



OECD REVIEW OF INNOVATION POLICY: FINLAND

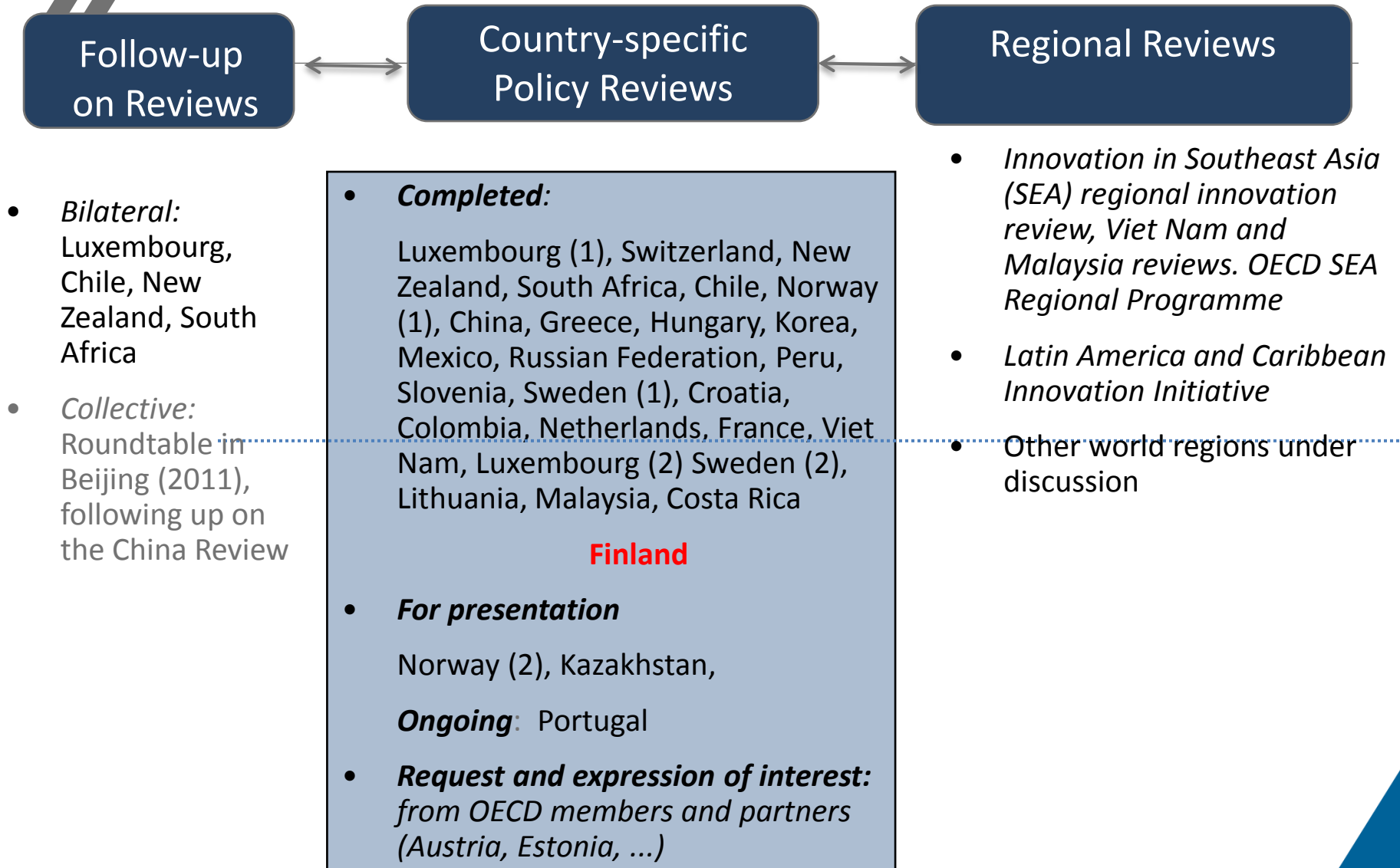
ASSESSMENT AND RECOMMENDATIONS

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Reviews)

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Helsinki, 9 July 2017

OECD Reviews of Innovation Policy





A new generation of OECD Innovation Policy Reviews in advanced European countries, prominently featuring Nordic Countries



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The OECD Review of Innovation Policy: Finland 2017 – the process

- Request from Finland, supported by Ministers Dr Olli Rehn and Ms Sanni Grahn Laasonen
- Fact-finding mission of the OECD Review Team to Finland (June 2016)
- Workshop on “The Role of R&D in fostering Economic Performance”, Helsinki, December 2016
- Peer Review at the TIP Workshop on Nordic Country Reviews, Paris, December 2016
- Stakeholder Discussion and Meeting with the Research and Innovation Council, Helsinki, February 2017
- Launch and publication of the Review, 9 June 2017





Finland's economic context

A double-dip recession and external shocks affecting the economy

- Finland was hit hard by the “great recession” in 2009. After partial recovery, the economy slipped once more into recession, against a weak economic environment and drop of trade with Russia.
- Disruptive technological change triggering the collapse of Nokia's mobile phone business; fall in demand for traditional paper products; large-scale restructuring and downsizing, especially in ICT.
- Finland lost ground vis-à-vis peers in terms of productivity and competitiveness.

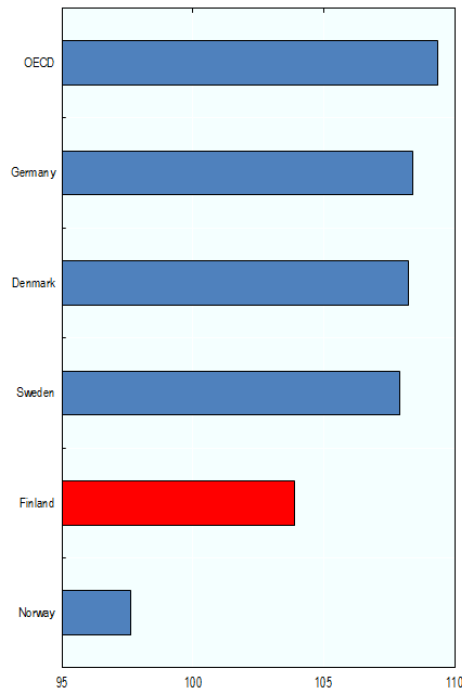
... but the forces of economic recovery are getting stronger

- In 2016, the economy has been pulling out of recession. Unemployment has continued to decline from its peak in 2015.
- Cost-competitiveness has been improving.

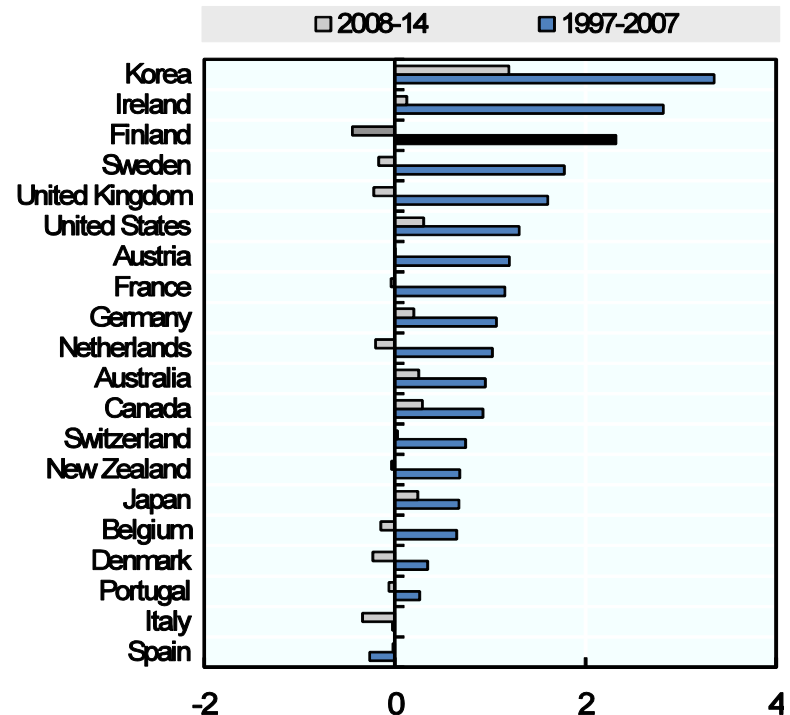


The gap in GDP per hour worked vis-à-vis OECD peers widened in the wake of the global crisis

Labour productivity growth, GDP per hour worked
2005-2015, index 2005=100



Total Factor Productivity, average growth



- Finland's labour productivity growth has lagged behind Nordic peers and the OECD average.
- Total Factor Productivity (TFP) has contracted over the period 2008-14, as opposed to its rapid expansion in the preceding decade.



Major challenges

To strengthen the competitiveness and resilience of the economy to safeguard living standards and wellbeing, Finland faces major challenges:

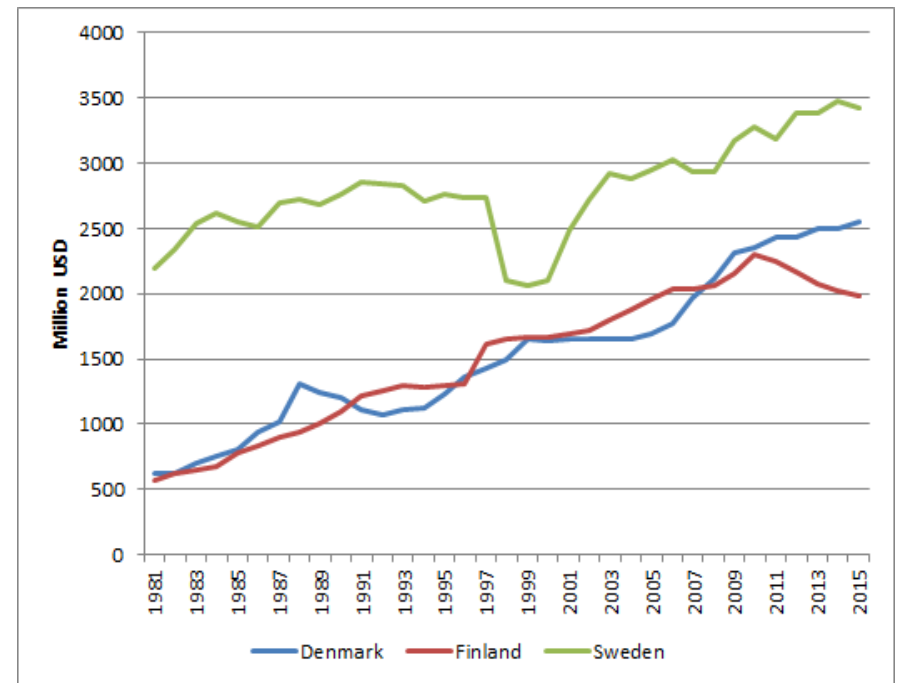
- Invigorate productivity growth and competitiveness through **diversification** and **innovative** firm growth.
 - Revitalising **existing industries** by building new competitive advantages.
 - Developing **new export sectors** through innovative entrepreneurship.
- Ensure future wellbeing by addressing **societal challenges in innovative ways** which will also leverage business opportunities, including in global markets.



Finland's STI policy responses in the wake of the recession (1)

- Government funding of R&D continued to grow when business funding for R&D started to decline in the recession.
- After 2010 switch from expansionary (“counter-cyclical”) to contractionary (“pro-cyclical”) policy, exacerbating a massive drop in business-funded R&D. In Finland the drop in government R&D funding continued at even faster pace in 2016 and into 2017.
- Other comparator countries have maintained the expansion of government funding of R&D (e.g. Denmark) or switched from contractionary to expansionary.

Government budget appropriations for R&D (2010 prices)

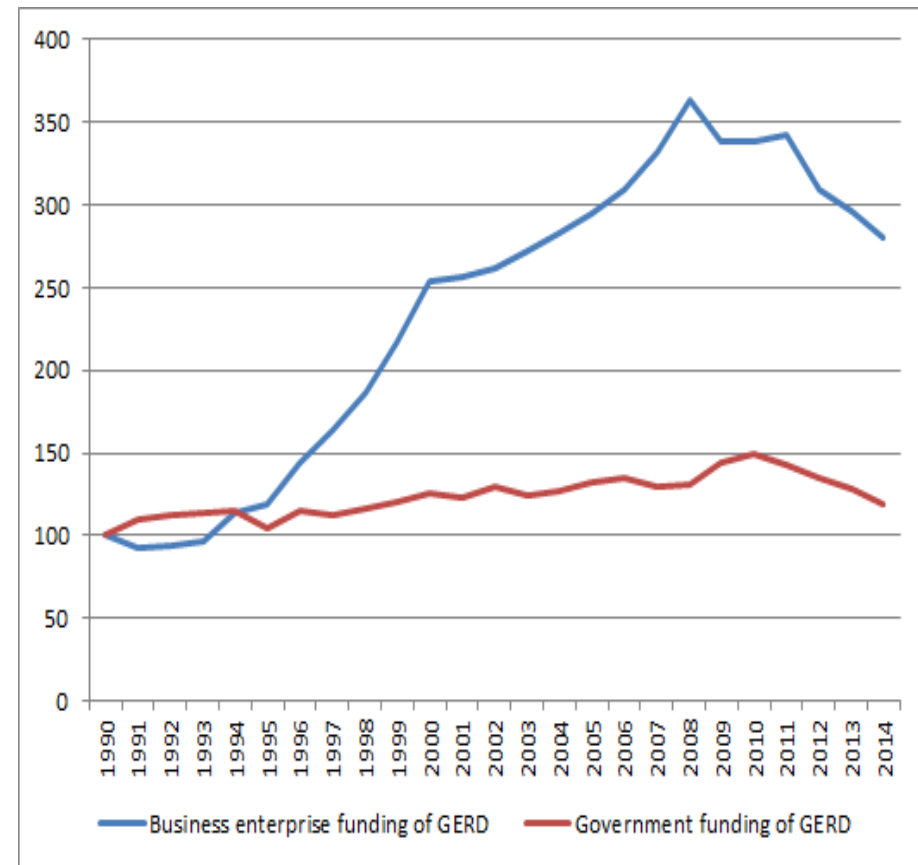




Finland's STI policy responses in the wake of the recession (2)

- The cuts in government funding of R&D combined with the massive drop in business-funded R&D contributed to the fall in Finland's R&D intensity.
- Public budgets for business innovation and applied research decreased.
- In particular, Tekes' budget decreased sharply, contrary to what may have been needed to support industrial recovery.
- Combined with cuts at VTT this contributed to the emergence of a gap in "strategic technology" development.

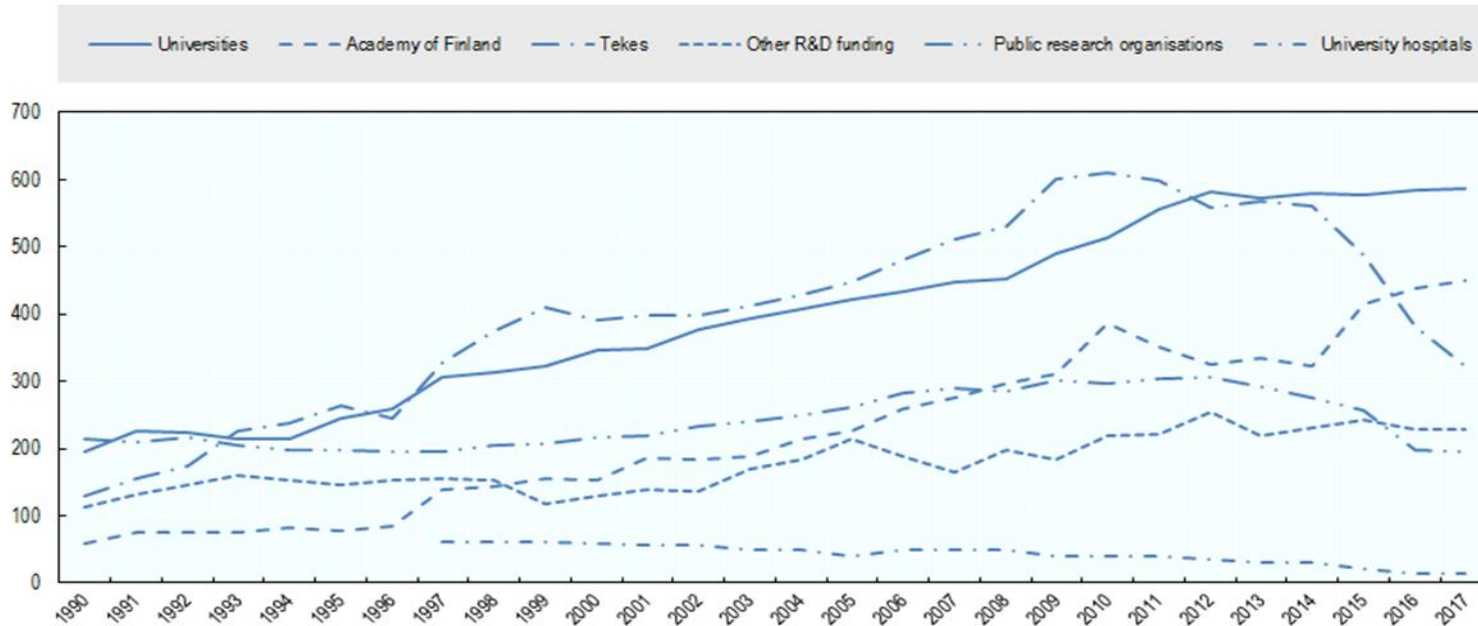
R&D by source of funding (index 1990=100)





Evolution of government R&D funding to major research and funding institutions

Government R&D funding at current prices



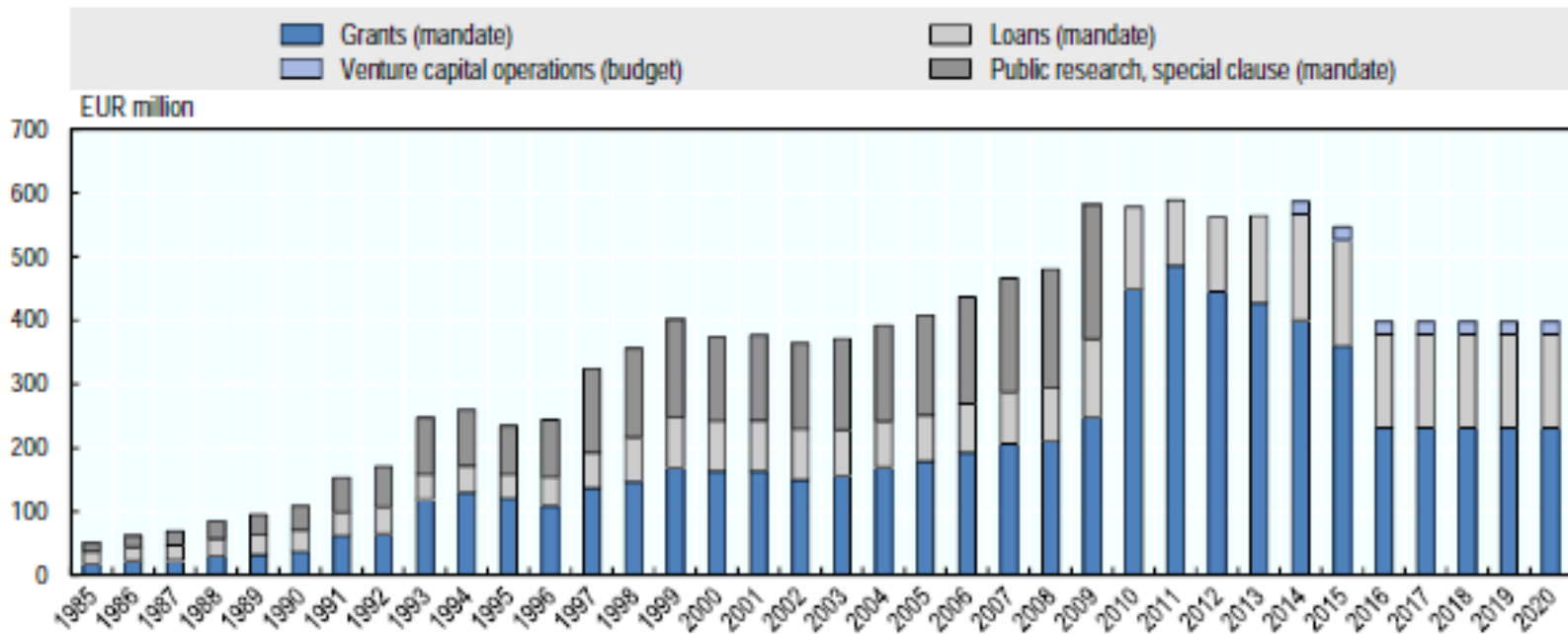
Tekes (2017).

- Institutional research funding to universities remained rather stable.
- Research funding through the Academy of Finland increased.
- Tekes has been significantly de-funded as regards R&D.
- Institutional R&D funding for public research institutions declined as well.



Shifting priorities changed the composition of Tekes' budget

Evolution of Tekes' budget



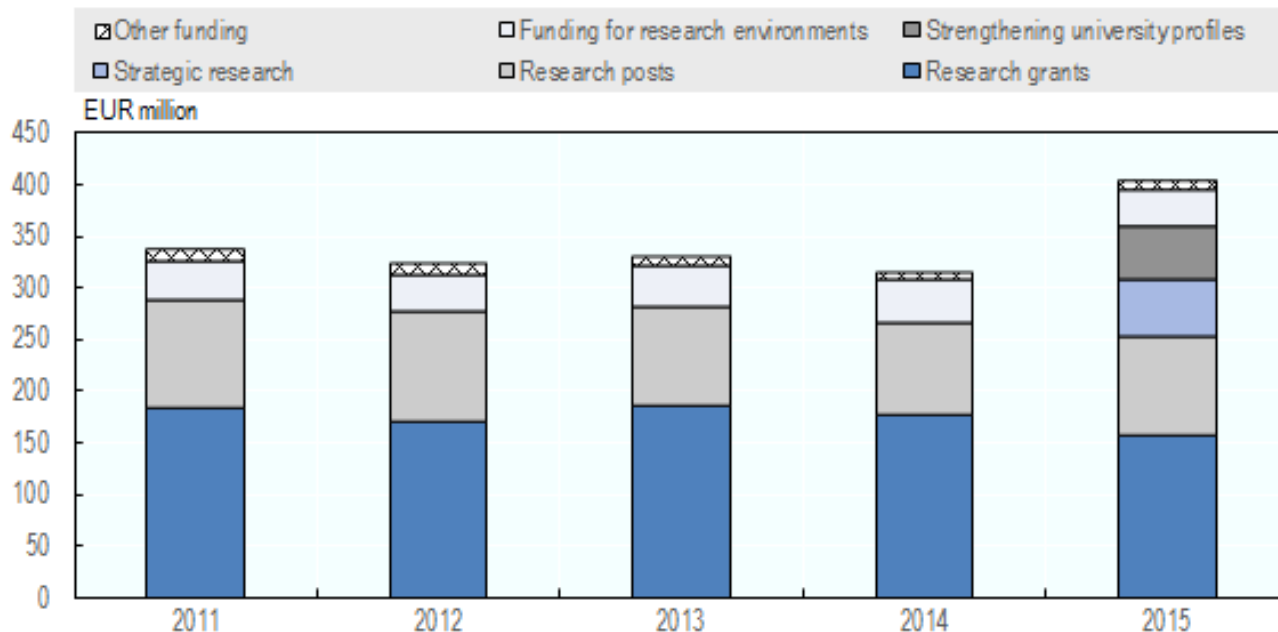
Tekes (2015).

- A combined effect of the creation of the SHOKs and of Tekes' changed role – including a stronger emphasis on entrepreneurship and SMEs – has been the reduced investment in technology programmes.
- Cancellation of the SHOK programme made Tekes lose the corresponding budget.



Increase in Academy of Finland funding related to new tasks

Academy of Finland funding decisions and funding type per year



Academy of Finland (2016).

- Grants to individual universities have been enhanced to consolidate areas of expertise.
- Recent shift to “strategic research” funding.

How can STI policy contribute to achieving Finland's objectives?

Tackling Finland's economic challenges requires

Re-balance R&D policy: Enhance applied R&D and the alignment of support instruments

Foster productivity and innovation in the business sector

Complete the modernisation of the HEIs and PRIs

Strengthen internationalisation

Develop a new Finnish vision and reinvent governance for STI

- Strengthen applied R&D and key enabling technologies
- Coordination of programmes/instruments

- Target “radical innovation” projects
- Enhance SME participation
- Make use of PPPs

- Complete reforms and foster specialisation and consolidation
- Reconsider institutional funding model

- Attract FDI and foreign R&D
- Attract talent from abroad



Numerous changes and reforms ...

- Stronger focus on entrepreneurship, SMEs.
- After the withdrawal of funding from the SHOKs programme there is a gap regarding PPP programmes.
- Discontinuation of the INKA programme.
- Reallocation of funds from institutional funding to “strategic research” funding.
- Reorganisation of public research institutions.
- Generally weakened STI governance, reflected in the evolution of the RIC.
- Apparent lack of coherence, overall
- This is a good time for a new start in Finland’s STI policy.





Develop a new Finnish vision and reinvent governance for STI

- **Develop a new vision for STI driven by societal and economic needs. Reinvent governance to generate a whole-of-government policy for innovation enabling system transitions. In this effort the Research and Innovation Council (RIC) has to take on a key role**
 - Work at the highest level of government to initiate the creation of a new unifying national vision about how to reinvigorate the economy by harnessing research and innovation.
 - Adopt a forward-looking strategy and use various types of foresight (technology, global markets/demand, socio-economic prospects).
 - Establish the RIC as an “arena of arenas” to coordinate the implementation of the vision across networks, and to keep the vision up to date.
- **Improve steering and impact of research and innovation policy by supporting stakeholder coordination to address societal and economic challenges**
 - Use new instruments to link a wide range of actors (knowledge producers, users, intermediaries etc.) in addressing innovation and societal challenges.
 - Launch a programme for PPPs and networks for tackling these challenges, enabling coordination of stakeholders whose engagement is needed to achieve systems transitions.
 - Ensure that PPPs not only cover research but also pursue broader innovation goals including “downstream” areas.



Rebalance R&D policy: enhancing applied R&D and alignment of support instruments

- **Enhance funding for applied R&D and key “enabling technologies”** (e.g. biotech, nanotech, advanced materials, advanced manufacturing), aimed at innovation capacity to address both industrial and societal challenges.
 - This will involve Tekes-style technology programmes and wider programmes linked to the agenda for resolving societal challenges. Some may be run by PPPs. Special care must be taken to close the “strategic research gap”.
- **Enhance funding for VTT and other relevant institutes** to maintain and strengthen their quality and industrial impact, and address the “strategic research” needs of industry and intermediary stages of the innovation process.
- **Consider adjusting the funding and operational model of the SRC programme:**
 - Encourage better coordination with instruments and policies for the participation of innovation actors including businesses, and more downstream innovation development.
 - Pay more attention to how research on societal challenges can be turned into concrete, viable and scalable solutions.



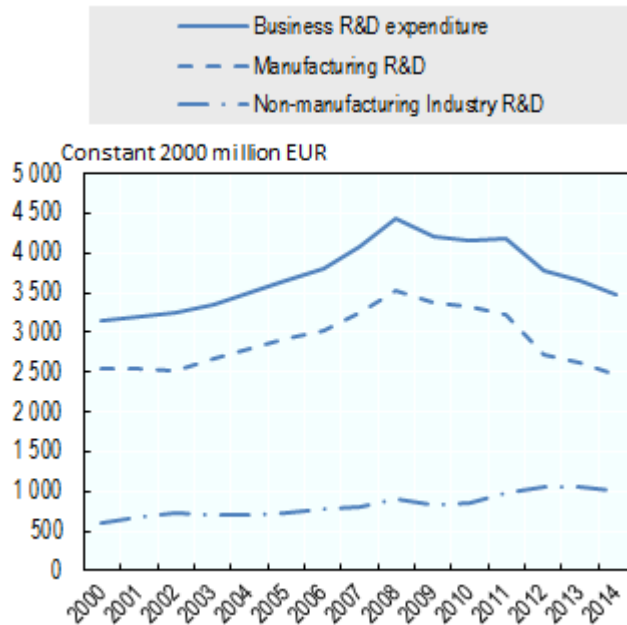
The Finnish business sector – challenges

- Few large companies and sectors dominating
 - Large firms: 53% of industry value added and 43% of employment
- Relatively few sectors with Revealed Comparative Advantage (a measure of specialisation)
 - 9 sectors with $RCA > 1$ (Sweden: 15 sectors); three sectors $RCA > 2$ (paper, wood/related products and computer and information)
- Productivity growth uneven across business sectors and deteriorated in the wake of the crisis (with the exception of ICT services)
- Difficulties by SMEs to export and integrate in global value chains (GVCs)
- Comparatively weak business dynamics (difficulties for start-ups/SMEs to grow; weak start-up rates overall)
- Decline in business enterprise expenditure on R&D (BERD), mainly due to Nokia

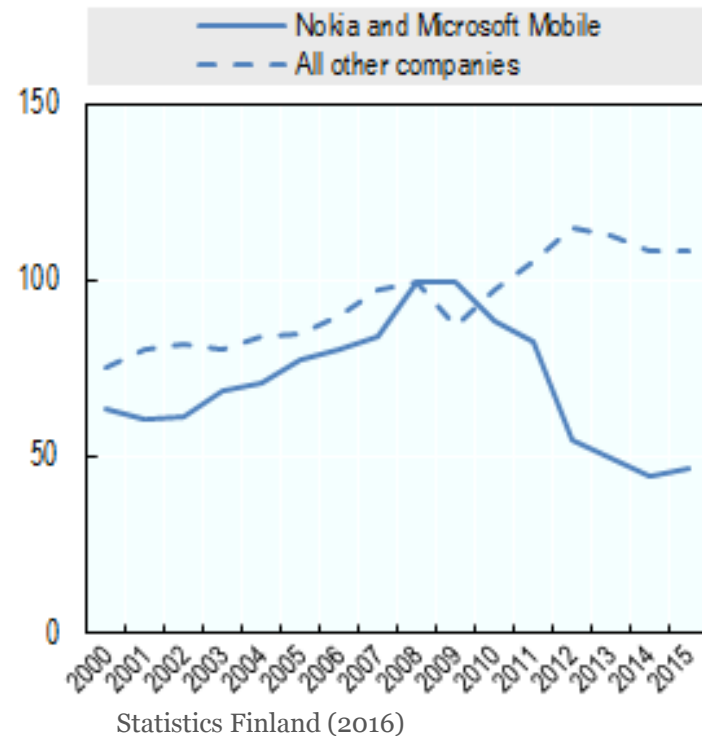


Decline of business expenditure on R&D, the Nokia effect

Business R&D (BERD)



BERD (real)



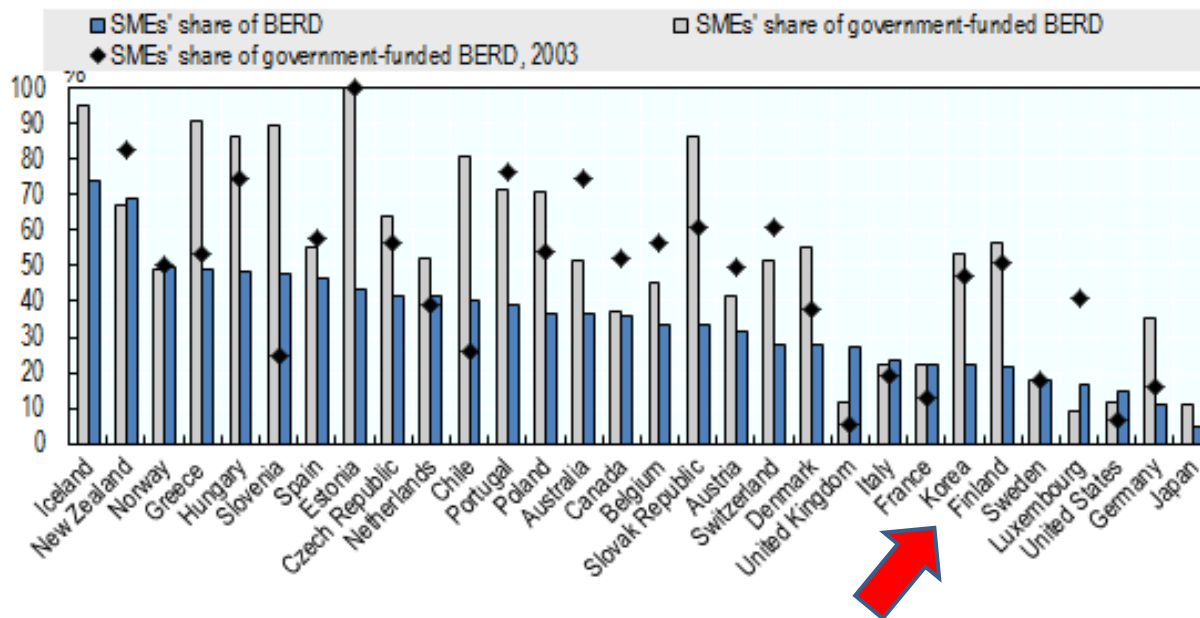
OECD (2017), ANBERD Database

- Cuts in Nokia's R&D expenditure has been the main source of the drop in Finland's BERD.
- Nokia accounted for 50% of BERD in 2010, whereas in 2015 it represented 20% of BERD, and Microsoft Mobile 10%.
- The aggregate of all other companies did not follow Nokia's trend.



Low share of SMEs in BERD

Share of small and medium-sized enterprises in BERD



OECD (2015), OECD Science, Technology and Industry Scoreboard 2015.

- The participation of SMEs in BERD is weaker in Finland than in the OECD on average.
- SMEs accounted for less than a quarter of BERD (21.8%) in 2013.



Foster productivity and innovation in the business sector

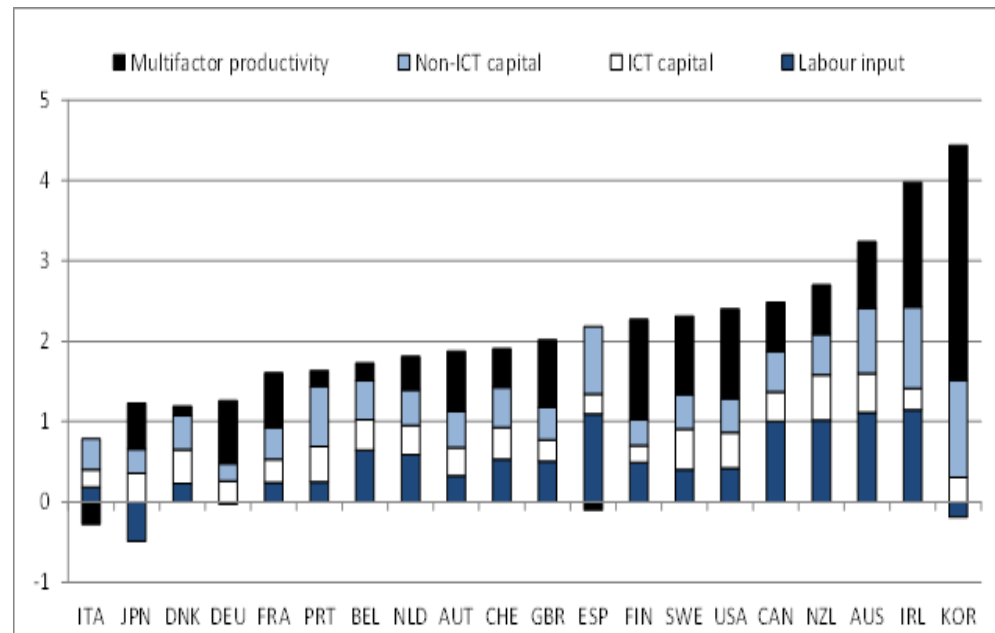
- **Strengthen public support to business R&D and innovation to address the needs for economic renewal and productivity growth**
 - Prioritise radical innovation projects with high value-added and export potential.
 - Strengthen the participation of SMEs in innovation. Promote innovation linkages between SMEs and large firms.
 - Enable SME innovation by supporting test sites and demonstration facilities; examine ways of making research infrastructure more accessible to SMEs.
- **Address (cross-)sectoral challenges through stakeholder coordination and strategic innovation agendas**
 - Support co-ordination for innovation and strategy setting. Currently there are some networks or clusters (SHOKs) but (cross-)sectoral innovation strategies, and road-mapping – identification of both technology and non-technology bottlenecks (e.g. regulation; skills) – are lacking.
 - Launch a new, more open and inclusive PPP model for research and innovation, with reinforced governance and a stronger participation of the public side in governance. Mobilise also existing programmes.
- **Increase growth opportunities through networks and demand-side programmes**
 - Develop innovation networks around public markets (needs). Scale -up procurement programmes across government agencies and regions.
 - Continue and strengthen efforts to involve the regional level, e.g. smart cities.



Role of R&D and Innovation in Growth and Development (Mohnen, 2017) – Helsinki Workshop

- **Productivity (TFP) a main driver of growth:** Investment in research and innovation account for two-thirds of economic growth in Europe from 1995 to 2007 (Bravo-Biosca *et al.*, 2013).
- **Social returns on investment in R&D are higher than the opportunity costs (*returns on physical capital*) and are higher than private returns:**
 - Two to three times bigger than private rates (Kao *et al.*, 1999); 40 % or more (Hall *et al.*, 2009).
- **Innovation and enabling STI policies contribute directly and indirectly to wellbeing (e.g. health, education ...)**

Contributions to GDP growth
Total economy, annual percentage point contribution, 1995-2013



Source: OECD Productivity Database, January 2015, and OECD (2015), OECD Compendium of Productivity Indicators, 2015, .



Complete the modernisation of the research and higher education (HE) sectors

- Complete governance reforms and consolidation in both the research and HE sectors to ensure critical mass and an efficient specialisation
 - Use funding instruments to encourage defragmentation and strengthening the research base, using e.g. centre-of-excellence (CoE) arrangements (and collaborative schemes) in both academia-initiated and industrially oriented research.
- Ensure skills are aligned with demand. Identify education needs for a changing world (skills, update programmes, improved transferability between programmes and universities).
- Encourage HEIs to develop their strategies to engage in knowledge transfer activities and contribute to economic development – next steps after profiling.
- Improve the strategic use of resources at HEIs by considering reducing the proportion under performance-based criteria in institutional funding and minimising unintended effects.
 - Consider adding an “impact” dimension to the assessment, especially if the level of influence of the performance-based research funding system on funding is to remain high.
 - Better recognise “third mission”/“societal interaction” activities (such as commercialisation of technologies addressing societal challenges) and advance a specific impact assessment and measurement agenda in this context.



Pursue foreign direct investment (FDI) and further internationalisation of R&D in the research and business sectors

- Integrate the Finnish business sector with global knowledge development and value chains through FDI and innovation networks involving foreign companies
 - Attract R&D and joint initiatives with foreign firms and institutions through the creation of joint CoEs in key areas for future competitiveness or societal challenges (e.g. digitalisation, clean-tech and health-tech).
- Further internationalise Finnish research through both inward and outward mobility and international cooperation
 - Establish a fund or some other specific instrument to head-hunt leading international researchers. This will involve competitive conditions to attract talents from abroad (both Finnish and foreign) and could part of the organisation of CoEs.
 - Ensure that immigration laws are conducive to attract talents, including timely and reasonable working permit conditions for foreign researchers and their spouses.
 - Increase the proportion of higher education conducted in English.
 - Further open faculty recruitment to global competition, based on scientific excellence.



Maintain and improve framework conditions supportive of innovation and entrepreneurship

Framework conditions are rather favourable for innovation:

- Finland's score in terms of the Ease of Doing Business is among the highest.
- Low barriers to entrepreneurship and bankruptcy legislation are in line with best practice.
- FDI regulations score above the OECD average.
- Credit remains accessible, although it has become more difficult for small firms in the very recent past.

Yet Finland could do better, in particular:

- Foster innovation through more competition-friendly business policies and product market regulation.
- Enhance flexibility in labour markets in various ways.
- Continue improving business and regulatory conditions for business creation and growth.



Thank you for your attention
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Web resources

www.oecd.org/sti/innovation/reviews