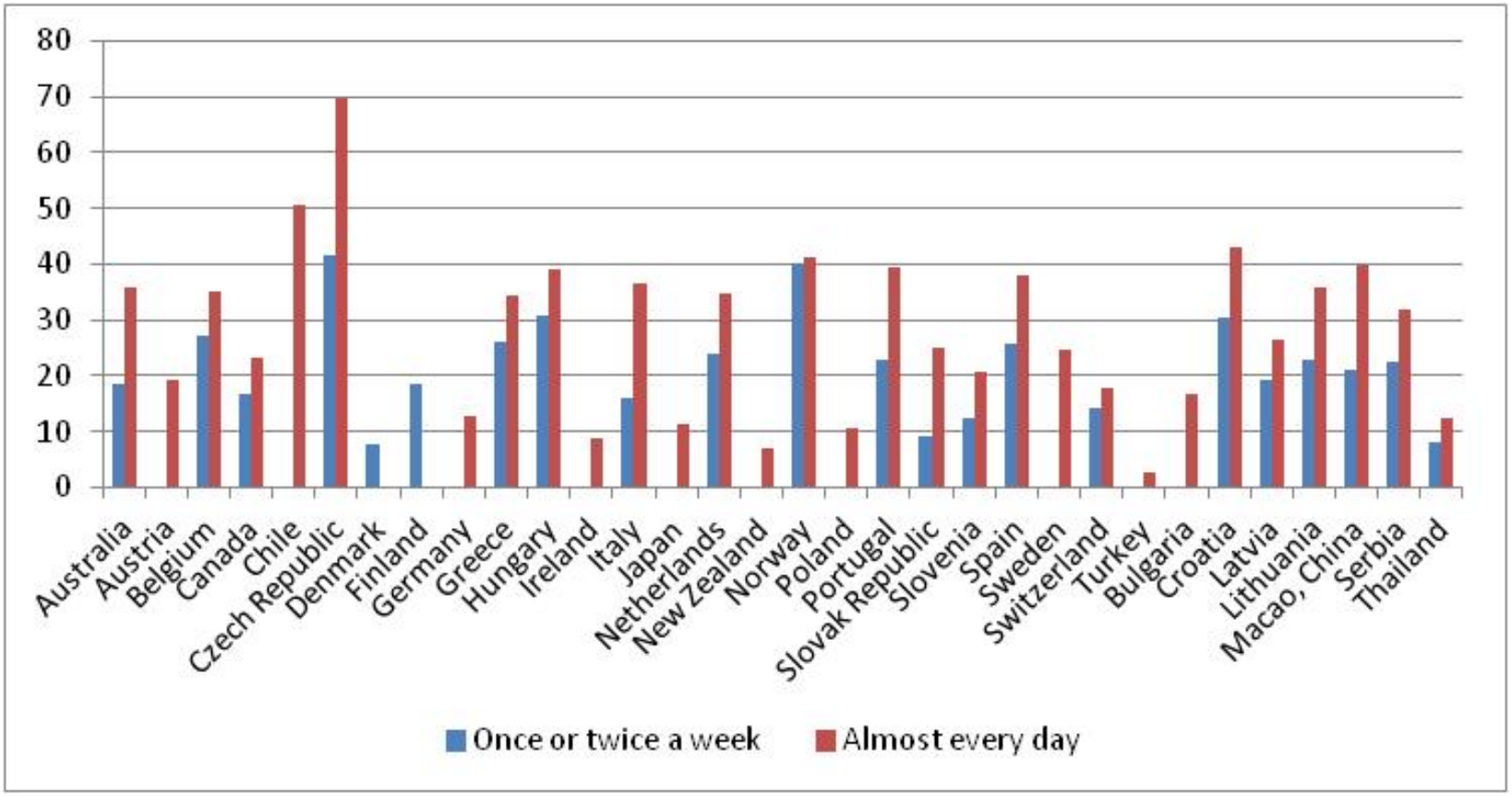
Intangibles explain much of MFP



- Similar results in the UK and Japan

ICT as an Input: Education

Computer use increase students' performance



ICT as an input

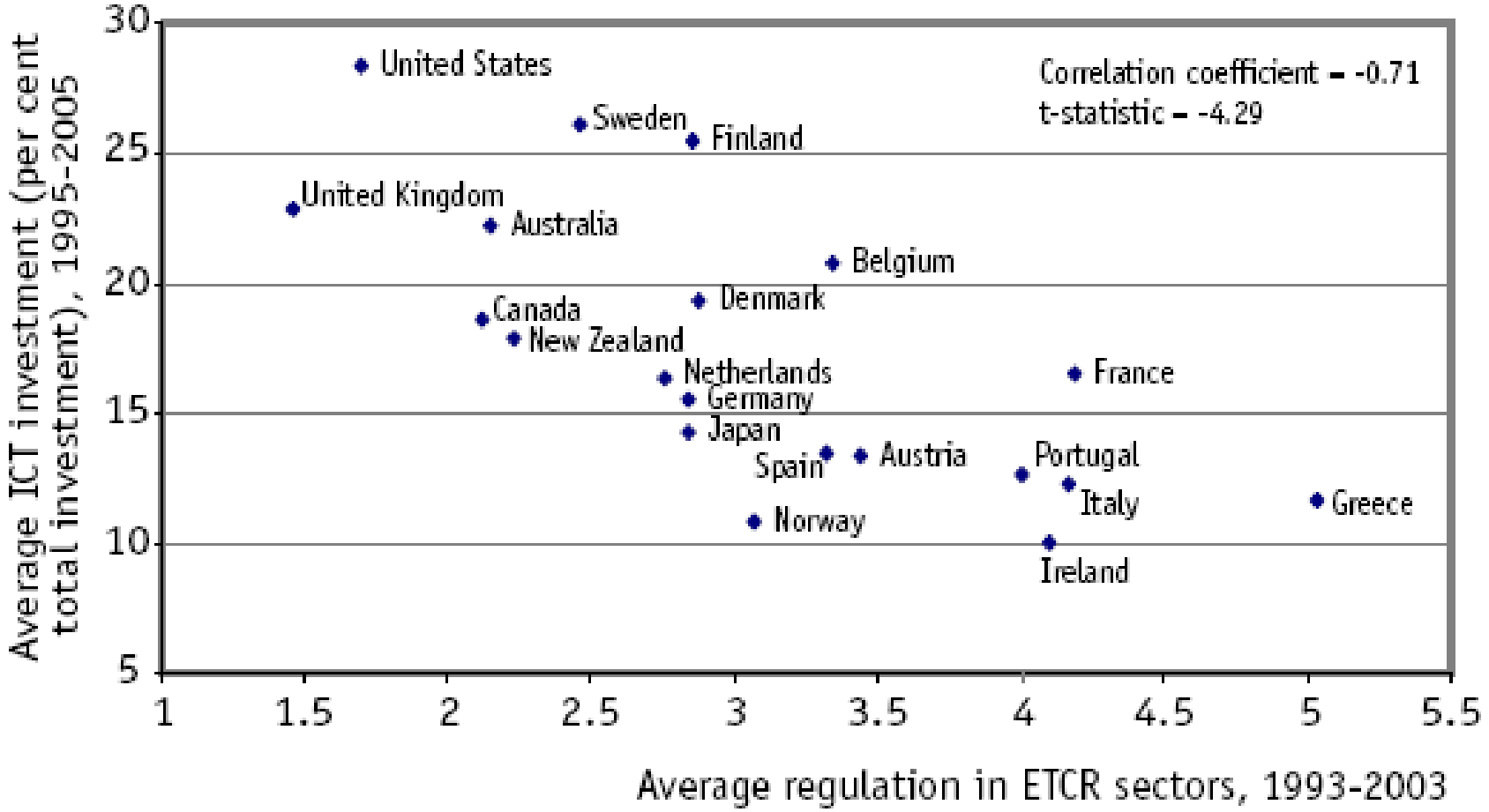
- Production function useful for other fields, eg: health
- Policy approach: feasible
- Accounting approach: feasible
- It relies on strong assumptions, eg: no ICT-enabled innovation
- Policy channels are clear: ICT investments

Should policy promote ICT investment?

ICT investments are lower in some countries because of:

- Financial markets: difficult access to credit
- Product regulation: low competition
- Labour regulation: high costs for failure

Product Market Regulation and ICT Investments



Source: Conway and Nicoletti (2006) OECD

ICT-enabled Innovation

Innovation: product, process, organisation and marketing (Oslo Manual, 2005)

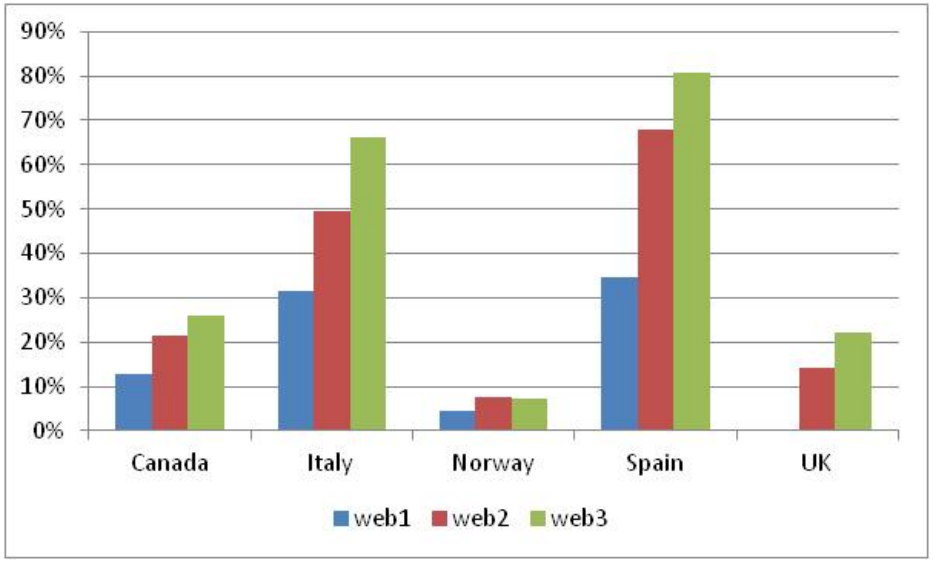
ICTs have the potential to increase firms' innovation capabilities by:

- speeding up the diffusion of information
- favouring networking among firms
- enabling closer links between businesses and customers
- reducing geographic limitations
- increasing efficiency in communication

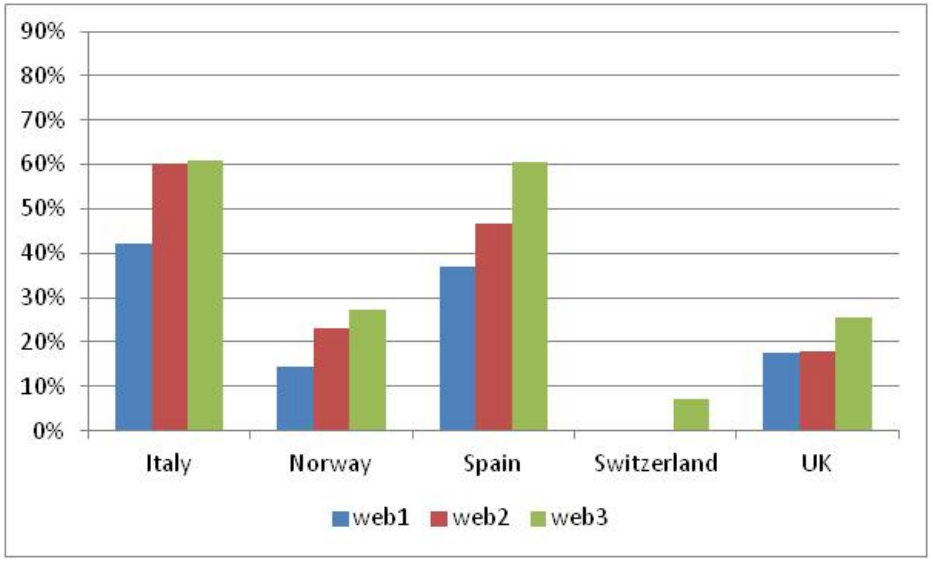
Innovation capabilities

ICT use increases the probability to ***innovate***

Manufacturing



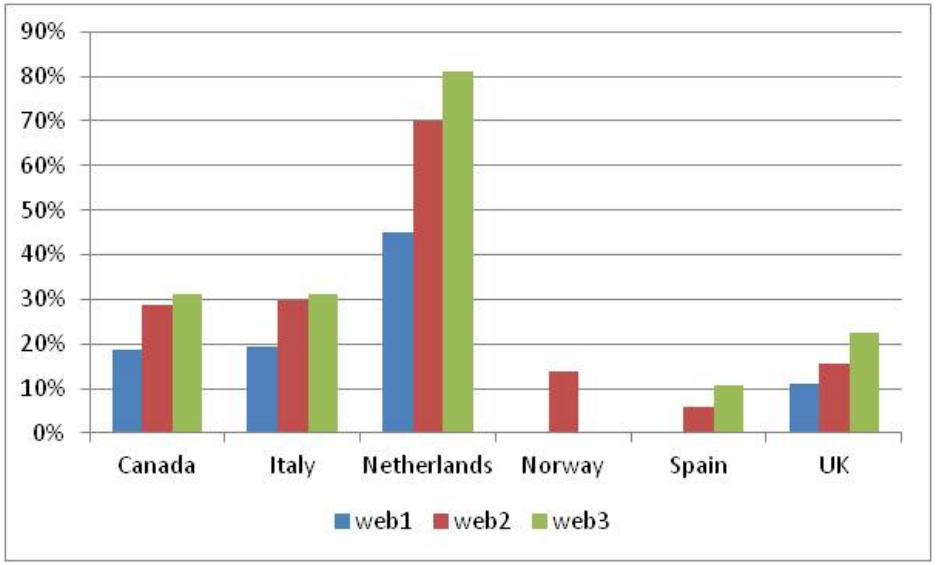
Services



Innovation capabilities

*ICT use increases the probability to introduce a **new product** both in manufacturing and services*

Manufacturing



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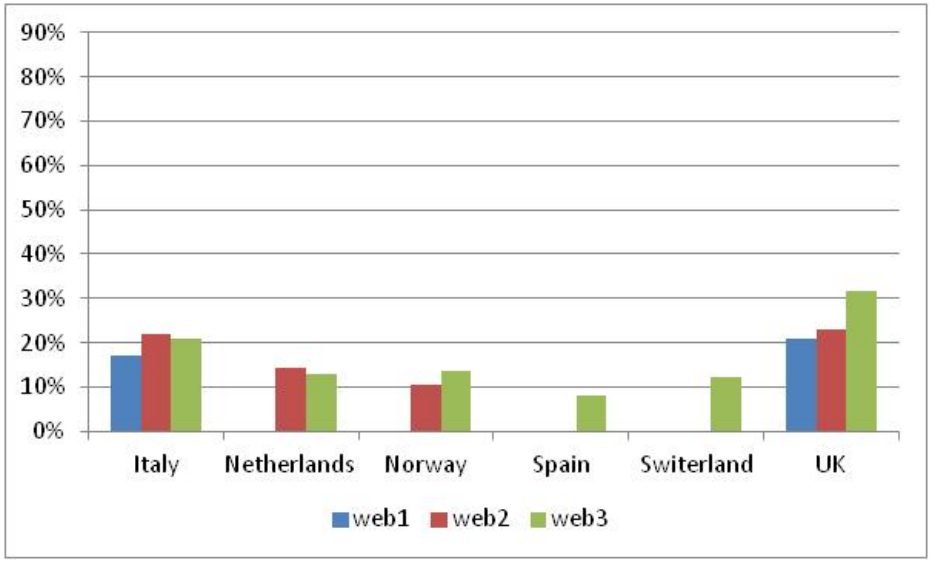
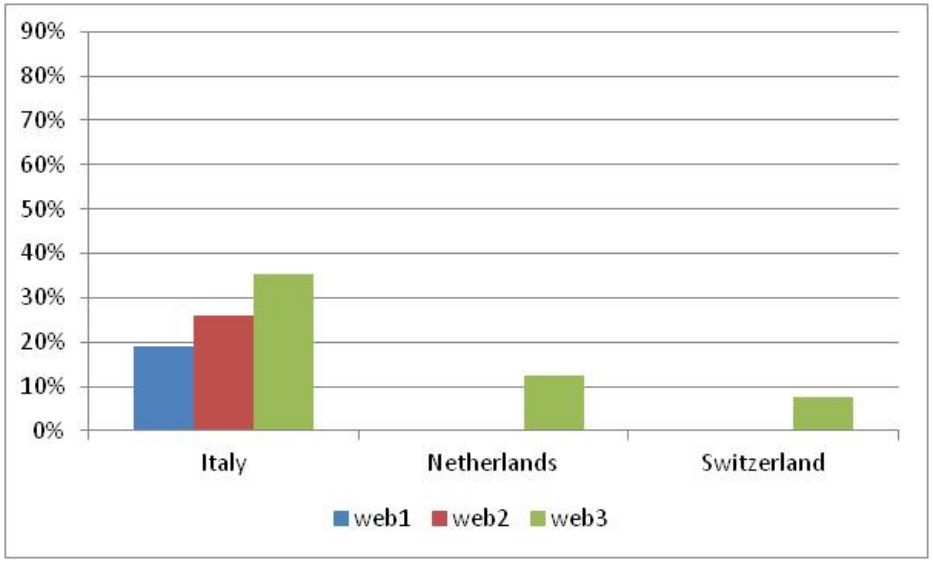


Innovation capabilities

ICT use has a significant effect on the probability to introduce a ***process innovation***

Manufacturing



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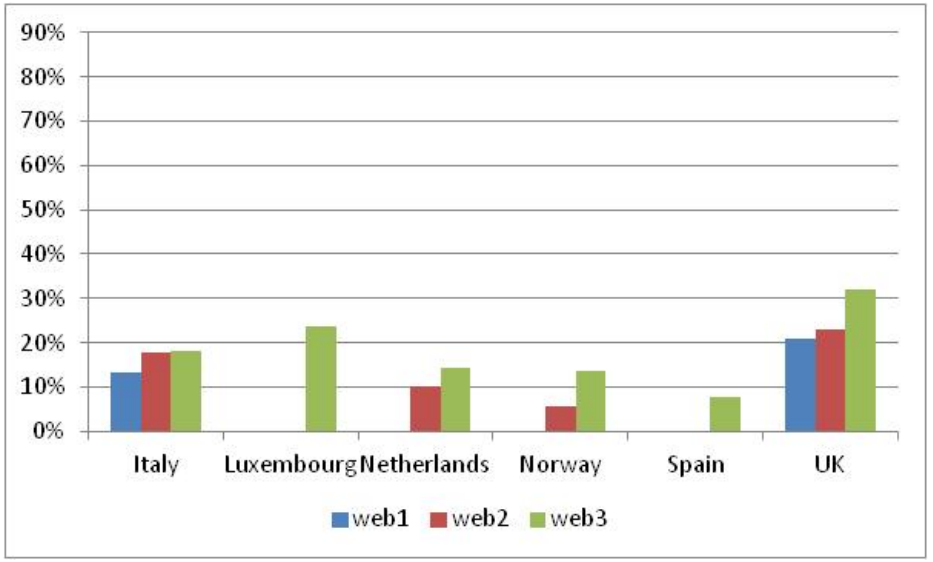
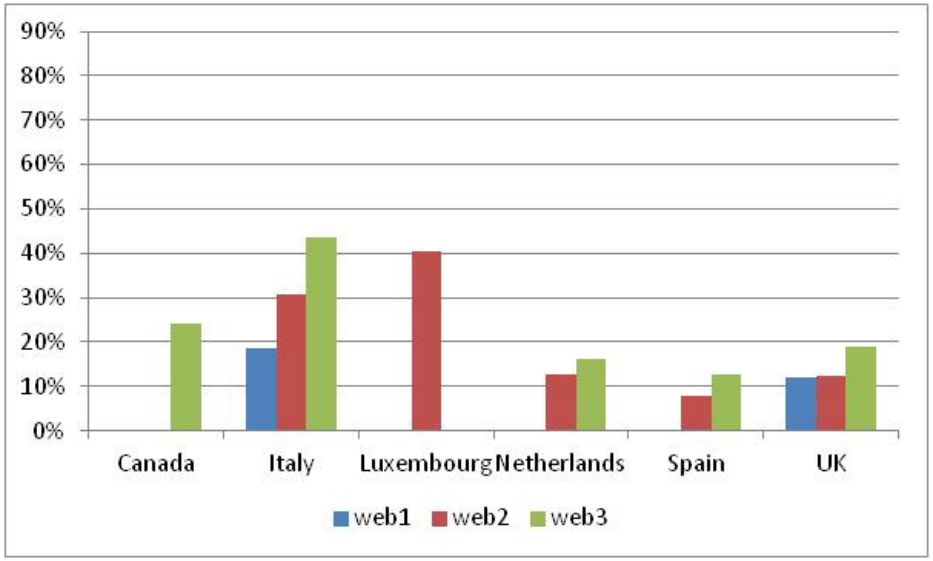


Innovation capabilities

ICT use increases the probability to introduce a ***new organisation***

Manufacturing



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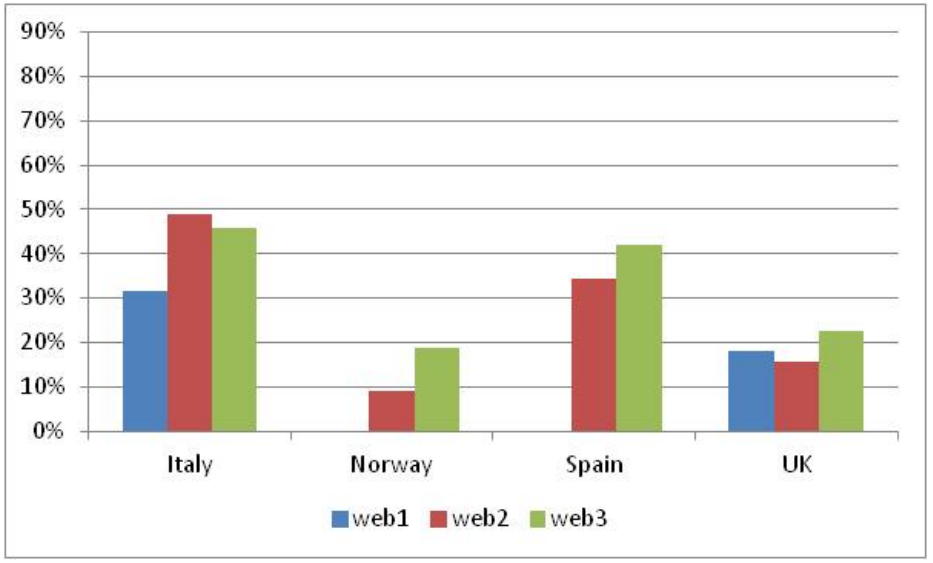
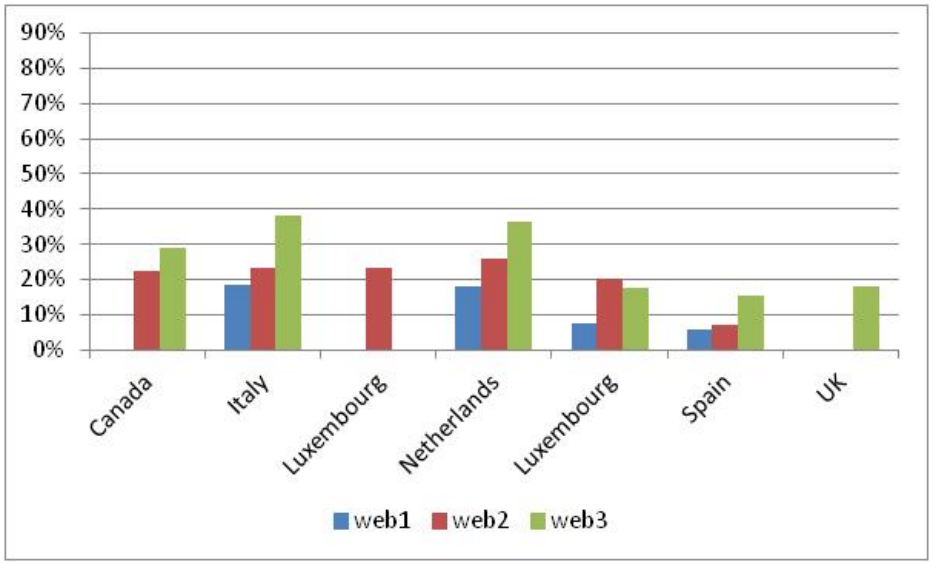


Innovation capabilities

ICT use increases the probability to innovate in ***marketing***

Manufacturing



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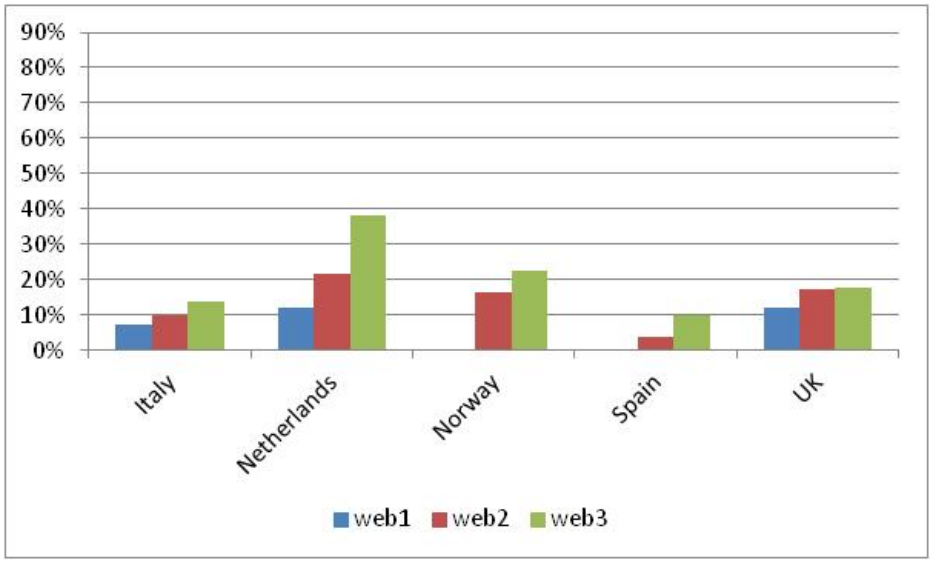

Other “non” results

*ICT use **does not** increase the probability:*

- to introduce a product new-to-the-market
- to develop new product/process in-house
- to cooperate in innovation

ICT-enabled Innovation

- In government:

  Lack of statistics on e-government

- In society:

  Little theory & statistics on social networks

- Policy approach: feasible
- Account approach: difficult
- Policy channels are not well-defined

Some final thoughts

- ICT impact means different things
- Some are more relevant for policy
- ICT-enabled innovation needs a policy-relevant measurement approach
- Both statistics and theory are needed

If you would like to discuss it more:

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Thank you!