What is knowledge-based capital (KBC) ?

Computerised information

Innovative property

Economic competencies

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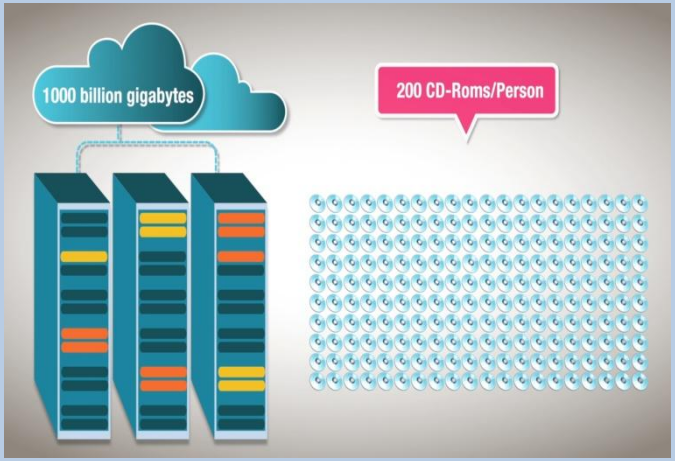
Computerised information

Software and databases

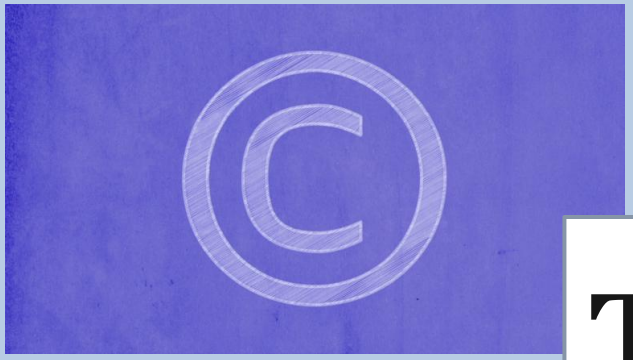


What is knowledge-based capital (KBC) ?

Computerised information

Innovative property

Copyrights, patents, trademarks, designs



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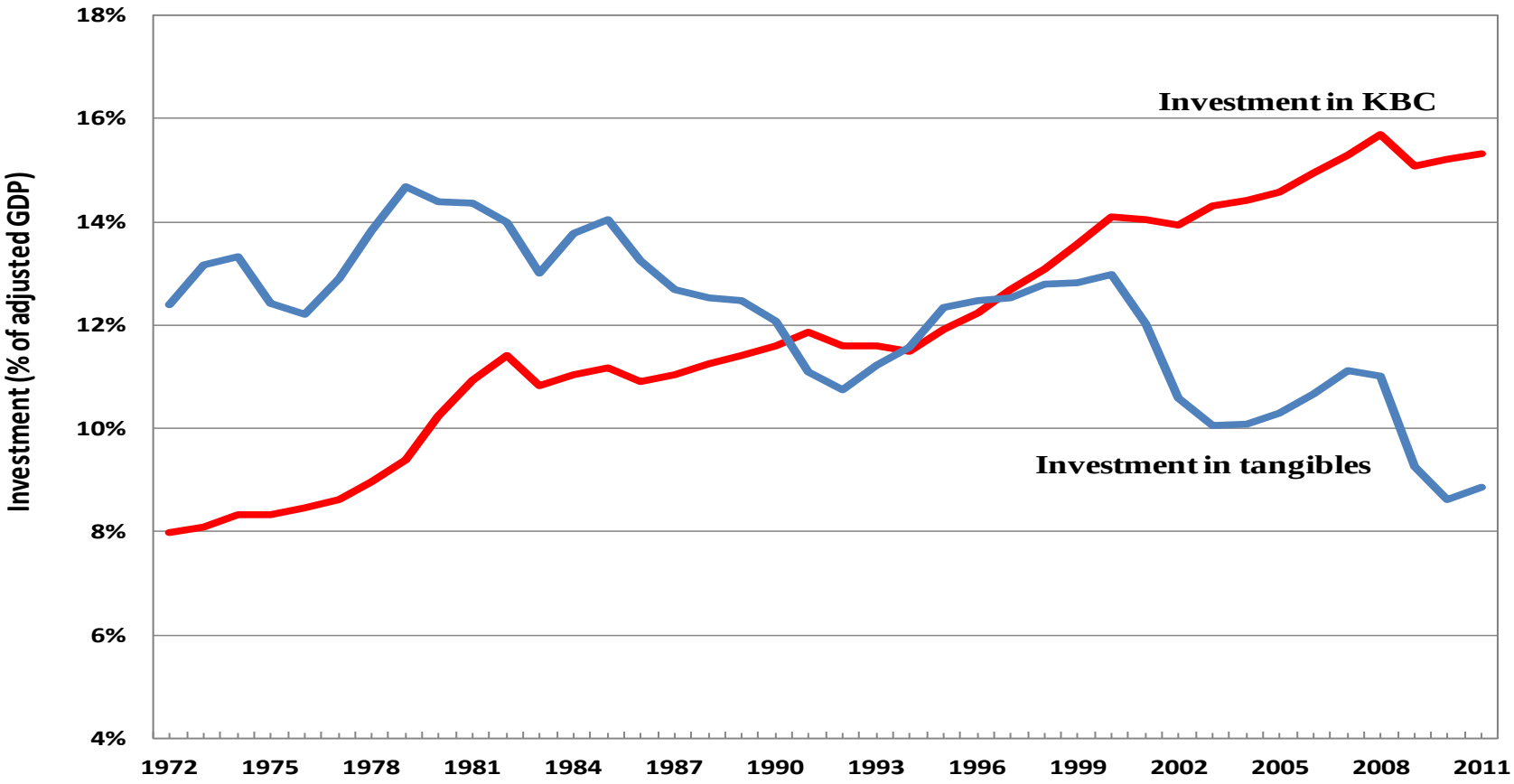
What is knowledge-based capital (KBC) ?

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

Economic competencies

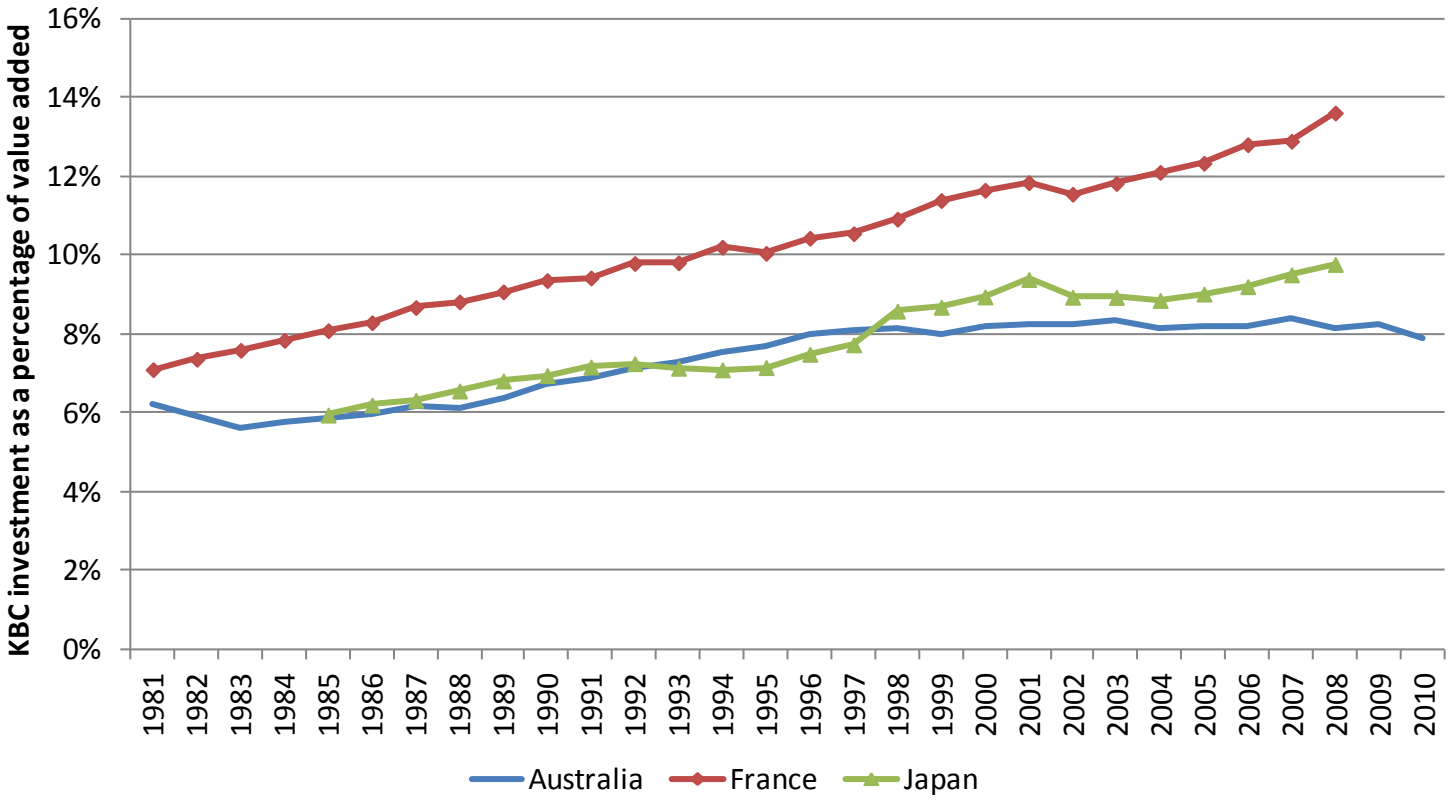
Investment in KBC is growing in importance

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

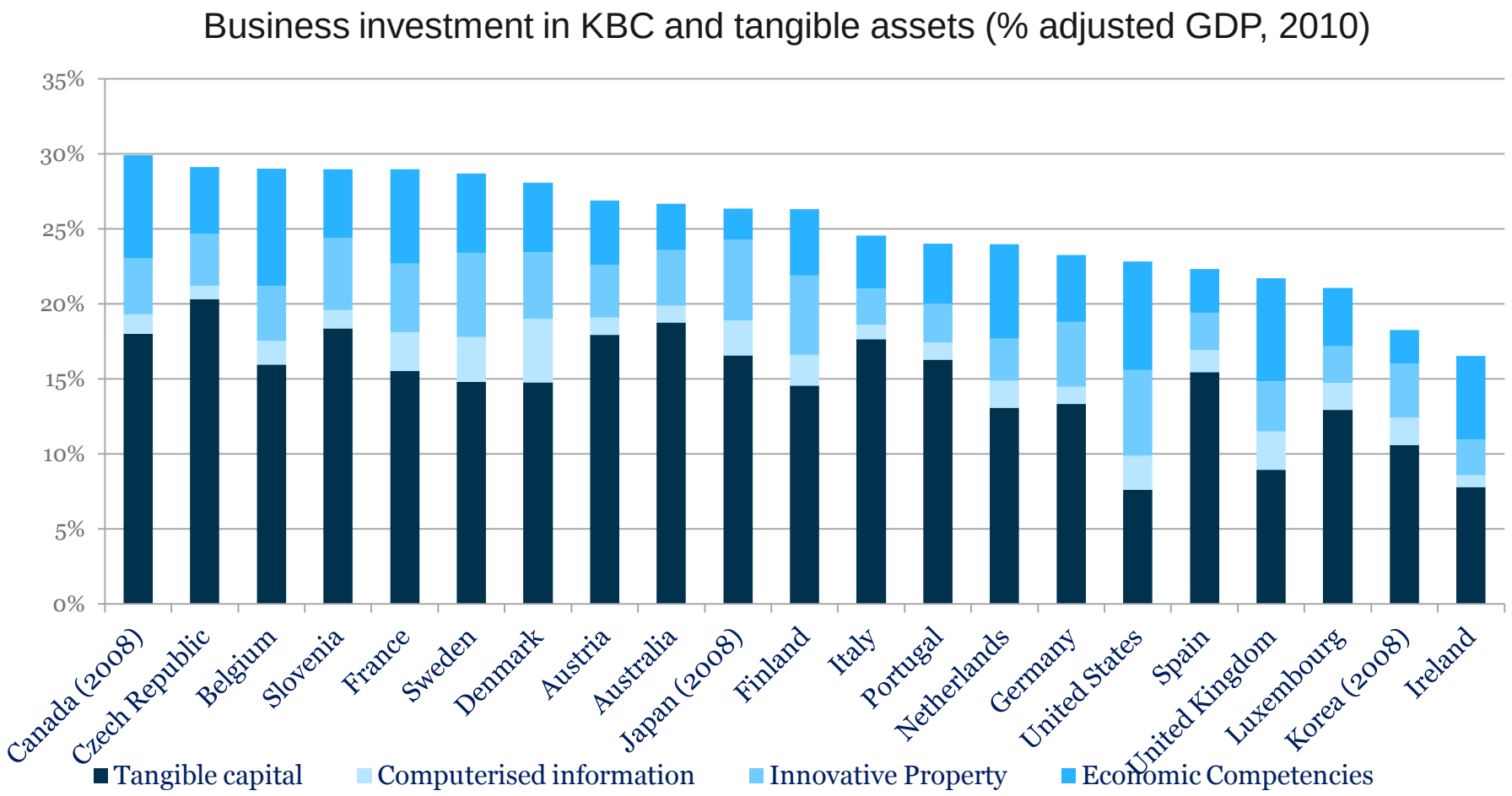


...and growing in importance elsewhere too..

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

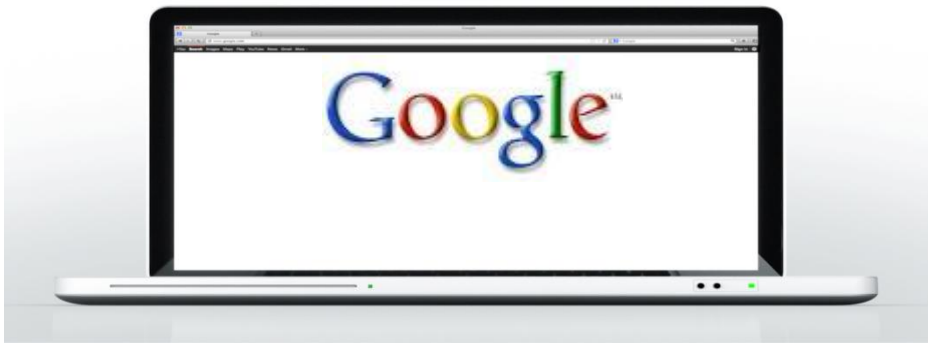


KBC accounts for near to or over half of all business investment in several countries



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

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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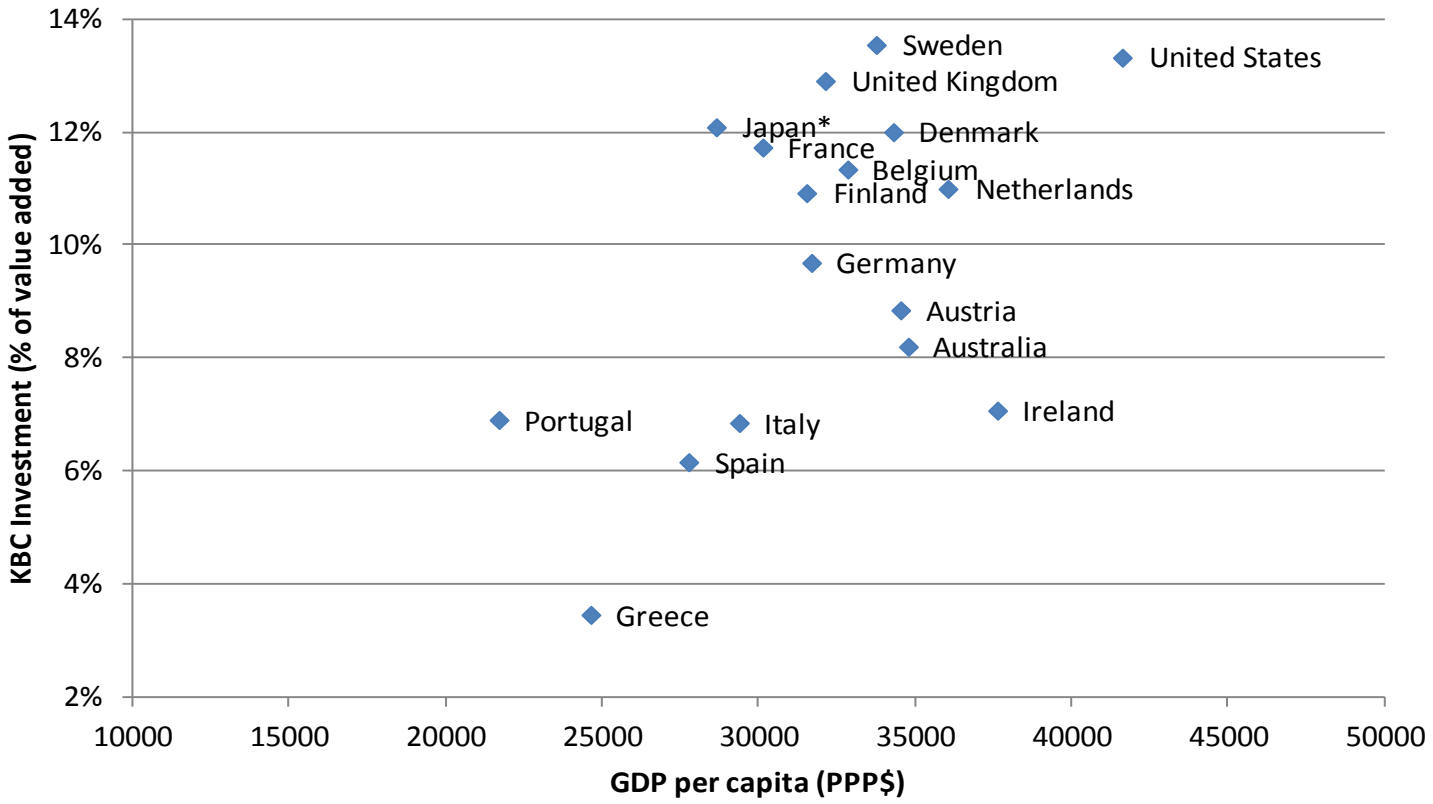
KBC = 87%
Tangible assets = 13%

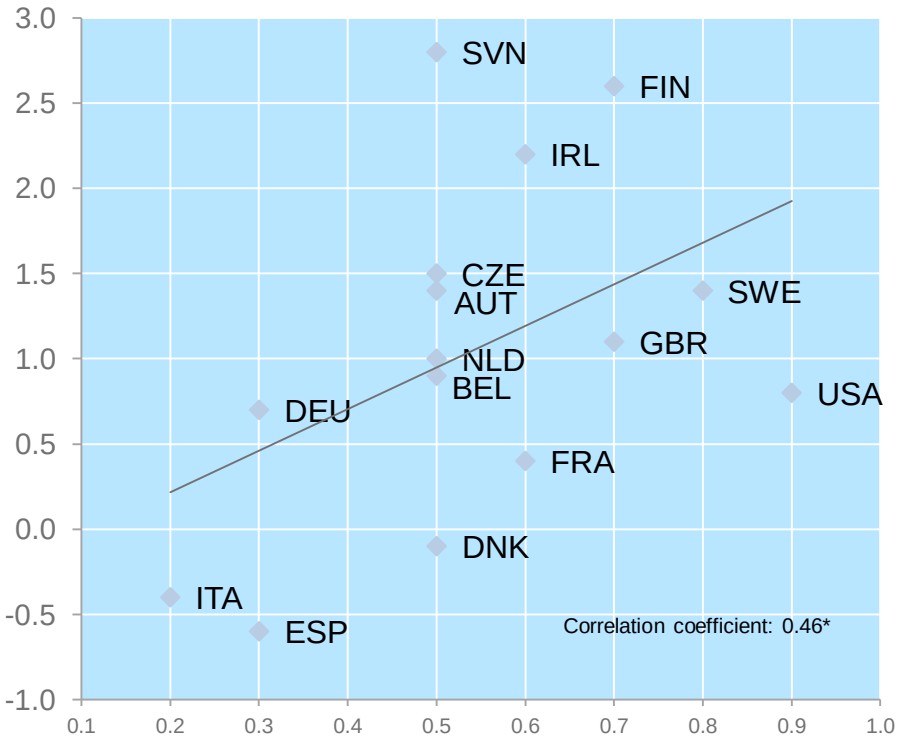
KBC positively associated with GDP per capita (2000-10)



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

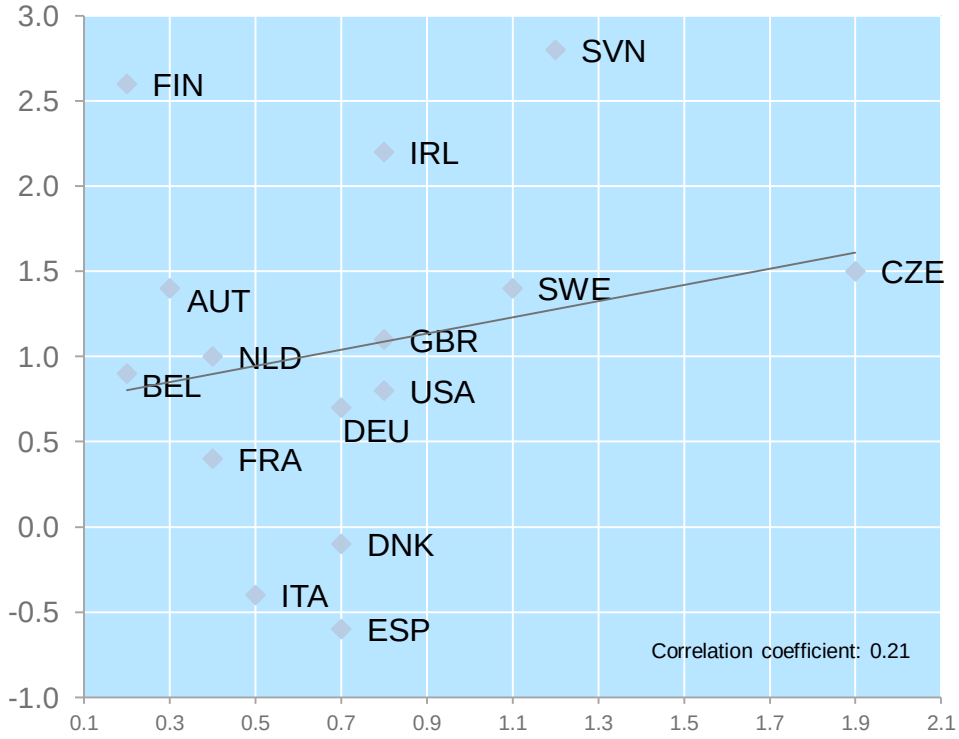
And KBC has spillover effects (selected OECD countries, 1995-2007)

MFP growth (% change)



KBC deepening contribution

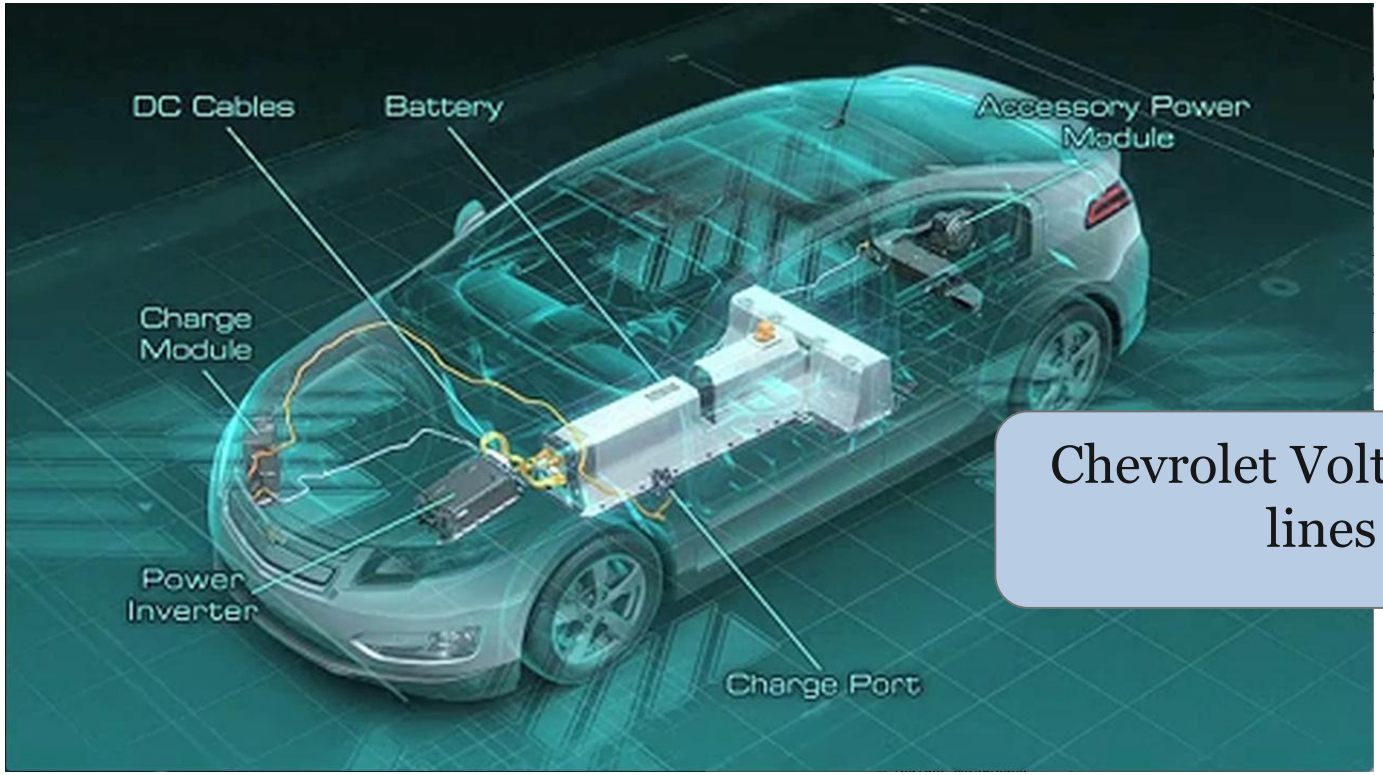
MFP growth (% change)



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

Selected Policy Implications

- ***Update framework conditions:***
  - They must suit a world of knowledge-capital.
- ***Innovation*:**
  - Adopt an enlarged concept of innovation – beyond the view in which R&D is pre-eminent.
- ***Entrepreneurship and business development*:**
  - Countries that invest more in KBC are more effective in reallocating resources to innovative firms.

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    resources to

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).

-Make it easy for firms to implement new ideas and experiment with growth opportunities.

-Need well-functioning systems of debt and early-stage equity finance.

-Investment in KBC positively correlated with debtor-friendly bankruptcy codes.

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

-Reductions in tariffs on intermediate inputs are associated with significant productivity growth in downstream manufacturing sectors.

-Lowering restrictions on FDI from the relatively high levels of Poland to those of Germany could increase aggregate productivity by around 2%.

-Policy stability – keeping uncertainty to a minimum – is also important.

- ***Entrepreneurship and business development*:**
  - Countries that invest more in KBC are more effective in reallocating resources to innovative firms. *Patenting firms in the USA and Sweden can attract four times as much capital as firms in Italy and Spain.*

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In US, royalty-based financing estimated at USD 3.3 billion in 2007-08.

While still rare, KBC is also used as loan collateral.

Governments can facilitate such developments in various ways, from monitoring the broader array of securities laws and regulations and how they affect KBC-based financing, to ensuring a robust market for intellectual property and institutional arrangements that minimise uncertainty as to ownership claims for KBC

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Selected Policy Implications

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

- ***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.

- ***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.

Selected Policy Implications

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-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.

-Target R&D tax credits on pure domestic firms that don't have cross-border tax planning opportunities.

-Need to recognise risk that international competition to increase tax support for R&D could increase revenues foregone without commensurate increases in innovation.

Selected Policy Implications

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

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

- **Creating economic value from data:** Governments could do more in the fields of privacy protection, open data access, ICT infrastructure and skills.

Selected Policy Implications

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

-Some evidence that industries more dependent on external finance grow faster in countries with higher-quality corporate disclosure.

-In sectors more reliant on external finance, R&D expenditure as a share of value added also grows faster in countries with higher-quality corporate disclosure.

-Could improve internal risk management and decision making and increase overall transparency for shareholders and other stakeholders.

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Many challenges:

-Firm-specific training and design – not included in official statistics.
-Organisational capital involves assumptions that need refinement (e.g. the share o management time used to effect lasting changes in a firm's productivity).
-Obtaining consistent industry-level depreciation rates for R&D investments.
-Assessing how KBC relates to productivity also requires more information on asse prices, so as to accurately capture the quantity of the assets purchased.

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Lisbon Agenda's 3% of GDP guideline for national R&D spending – these should include the wider innovation indicators provided by KBC.

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Selected Policy Implications

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

-Global data creation is projected to grow by 40% a year, compared with 5% ye growth in worldwide IT expenditure.

-Large public sector benefits.

- **Creating economic value from data:** Governments could do more in the fields of privacy protection, open data access, ICT infrastructure and skills.

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.*

New Sources of Growth: Knowledge-based Capital

More information available at:

www.oe.cd/kbc