



# Session 3: Making innovation policies work in support of a recovery: key policy considerations

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# Outline

- Diagnosis following from previous sessions.
- Questions in this session:
  - What complementary policy reforms in research and innovation, entrepreneurship, infrastructure and broadband networks, “green” technologies and human capital should be considered to strengthen the recovery?
  - How can policies facilitate the transition of OECD economies to a more sustainable, “green” growth path?
  - What actions are needed to ensure that government policies are effective and efficient?
  - How should policy strike an appropriate balance between government intervention and market functioning? To what extent can government substitute for, or stimulate, market forces?
- A short 15 minutes kick off intervention.



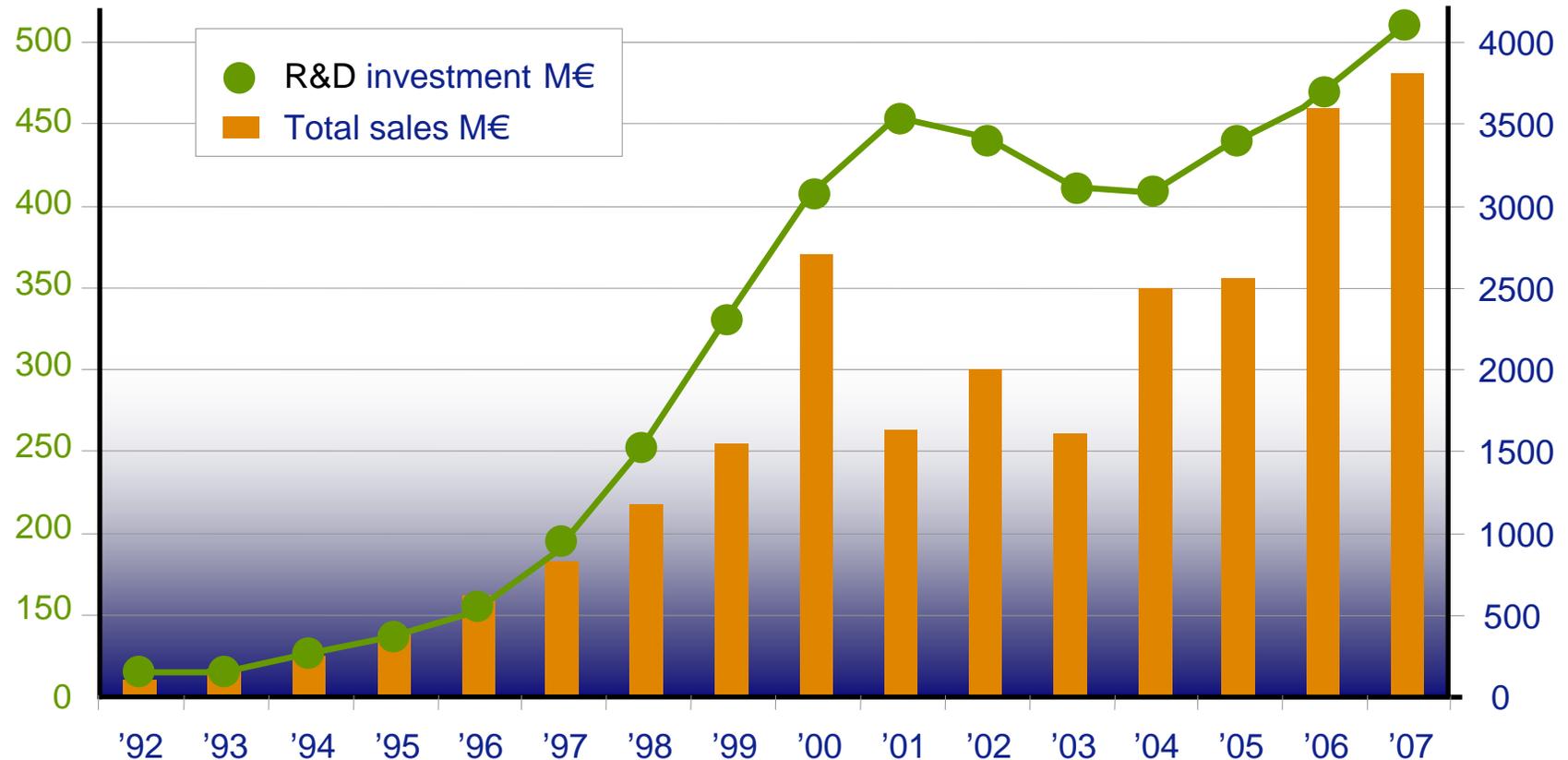
# 1. Impact of the crisis on research and innovation

- With respect to research, the anti-cyclical view the most common:
  - The negative impact of the recession on profitability forces firms to focus on the most productive segments of their output;
  - Furthermore, the opportunity costs of achieving productivity growth is lower in recessions, providing incentives to undertake research activities in downturns (Aghion and Saint-Paul, 1998; Canton and Uhlig 1999);
  - R&D-personnel will be subject to “labour hoarding”; the most qualified scientists and engineers are kept at the expense of the lower skilled personnel.
- However, with respect to innovation, the cyclical view is the most common:
  - Innovation or the implementation of new ideas, will be postponed in a recession till the boom period (Shleiffer, 1986 and Francois and Lloyd-Ellis, 2003);
  - The so-called innovation acceleration hypothesis of Gerhard Mensch (1975) whereby radical innovation would be favoured in recessions/depressions out of despair has been rejected (Clark, Freeman and Soete, 1981).
- Well illustrated in the case of ASML the world leading Dutch lithographic machine maker where the R&D intensity increased significantly over the period 2001-2003 following the dramatic downturn in IT sales of 2001, and innovation peaked with the introduction of a new generation of machines over the boom period from 2005.



# ASML's R&D

ASML's R&D budget = total revenues of one of its competitors  
Second largest, non-government R&D investor in the Netherlands



Source: ASML



# Knowledge investments not part of recovery plans?

- Traditionally macro-economists would not consider supporting research and innovation a priority in addressing the economic crisis:
  - Priority goes to short term, demand led economic recovery plans as opposed to more long term structural reform plans such as R&D investment support;
  - Given the counter-cyclical nature of research and productivity investments, the deeper the economic crisis, the quicker the structural transformation towards a knowledge economy. Thanks to the economic crisis, the EU might actually come much nearer to its Lisbon and Barcelona targets in 2010.
  - Innovation by contrast will lag behind but there is little one can do about it... successful innovation is ultimately crucially dependent on entrepreneurial market expectations: it is endogenous to the business cycle.
- The central assumption behind this view: firms will consider their R&D investments as costs “of last resort”: essential long term investments for the future of the company. However, this
  - Depends on the nature of the recession
  - The nature of funding of research and innovation.



# Nature of the crisis

- A rather unique crisis originating from within the financial sector and affecting the real economy under the form of a dramatic change in “risk aversiveness”. Private financial institutions which normally play the role of central agents in any counter-cyclical recovery policy have become “dead bodies”, in some countries even “black holes”!
- Spreading of lack of trust in future risks with private investors as a result of the huge write-offs over the last year and growing distrust in society: fertile ground for growing financial nationalism;
- The current dominant philosophy of “**Cash is king**” has a direct negative impact on knowledge investments:
  - Within stock listed companies, the CFO’s pressure to distribute as much of the limited profits as dividends – in a recession a crucial differentiating factor signalling solvability and managemnet reputation– is likely to prevail over long term R&D investment commitment.
  - Within SMEs as credit is becoming difficult to get, the focus will shift to organisational and easy to implement process innovations reducing costs and inventories. New product innovations and renewal investments will be postponed.
  - Finally high-tech starters will postpone the introduction of new product innovations. As a result seed money providers are having difficulties in finding sufficient worthwhile investment proposals. The venture capital market collapses.



## 2. Questions for this session

- Policy reforms in research and innovation, entrepreneurship, infrastructure and broadband networks, “green” technologies and human capital:
- In research:
  - Broadening of existing R&D support schemes for the private sector but also closer private-public interaction;
  - Need for complementary policies within broader trend of increased (global) specialisation of private R&D within large firms with a growing trend towards “outsourcing” in the direction of small firms.
  - Use opportunities for increased “outsourcing” of a number of specific R&D-activities in the direction of public sector (universities and other public research institutions);
  - New role, with partly public (local) funding support for some of the large private R&D labs as “open” systemic innovation infrastructure;
  - Ultimately, arguments very similar to support for systemic banks but with one major difference: not aimed at stabilisation but at enhancing growth dynamics. Example of dismantling of Bell Labs in the 80’s and impact on private R&D in US of many of those underutilized R&D managers.
- In innovation and entrepreneurship:
  - Temporary “innovation pools” between private and public research institutions and universities;
  - Temporary employment extension schemes for young PhD and post-docs at universities but with particular focus on innovative entrepreneurship;
  - General support measures for risk-taking innovative investments through a more active role of local development banks;
  - Reduced inheritance taxes for family enterprises: particularly strong in some OECD countries with major shifts in ownership expected in years to come.



# Long term growth opportunities

- In human capital:
  - Exploit to the full knowledge workers' mobility and retraining possibilities. In most OECD countries there are still many shortages for highly skilled jobs;
  - Use opportunities of the world wide increased supply of highly qualified personnel e.g. to fill labour shortages in public sector research and higher education institutions;
  - Address structural weaknesses and inefficiencies within system of higher education (Finland, Flanders).
- In infrastructure:
  - Bring forward long delayed but needed maintenance investments in knowledge infrastructure (buildings of universities, broadband infrastructure);
  - Fasten the development of various possible "lead markets" using technology procurement following the US example with respect to DARPA, NASA, NIH, etc.; Involve the private sector more actively in technology development and innovation in so-called societal innovation programmes (health, education, mobility and logistics, security);
  - Thanks to internal EU rules, such national "innovation procurement" will not result too easily in hidden support for the own national industry.;
- In "green" technologies:
  - Use the immediate local growth and employment opportunities associated with the application and diffusion of green technologies to the ful. E.g. "green" construction represents a long term productive investment both for the public and private sector, including house owners;
  - Focus the recognition of "grand challenges" on sustainable development. Use this new "mission" focus so as to bring about a brake in the current lack of trust with private investors and starters in future risk taking;
  - Make investments in sustainable investment shares and bonds fiscally more attractive.



# By way of conclusion: A less flat OECD world after the crisis?

- Historically there have been continuous shifts in public versus private funding of research and innovation, sometimes in favour of public funding (2<sup>nd</sup> World War and post-war period), sometimes in favour of private funding (80s and 90s).
  - Today given the risk aversiveness on the financial side, there is a need for stronger role of public funding;
  - Crucial for the effectiveness of research and innovation is not so much the funding origin but the performance location.
- Countries with high R&D investments (US, Finland, Korea, Sweden, Germany) typically embrace the view that the financial crisis offers opportunities for domestic structural reforms strengthening R&D and innovation, including the deployment of “green” technologies and eco-innovation; countries with low private R&D investments appear to only marginally refer to research and innovation stimulation measures within their domestic recovery plans;
- In the long term these different policy responses might signal a further growing divide between OECD countries with the group of technologically leading countries which have the policy room for investing more public resources in knowledge taking a further lead and a group of falling behind countries adjusting their specialisation towards less technologically advanced goods and services.
- The public resources for knowledge and innovation investments are up to now nowhere under pressure (even not in Island). Most planned expansionary R&D and innovation investments appear to be continued but the real test though will only come when countries will see their budgetary deficits increase rapidly over 2009 and 2010.
- It is therefore essential not to view the current expansionary public policy proposals for public knowledge and innovation investments as a free card for ignoring the many structural opportunities for increasing the effectiveness of R&D, innovation and human capital policies. In most of the smaller OECD countries there are many opportunities for more focus in research and innovation specialisation in line with those countries competitive strengths.