THE ROLE OF INTANGIBLE, KNOWLEDGE-BASED CAPITAL IN ECONOMIC GROWTH

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BETTER POLICIES FOR BETTER LIVES

What is knowledge-based capital (KBC) ?

Computerised information

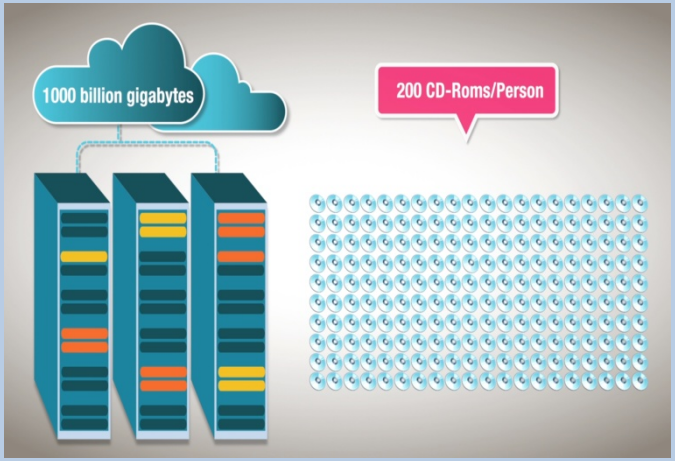
Innovative property

Economic competencies

What is knowledge-based capital (KBC) ?

Computerised information

Software and databases



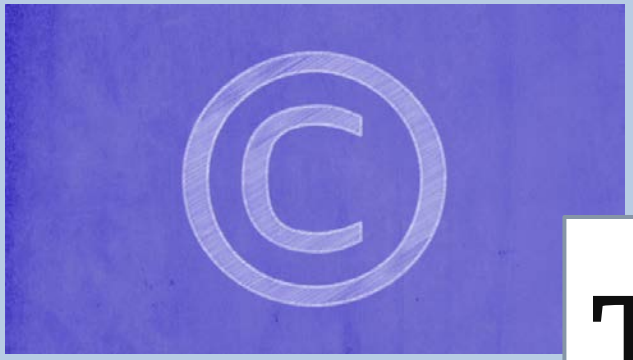


What is knowledge-based capital (KBC) ?

Computerised information

Innovative property

Copyrights, patents, trademarks, designs





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What is knowledge-based capital (KBC) ?

(brand equity, firm-specific human capital, business networks, organisational know-how that increases enterprise efficiency, etc.)

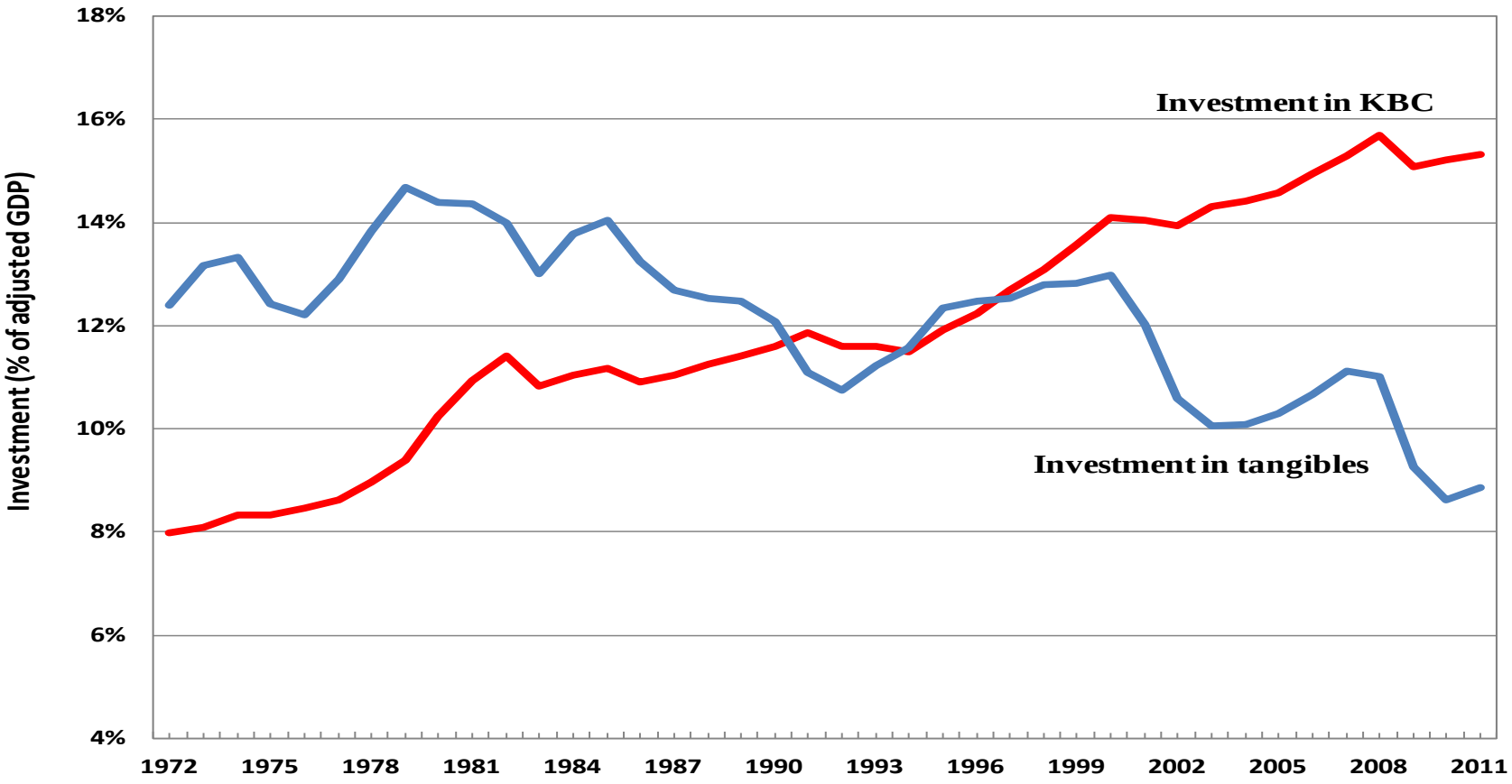




Economic competencies

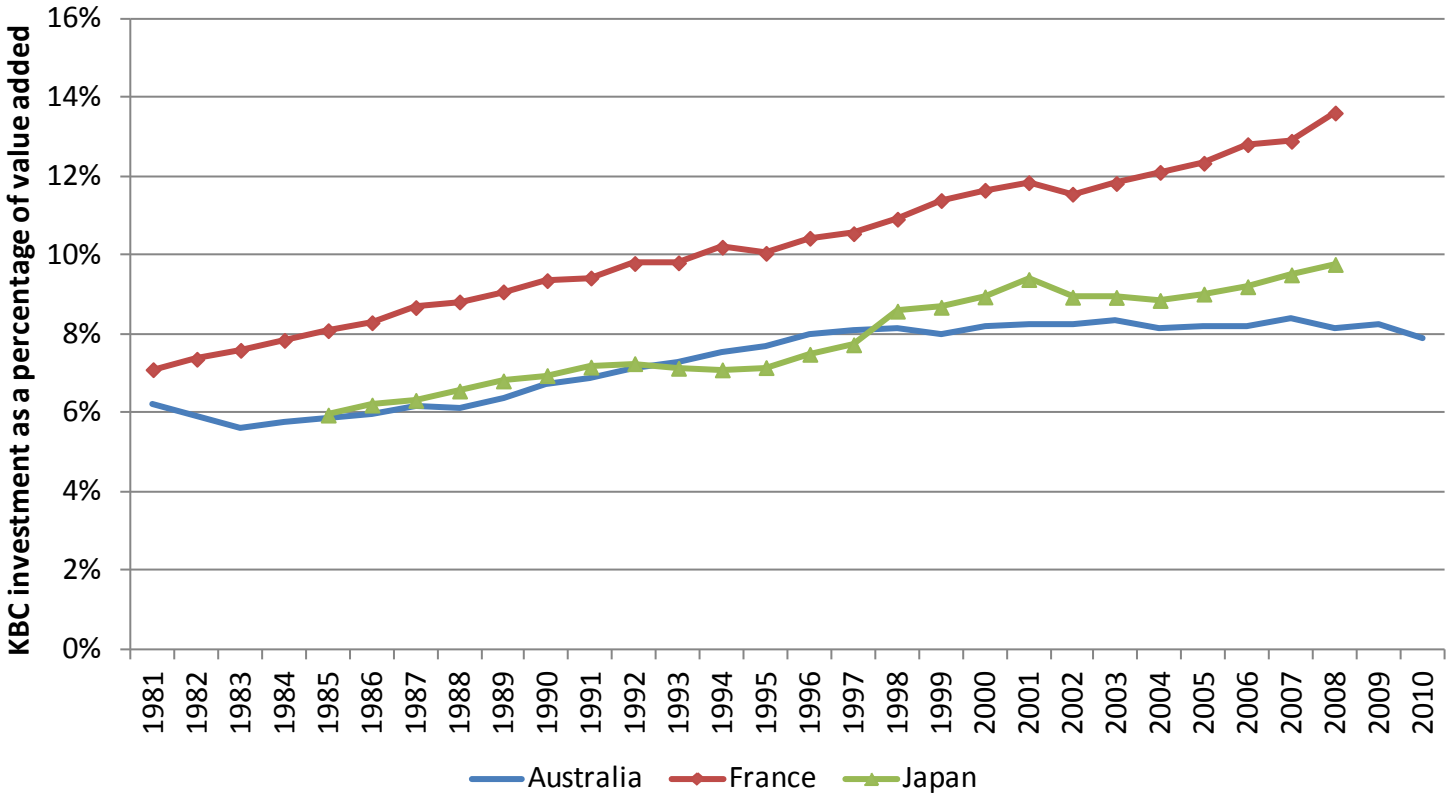
Investment in KBC is growing in importance

Business investment in KBC and tangible assets in the United States
(% GDP, 1972-2011)

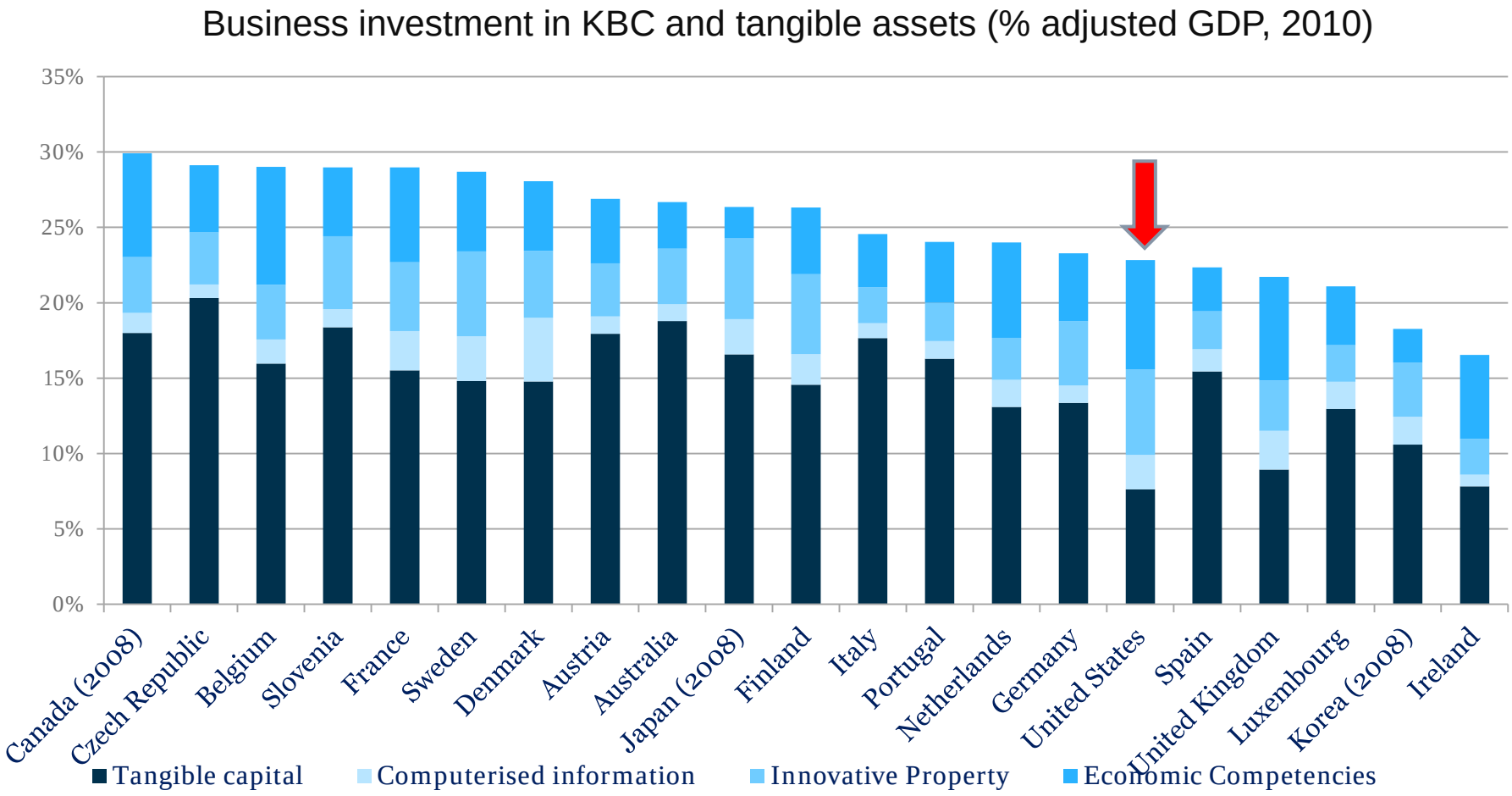


...and growing in importance elsewhere too..

Australia, France, Japan: Investment in KBC as a percentage of GDP (1981-2010)



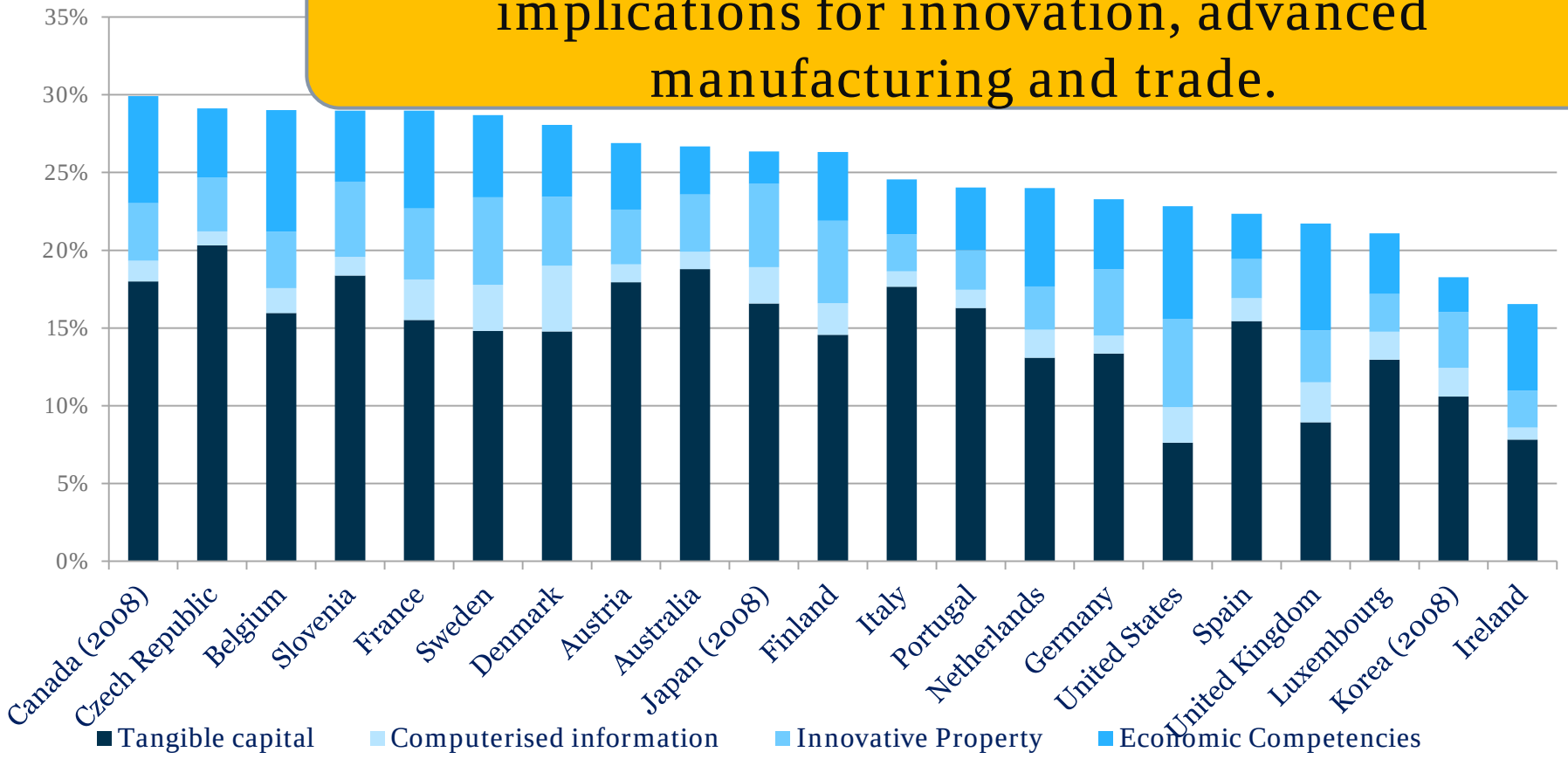
KBC accounts for near to or over half of all business investment in several countries



Source: OECD calculations based on INTAN-Invest, Eurostat and multiple national sources.

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But big differences exist across countries…with implications for innovation, advanced manufacturing and trade.



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"Our clothes are Italian, French and German, so the profits are all leaving China…We need to create brands, and fast".

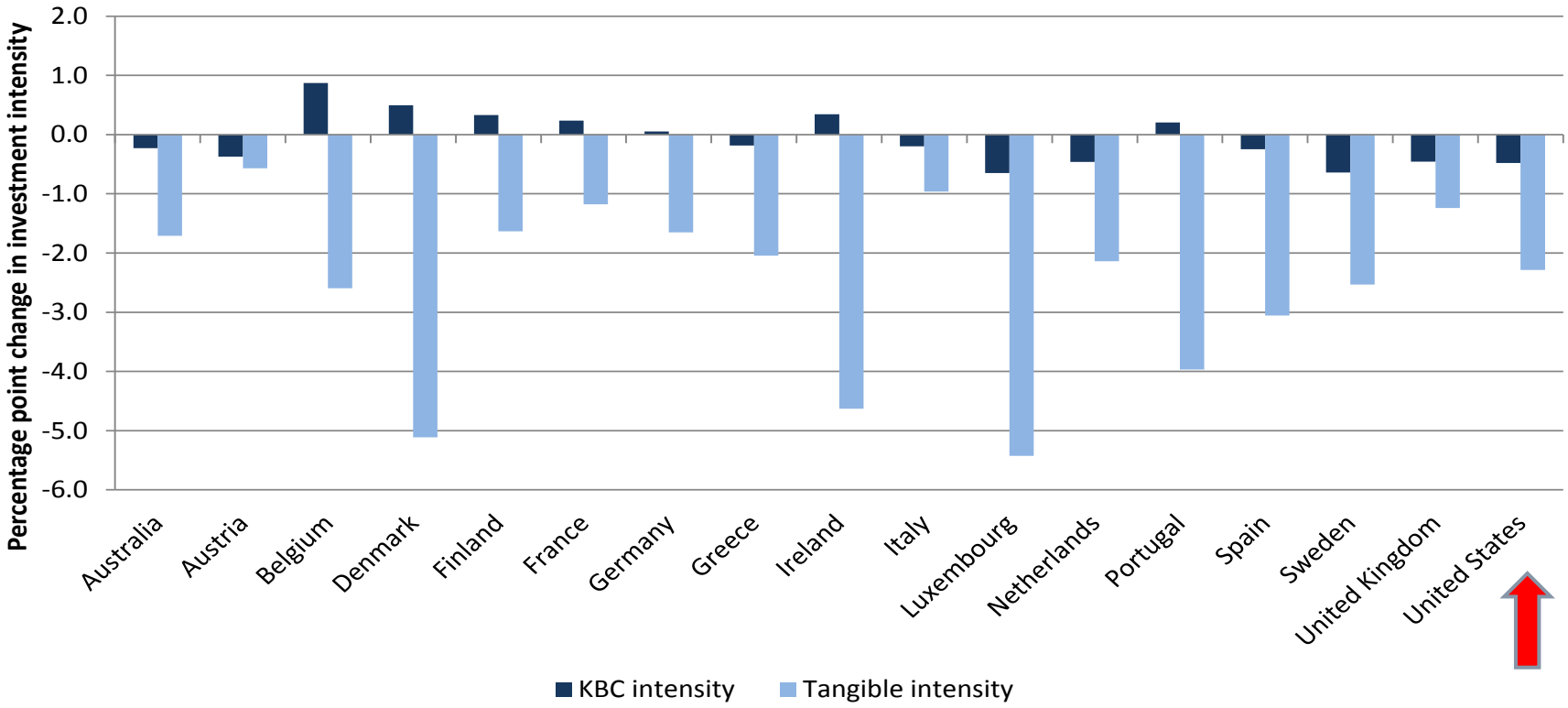
SG, China Industrial Overseas Development and Planning Assoc.



Source: OECD calculations based on INTAN-Invest, Eurostat and multiple national sources.

KBC relatively resilient during the crisis

(change by type of business investment, 2008-2010, % points of value added)



Source: *Source*: OECD National Accounts Main Aggregates, INTAN-Invest, Eurostat and multiple national sources.

And the value of many companies is largely KBC



At the start of 2009, physical assets accounted for only about 5% of Google's worth.



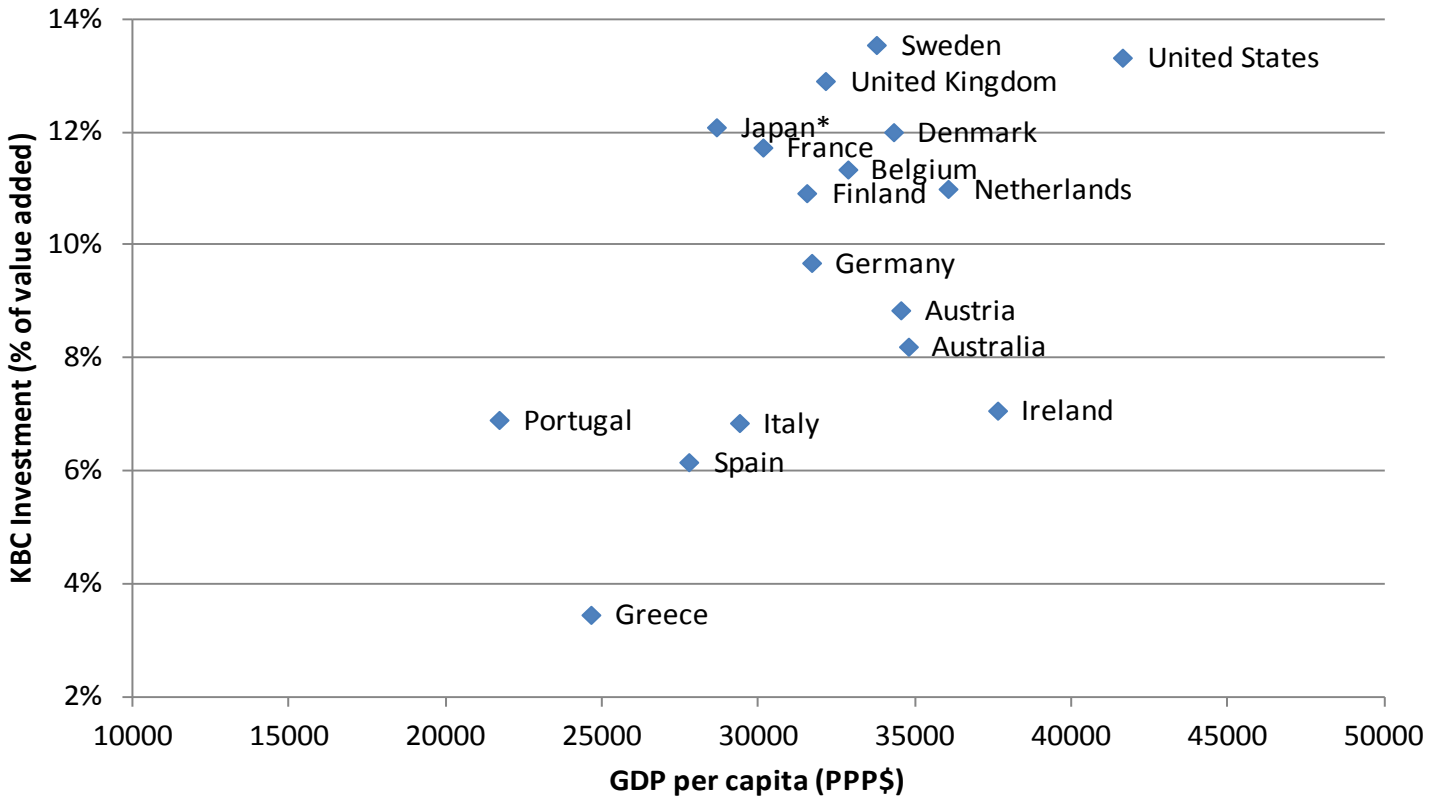
Microsoft: physical assets about 4% of total assets (2006).

Nestle's value (2011) = CHF 186 bn

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KBC = 87%
Tangible assets = 13%

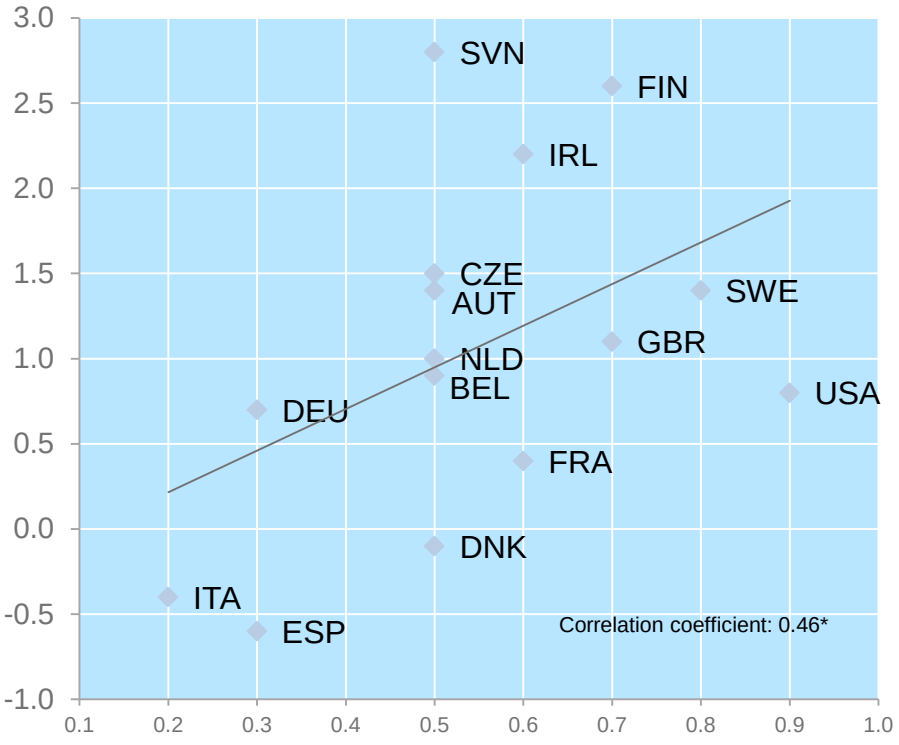
KBC positively associated with GDP per capita (2000-10)



Source: *Source*: OECD National Accounts Main Aggregates, INTAN-Invest, Eurostat and multiple national sources.

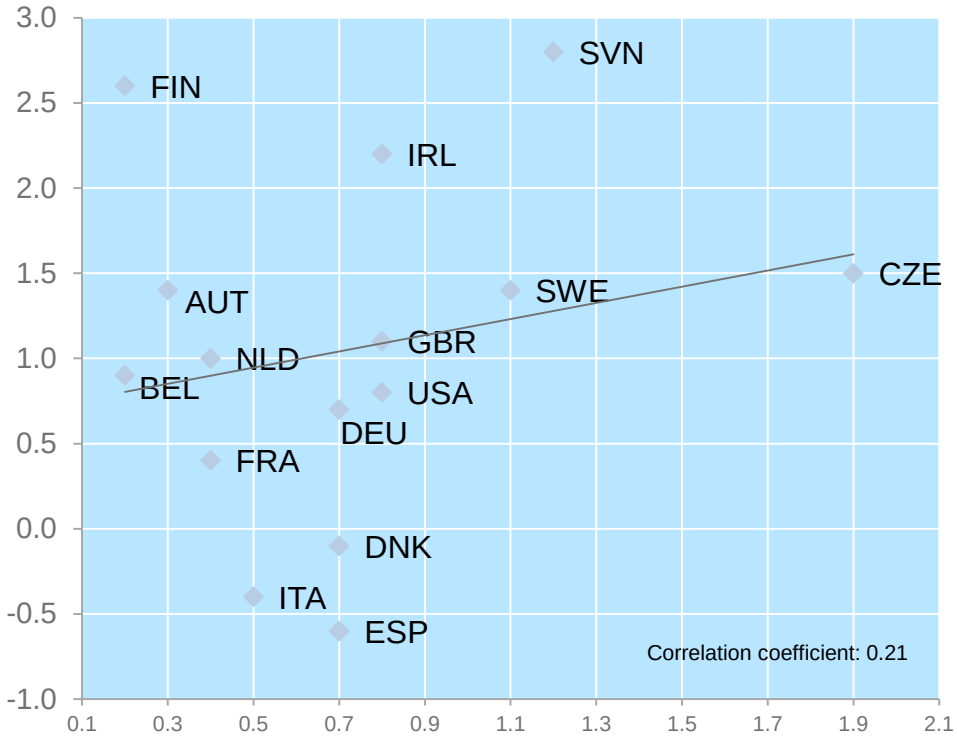
And KBC has spillover effects (selected OECD countries, 1995-2007)

MFP growth (% change)



KBC deepening contribution

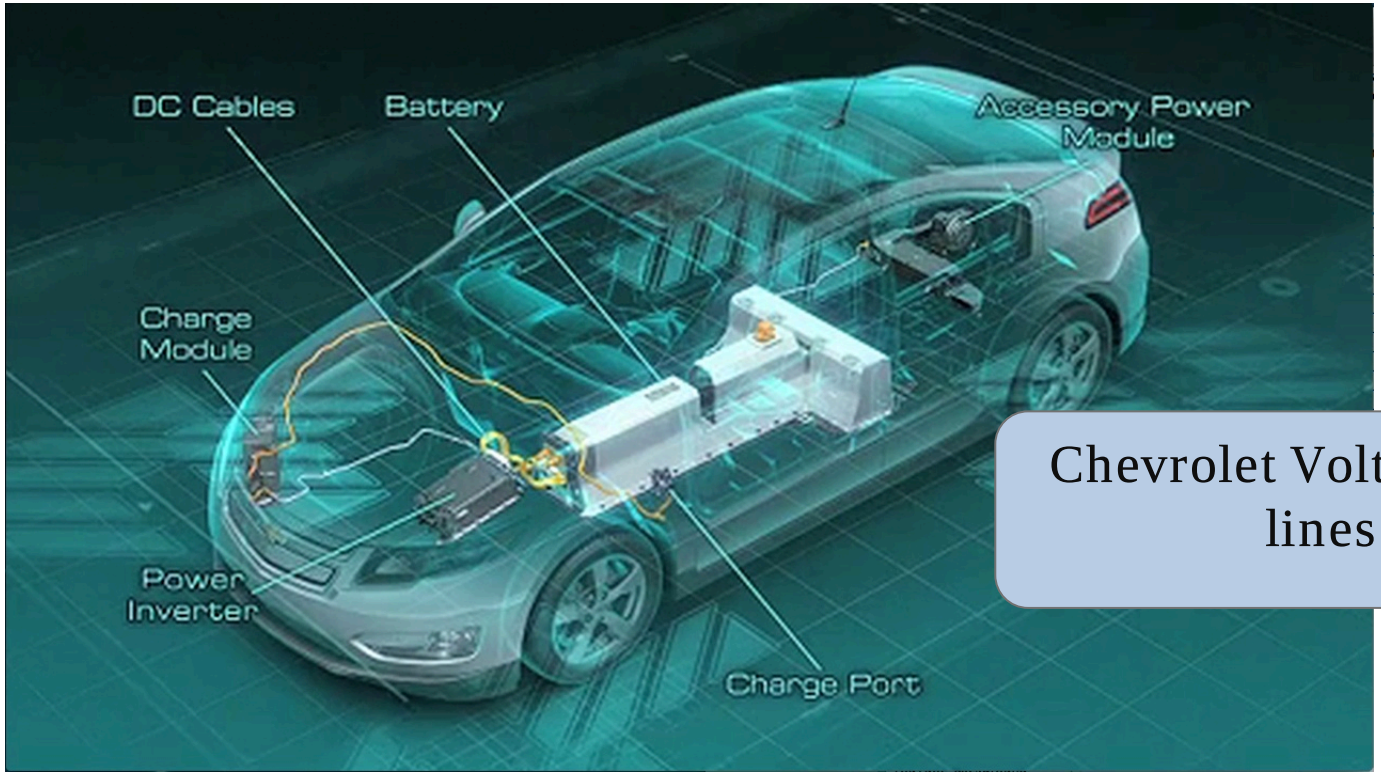
MFP growth (% change)



Tangible capital deepening contribution

Source: Corrado *et al* (2012)

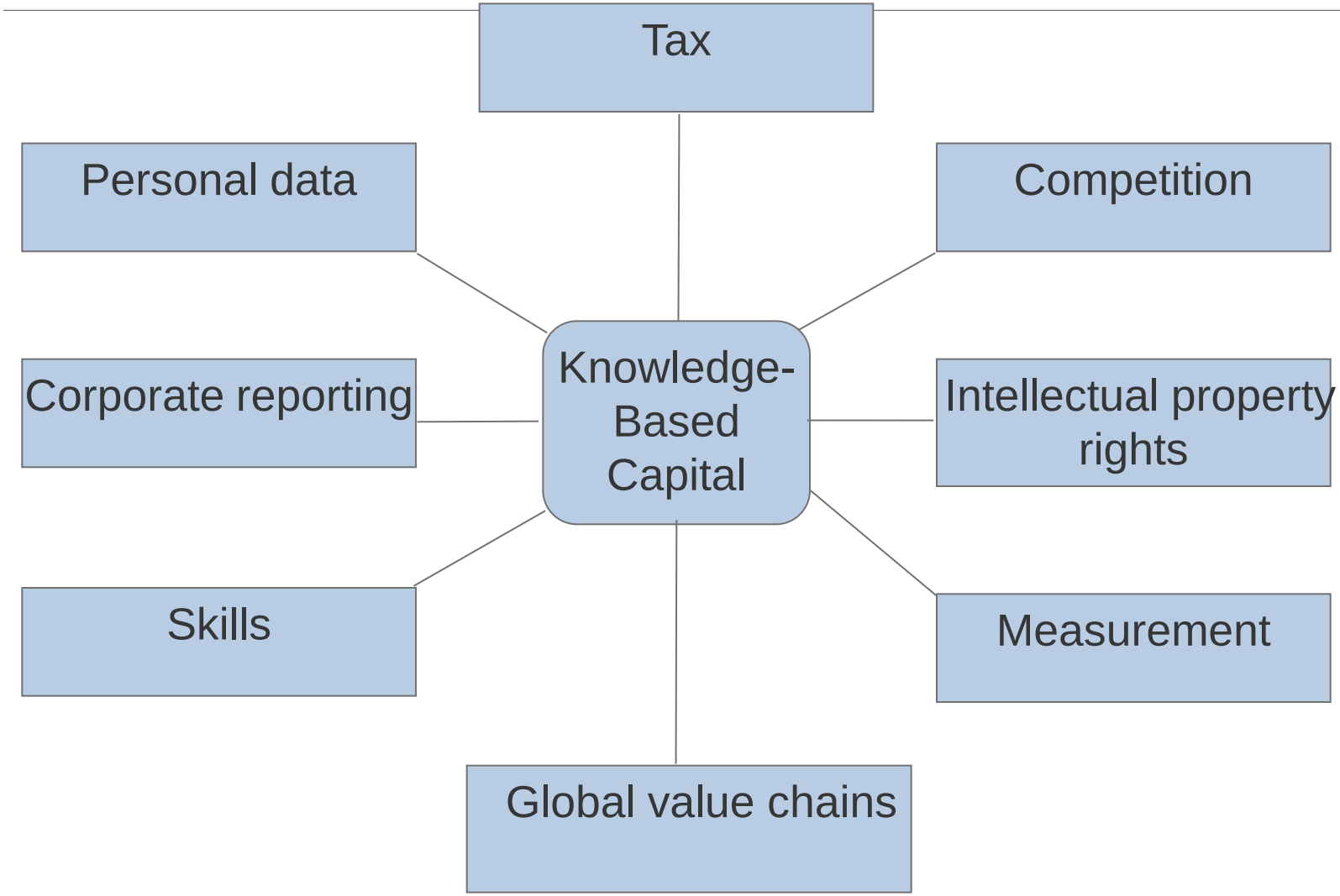
Many products becoming more knowledge-intensive



Chevrolet Volt has 10,000,000 lines of code.

Automotive manufacturers view leadership in control software as vital

KBC relevant to a wide array of policy issues



Selected Policy Implications

- ***Innovation*:**
  - Adopt an enlarged concept of innovation – beyond the view in which R&D is pre-eminent.

Data, new business processes and design also drive innovation and may be affected by specific barriers and policies.

A renewed emphasis on programmes such as technical extension services that aid the diffusion of KBC to firms ?

Redesign of some long-standing innovation programmes - a move from STEM to STEAM (in innovation vouchers, know-how funds and technical extension services).

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- ***Entrepreneurship and business development*:**
  - Countries that invest more in KBC are more effective in reallocating resources to innovative firms. As a share of GDP, the USA and Sweden invest about twice as much in KBC as Italy and Spain and *patenting firms in the USA and Sweden can attract four times as much capital as firms in Italy and Spain.*

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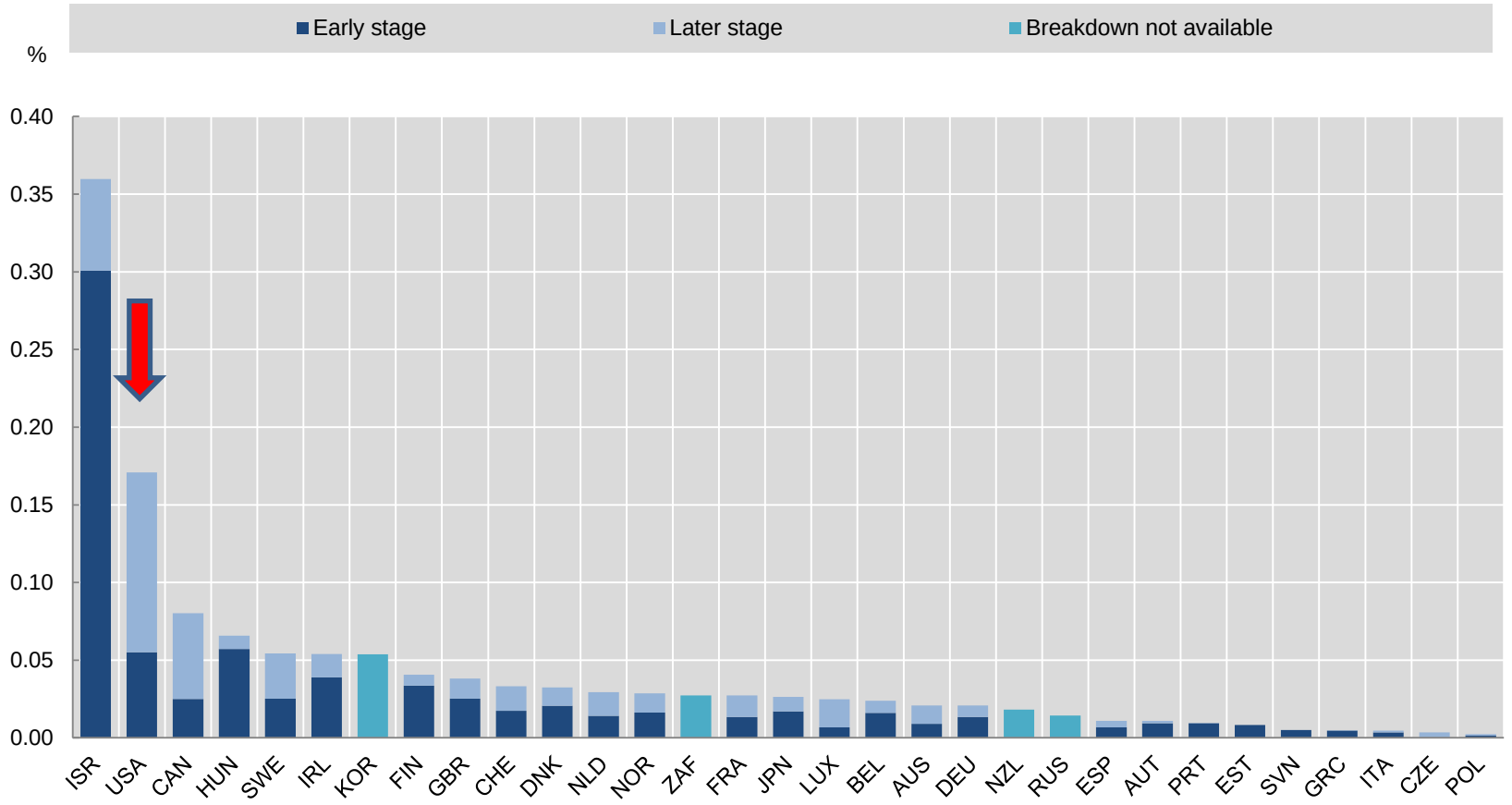
-Make it easy for firms to experiment with growth opportunities.

-Countries with more stringent regulations in product and labour markets invest less in KBC.

-Need well-functioning systems of debt and early-stage equity finance : Investment in KBC positively correlated with debtor-friendly bankruptcy codes and the size of the VC industry.

Big differences in access to risk capital

(VC investment, 2012, % GDP)



Source: OECD Science, Technology and Industry Scoreboard 2013

Selected Policy Implications

- ***Intellectual Property Rights (IPR):*** An increasingly important framework condition. Aspects of IPR systems have not kept up with technological change.

-Are copyright laws best suited to a world of paper and pencil ? Might they constitute a drag on the digital economy ?

-Are aspects of some patent systems retarding innovation ?

-Evidence of declining patent quality over the last decade (i.e. the accuracy of the patent claim and whether patents reflect genuinely novel innovations).

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- ***Tax policy:*** Overall tax relief for R&D by multi-national enterprises (MNEs) could be greater than governments foresaw when R&D tax incentives were designed.

Potential annual revenue cost from income shifting by US-based MNEs may be as high as USD 60 billion, with possibly half of this due to aggressive transfer pricing of KBC-related transactions.

Selected Policy Implications

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"We will be more likely to promote innovative activity if we are able to measure it more effectively and document its role in economic growth."

Ben Bernanke. ***May 16, 2011,***

Selected Policy Implications

- **Measurement:** Governments should do more to properly measure investments in KBC and agree common measurement guidelines.

- **Creating economic value from data:**
  - Data has become a new input to production.
  - Global data creation projected to grow by 40% a year, compared with 5% yearly growth in worldwide IT expenditure.
  - Big data: things you can see at a large scale that you cannot see at a small scale. “More isn’t just more, more is different” Chris Andersen.

Selected Policy Implications

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- **Creating economic value from data:**

-In the US, firms that base significant decisions on data analytics have l
output and productivity 5-6% higher than would be expected given the
investments and use of information technology.

-Large public sector benefits.

Selected Policy Implications

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- **Creating economic value from data:**

Not clear what optimal policy is yet: but many governments could do more in the fields of privacy protection, open data access, ICT infrastructure and skills.

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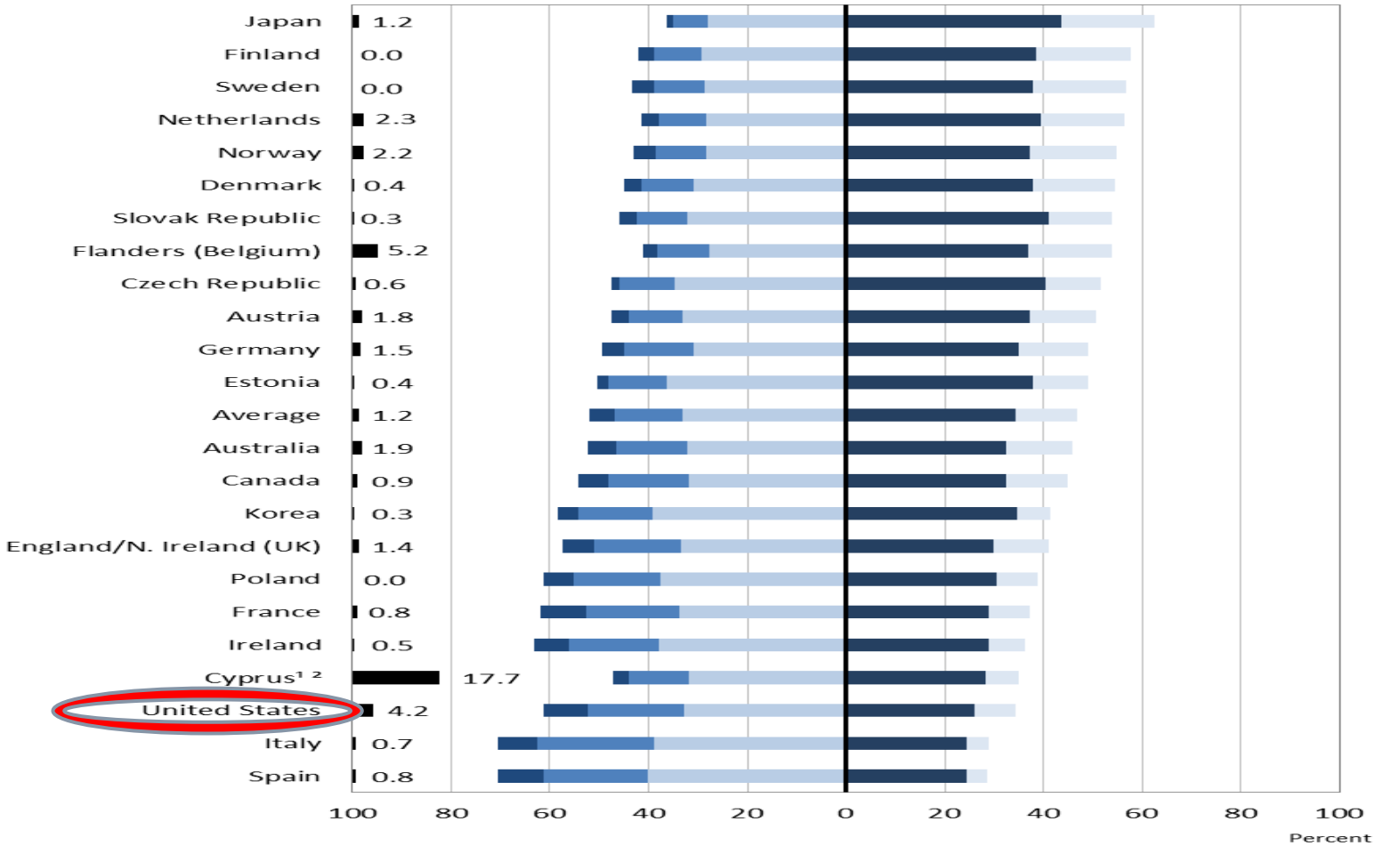
McKinsey Global Institute, May 2011, estimates US to lack 140-190,000 people with analytical expertise and 1.5 million managers with skills to make decisions based on 'big data'.

Selected Policy Implications

- ***Education and training:***
  - *Growing business investment in KBC amplifies the importance of getting human capital policies right.*
  - *And the rise of KBC has profound implications for employment and for earnings inequality.*

Numeracy Proficiency Among Adults

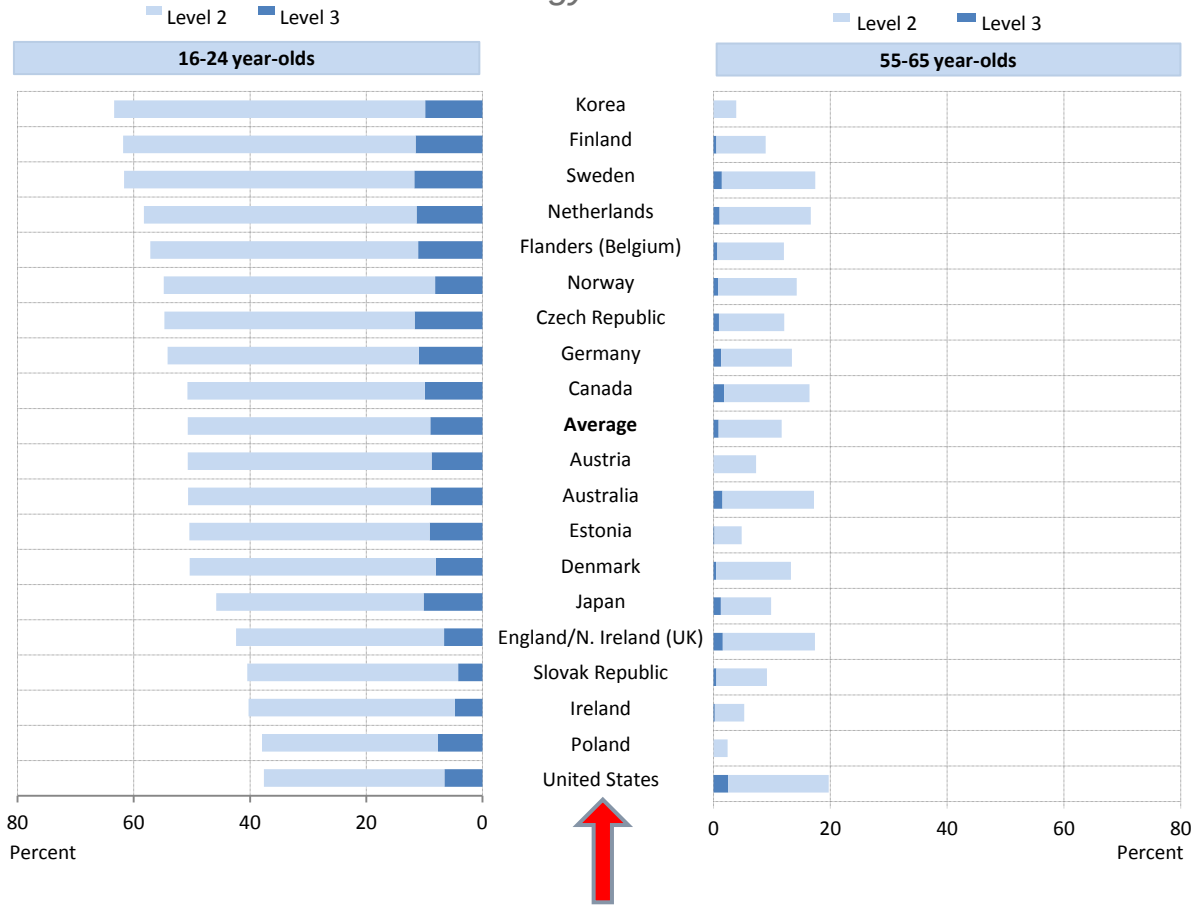
Percentage of 16-65 year-olds scoring at each proficiency level in numeracy



Source: OECD Survey of Adult Skills, 2013

Problem-solving proficiency among younger and older adults

Percentage of adults aged 16-24 and 55-65 scoring at Level 2 or 3 in problem solving in technology-rich environments



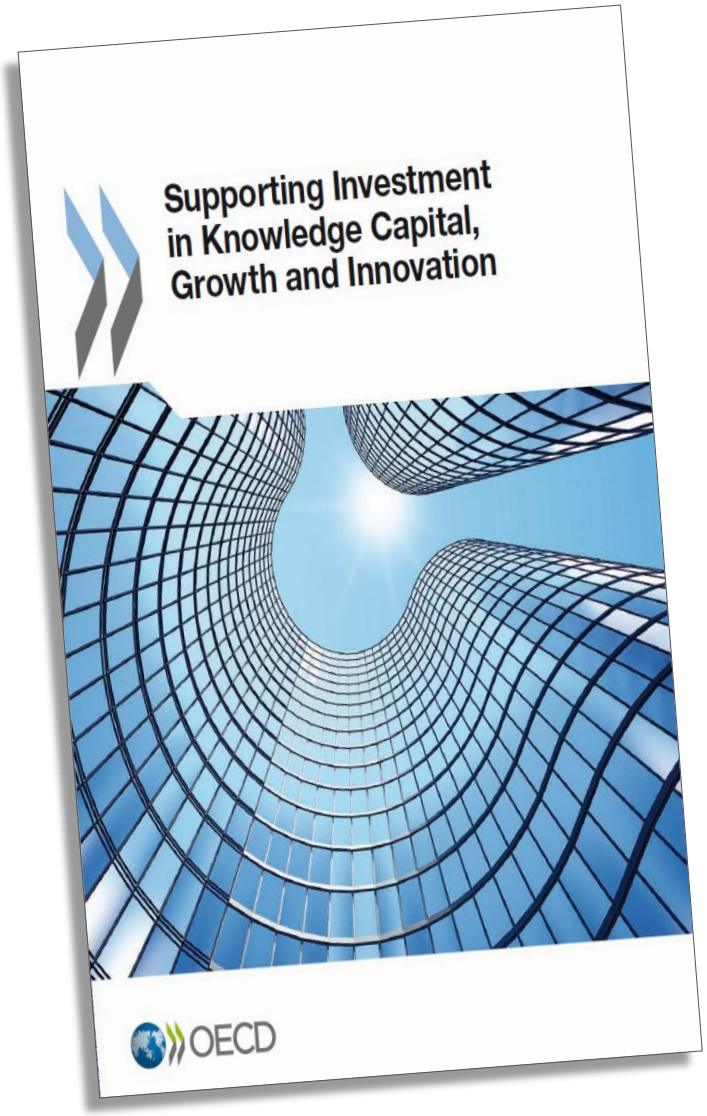
Source: OECD Survey of Adult Skills, 2013

Selected Policy Implications

- ***Competition Policy:*** Faces new challenges in industries founded on KBC, particularly in the digital economy, where: never before have leading firms grown so large so quickly, and the nature of competition may differ from other sectors.

- **Corporate Reporting**: Benefits could be had from better corporate disclosure of investments in KBC.

Supporting Investment in Knowledge Capital, Growth and Innovation



http://oe.cd/kbc