

National Innovation Strategies

Some lessons from OECD country-specific work

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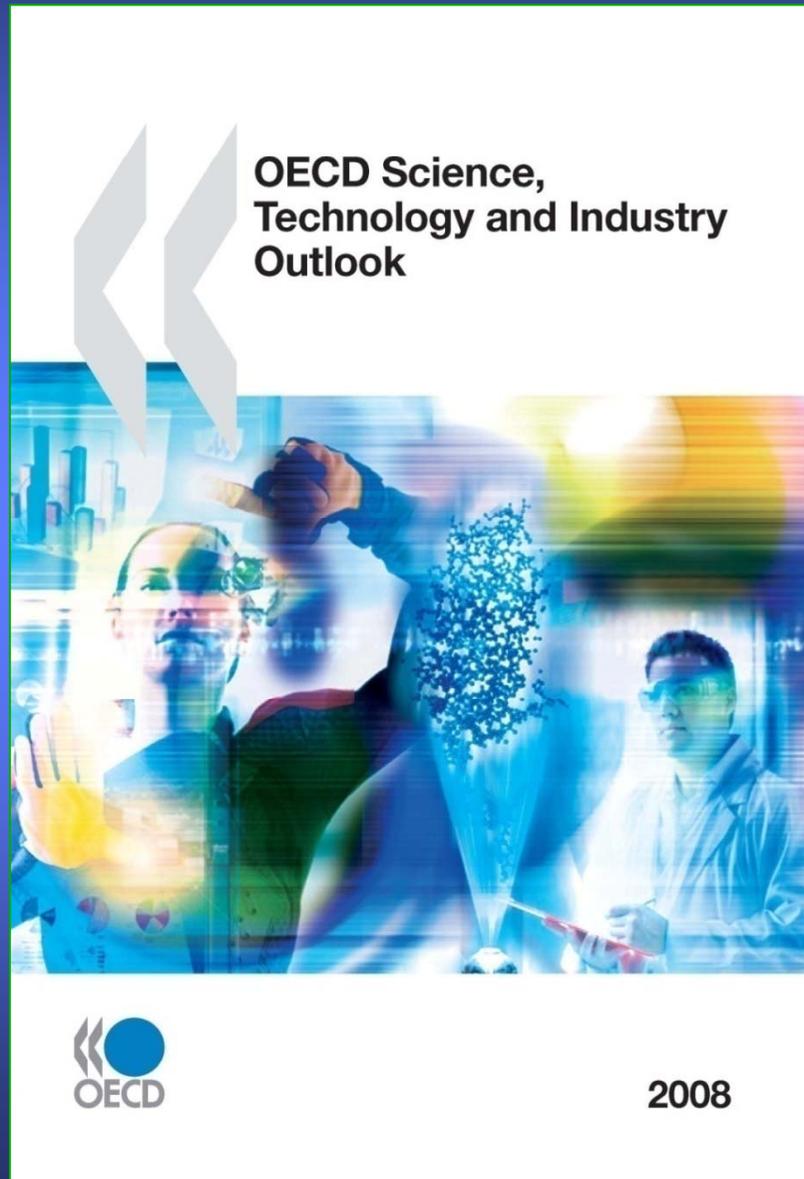
Outline

- Preamble
- The OECD Country Reviews of Innovation Policy
- Changing nature of innovation
- Implications for government policy
- Concluding remarks

Preamble

- Most countries now have high-level policy strategies to foster innovation: EU – Lisbon agenda; US - competitiveness agenda; Japan - Innovation 25, the new UK Innovation Strategy, etc. Emerging countries, especially China, show new ambitions.
- But for governments strengthening innovation is not straightforward. Some reasons that may explain these difficulties:
 - ✓ Business, not government, is the main driver of innovation
 - ✓ Innovation depends on many factors: business-friendly environment, strong education and science system, good links between science and business, etc. Coordinating policies across policy domains can be difficult
 - ✓ Improving innovation is a long-term endeavour
 - ✓ Stronger innovation imply winners and losers: if potential losers are well organised the political feasibility of innovation policy is reduced
 - ✓ Processes and drivers of innovation are undergoing deep changes
- International sharing of experiences and good practices can help. The OECD Innovation Strategy, including thematic work, a monitoring activity, and a programme of **Country Reviews of Innovation Policy** can contribute

Monitoring innovation trends and policies



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www.oecd.org/sti/outlook

OECD Reviews of Innovation Policies

- In 2005, the OECD/CSTP decided to “re”-launch a demand-driven programme of Country Reviews with three main objectives:
 - ✓ “Additional service”: help individual countries to derive more benefits from OECD work
 - ✓ “Learning tool”: deepen our collective understanding of priority issues in the area of science and innovation by analysing them in concrete national contexts
 - ✓ “Outreach tool”: help diffuse OECD work in non-member countries and facilitate the participation of selected countries in mainstream OECD work
- Scope: Comprehensive analysis of the respective national innovation system, with a focus on the role of government policy



See: www.oecd.org/sti/innovation/reviews

Country Reviews: Current status

- Completed and published:
Luxembourg, Switzerland, New Zealand, South Africa, Chile, China, Norway, Hungary
- To be completed by end 2008:
Korea, Mexico, Greece
- Under launch:
Russia, Turkey
- Requested or under discussion:
Japan, Brazil, Italy, etc.
- The reviews already cover a wide range of countries, including non-member economies, high and middle-income countries, which should allow to draw some general lessons – planned Synthesis Report

Overriding policy concerns

Growth
Market access
Development gaps
Competitiveness

+

Sustainable development
Access to key resources
Social & digital divide
Attractiveness

Policy governance **2**

National
Public

Innovation-driven socio-economic development

Policy focus

Physical infrastructure
Financial means
Technology transfer
Established large firms
High-tech sectors

1



Multi-level
Participatory

Policy mix **3**

Supply-side measures
Support to investment in S&T

Info- & inno-structure
Human resources
Joint development
Start-ups / SMEs / Networks
Innovative Clusters

Policy instruments

R&D tax incentives
Project-based subsidies
Public intermediaries



Impact of financial crisis and economic downturn

Demand-side measures
Building capabilities and fostering linkages

Programme-based support
Public/private partnerships
Public procurement

Changing nature of innovation

- Transformation of market-led innovation

- ✓ Increasing multidisciplinary scientific content of innovation (with borderlines between basic and applied research becoming increasingly blurred) ...
- ✓ ... but also trend towards a broad approach to innovation, including technological *and* non-technological innovation in manufacturing *and* services
- ✓ Outsourcing of R&D and re-combination of complementary capabilities within innovative networks
 - Examples: Norway – standard indicators do not fully reflect innovation content of economic activities (engineering-based large scale projects, services innovation); new business models and science-based innovation with strong international connections explain in part success in export-oriented traditional industries (Chile)

- Accelerated internationalisation of R&D

- ✓ Internationalisation of R&D driven by business (mainly MNE but also innovative SMEs); inward /outward FDI in R&D; globalisation of innovation networks.
- ✓ Countries' capabilities to seize opportunities differ widely
 - Examples: China attracting R&D FDI based on investment in infrastructure and HRST, versus Chile (no significant R&D FDI); Advanced economies are more able to “embed” R&D FDI within the national innovation system (Switzerland versus China and Hungary)

- Innovation is a learning and social process
 - ✓ The complexity and scope of innovation processes requires a broad set of complementary skills
 - Example: South Africa – eroding vocational and engineering skill-base jeopardising innovation capability (Switzerland is a counterexample)
 - ✓ Objectives of innovation: social (and societal) goals are becoming more prominent
 - Examples: South Africa – strong demand for innovations with positive social impact; Norway – strong drive toward innovations to address new, including global, societal needs
 - ✓ Increasing role of “social capital”; facilitating to achieve a balance between competition and co-operation; saving on transaction costs incurred by an increasingly complex system, comprising a large number of specialised organisations
 - Example: Norway – high level of trust facilitates co-operation and informal policy co-ordination
 - ✓ Complex and ambiguous impact on social equilibria
 - Examples: Regional concentration of innovation capabilities (most countries); decreasing poverty but resilient inequalities (Chile)

- The agenda for leading and catching-up countries is converging
 - ✓ The idea that countries need to “exhaust” their potential for catching up before entering “own” R&D activities is unhelpful for several reasons: own R&D enhances the efficiency of absorbing technology from abroad; the set of comparative advantage can be broadened to more knowledge-based production
 - Example: China – large-scale investment in S&T infrastructure and HRST is likely to result in a broadening set of comparative advantages, including low skill-intensive and knowledge-based production
 - Example: Korea – shows that significant level of S&T is required for successful imitation strategies, and all the more for moving up the value chain to accelerate catching up
 - Example: South Africa – dual economy characterised by high technological capabilities in one part of the economy

Implications for government policy

Some lessons
from OECD Country Reviews

Market and governance arrangements for innovation (1)

- Improving framework conditions
 - Lack of competition as a barrier to innovation appears as an issue in many countries but awareness of the role of competition policy in fostering innovation is still insufficient
 - Examples: Switzerland (e.g. barriers to entry, e.g. in infrastructure –related procurement); Mexico (telecommunication industry)
- Policy coordination and participatory governance
 - Ensure an effective policy coordination and stakeholders' participation
 - Examples: Switzerland, Mexico – high-level councils have generally failed to deliver the promised coordination; Korea – perhaps gone the furthest in trying to solve coordination problems, though with uncertain results
- Leadership
 - Involvement of the highest level of government is needed in order to secure policy attention and commitment
 - Examples: Chile – active involvement of Ministry of Finance has helped; Mexico – the lack of involvement of the Presidency has in the past left governance arrangements without a corner stone

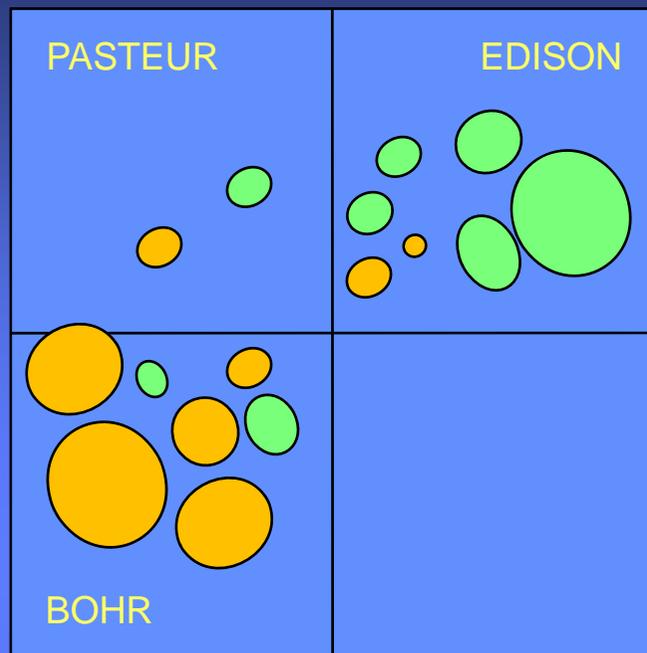
Market and governance arrangements for innovation (2)

- Commitment
 - Safeguard public funding for STI against “crowding out” by short term demands
 - Example: Norway – the Fund for Research and Innovation
- Stability / predictability of institutions and policy delivery
 - While innovations in the policy framework are necessary, frequent changes tend to be counter-productive
 - Example: Mexico – excessive instability reduces the power of incentives for R&D and innovation for both business and Public Research Organisations (PROs)
- Evidence-based policy making
 - Greater actor autonomy => greater need for accountability => use of review and evaluation => generation of strategic policy intelligence
 - Policy learning easily disrupted and often difficult to institutionalise
 - Example: Hungary – frequent changes in institutions are an obstacle to policy learning and thus evidence-based policy making

Market and governance arrangements for innovation (3)

- Steering and funding of public research organisations (PROs)
 - PROs are in need of a re-definition of their role and be better connected to the business sector, leveraging their contribution to overall performance of the innovation system
 - Examples: Mexico, Chile – need to overcome disconnect; Norway – well-developed support for industry by major PROs
 - Part of PRO's output is no longer a “public good”; drawing the border to and intensifying linkages with business has become major issue; refocusing PROs towards “Pasteur's quadrant”
 - Examples: Luxembourg – past PRO expansion into commercial services; New Zealand – PROs retaining commercially successful operations (which could be spun out).

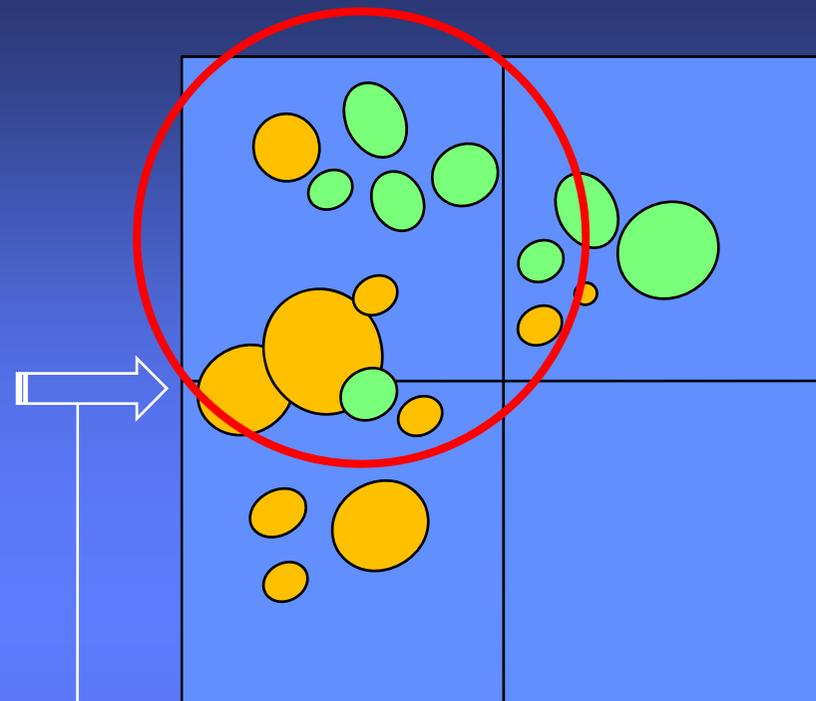
Use-inspired



Curiosity-driven

Fundamental

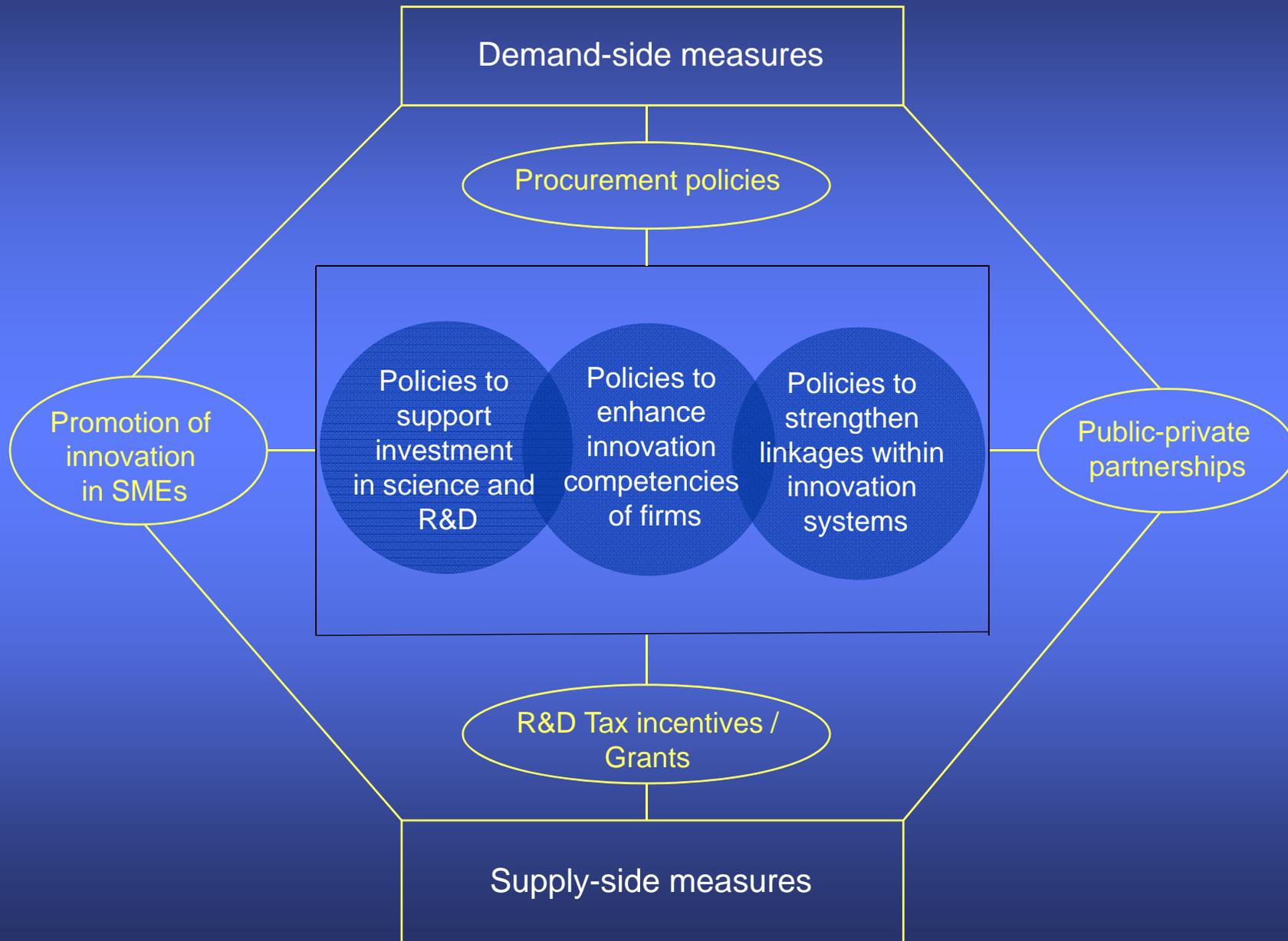
Technical achievement



● Universities ● Public Research institutes

- Large-scale national programmes in priority areas (top down)
- Public-private partnerships (bottom-up)
- Better recognition of user-driven research in evaluation
- Improve HRST mobility

Policy mixes and instruments (1)

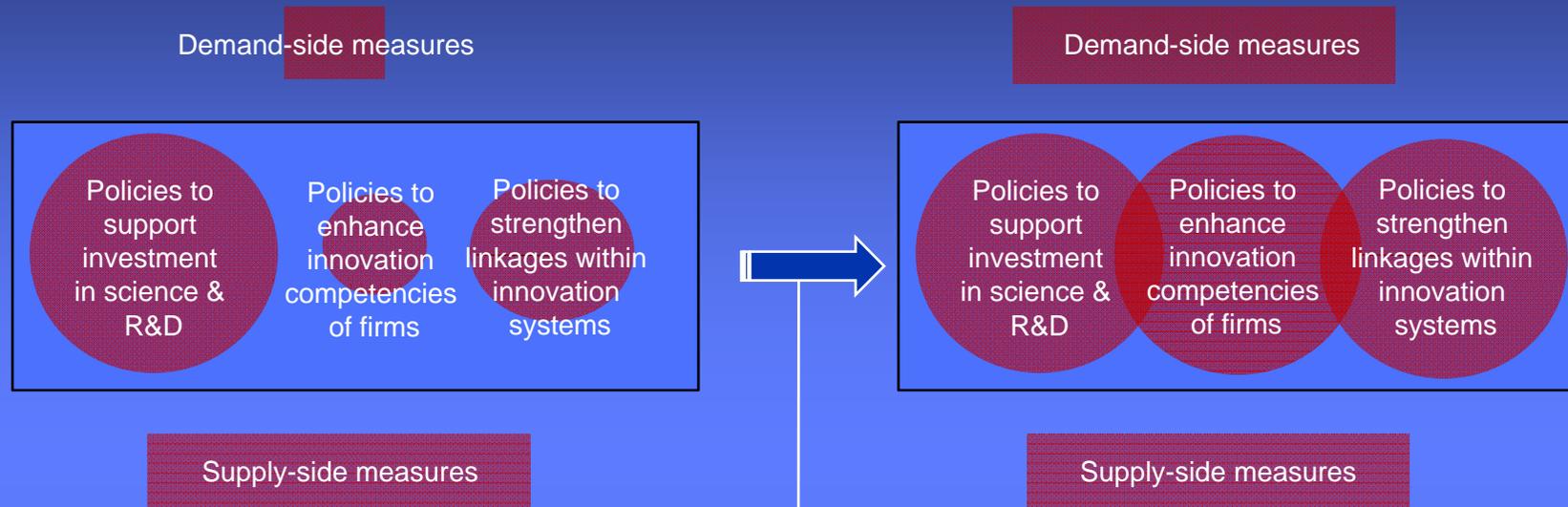


Policy mixes and instruments (2)

- Striking a balance in the set of policy instruments to stimulate business innovation along several dimensions, e.g.
 - ✓ Building capabilities – reducing financial barriers to investment in innovation
 - ✓ Direct – indirect support measures (tax incentives). Ideally, the two types of measures should be applied in a complementary way, making best use of their respective advantages
 - Example: Mexico – Heavy bias towards tax incentives mainly benefiting large firms (subsidiaries of MNEs)
 - ✓ Bottom-up – top-down approach. Bottom-up for more standard types of innovation projects, but also to gather information and induce self-organisation on new areas, e.g. by sufficiently unrestrictive competitive calls. Top-down for deliberate changes in directions
 - Example: Korea – Future Growth Engines and 21st Century Frontier R&D Programmes

- ✓ Individual project-based / ad-hoc – consortia-based / longer term support. Consortia are useful among others for triggering behavioural change (e.g., co-operation between different types of actors)
 - Example: Norway – mix of RCN support measures
- ✓ Competitive – institutional funding. The shift towards competitive funding has proved powerful incentives for PROs and universities. At the same time stability and capabilities have to be maintained.
 - Example: New Zealand – Shift towards competitive funding of PROs may have gone too far, resulting in some degree of instability and unintended side-effects induced by adaptive behaviour of PROs
- ✓ Supply-side – demand-side measures
 - Example: Switzerland – steps towards complementing “supply driven” technology and knowledge transfer from HEI to enterprises by measures that build on the demand from SMEs
 - Example: China – Intended use of public procurement to stimulate innovation

Main strategic objectives and balance between supply and demand-side measures



- Improve incentives for science-industry relationships
- Foster demand for HRST in the business sector
- Foster innovation capacity building in SMEs
- Innovation-friendly procurement policy
- Lead markets, standards

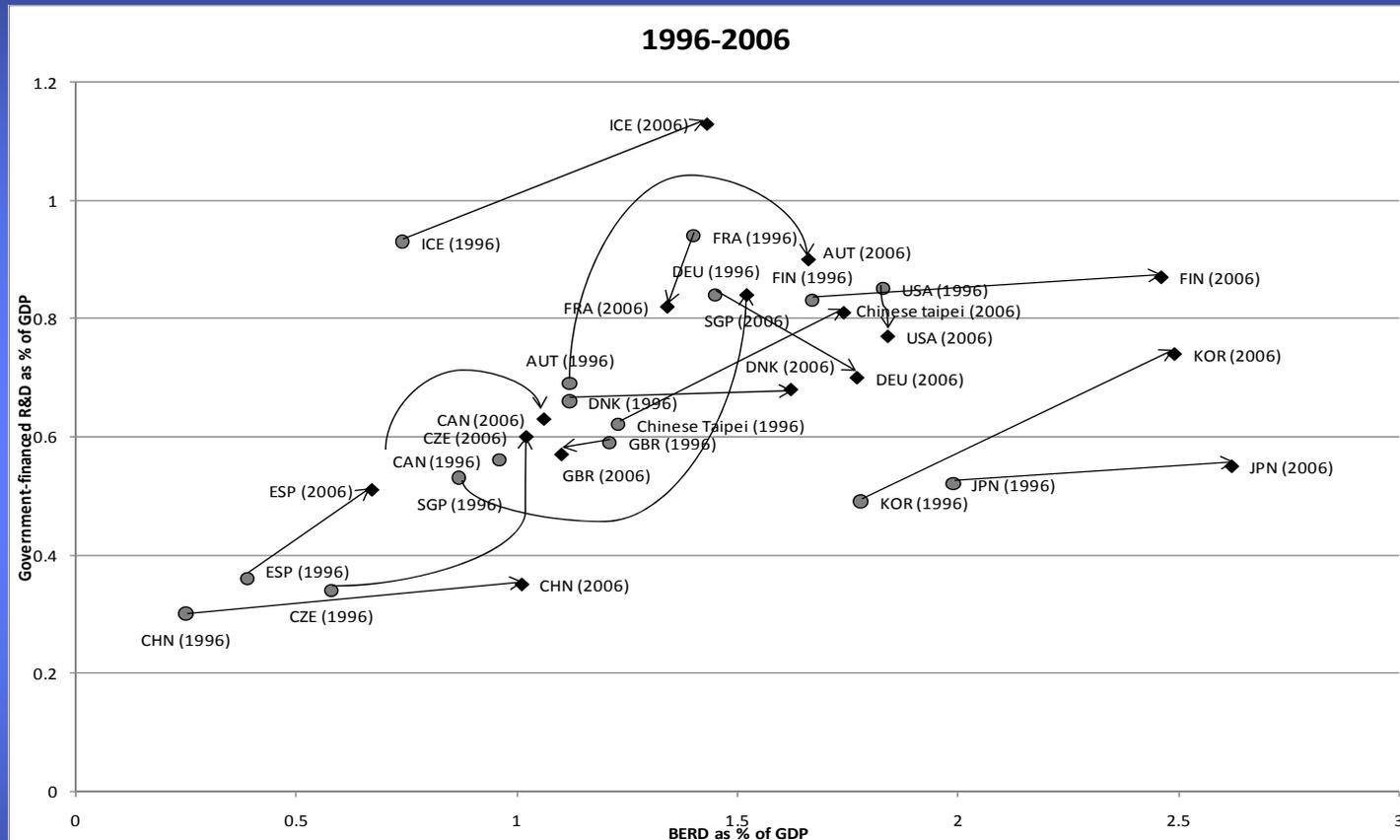
Policy mixes and instruments (3)

- Adopting well-designed, good practice instruments
 - ✓ Much evidence has been accumulated on specific instruments, based on a more systematic collection of data, evaluation, international exchange of experience, etc.
 - ✓ Experimentation and innovation in support instruments
 - Example: Chile – New tax incentive
 - Example: Hungary – Innovation Fund (offset mechanism) is innovative but has not been evaluated
 - Example: Norway and other advanced countries – Public-private partnerships for R&D and innovation. Spreading to catching-up and emerging economies
 - ✓ Pitfalls: Instruments sometimes are aimed to correct for a failure that should be addressed at its origins
 - Example: Mexico – SNI compensating for “uncompetitive” remuneration of researchers.

Concluding remarks

on the possible impacts of the financial crisis

Over the last decade, in many countries, public and private spending on R&D have gone hand in hand – a mutual leveraging



The darkest scenario would be that the financial crisis and economic downturn lead to a mutual de-leveraging

- Short to medium-term risks

- ✓ Experience demonstrates that business R&D is pro-cyclical

- Supply-side factors: declining profitability and will affect the level and patterns of self-financed investments

- Demand-side factors: some lead markets for innovative products and services will suffer

- ✓ The impact might be biased against:

- Firms which are more dependent on external financing (e.g. SMES and start-ups) due to credit crunch and increased risk aversion throughout the financial system

- Product innovation, as opposed to cost-cutting process improvements

- Longer-term opportunities

- ✓ The “cleaning “ effect of the crisis will provide new opportunities to the most efficient, innovative, firms

- ✓ The resource allocation and risk management processes will improve , with investments in innovation suffering less from the competition of alternative investments with “artificially“ boosted higher returns

- Policy responses

“What I want (we need) to avoid is getting ourselves in a position governments have done in the past, where you face an immediate problem and cut back on the things the country will need in the future”

Alistair Darling, UK Chancellor of the Exchequer, October 2008

- ✓ Innovation should be therefore part of any “expansionary package”:
 - Sustained public investment in the knowledge infrastructures
 - Sustained support to business innovation with an emphasis on:
 - Measures which are counter-cyclical (e.g. grants or loan guarantees, as opposed to tax incentives)
 - Measures to combat the drying-up of venture capital
- ✓ But on the other hand, financial reforms to prevent speculative bubbles should not reduce the future ability of financial market to take and manage the risks of innovation.

Thank you for your attention

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Web Resource:

www.oecd.org/sti/innovation