



Lessons from a Decade of Innovation Policy

*What can be learnt from the INNO Policy
TrendChart and The Innovation Union
Scoreboard*

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Executive Summary

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This report draws lessons from the comparison of (i) the research and innovation policy mix implemented in the EU27 countries plus Norway and Switzerland with (ii) their innovation performance.

The analysis uses (i) the description of research and innovation policy measures which the INNO-Policy TrendChart and ERAWATCH have collected and (ii) the performance indicators of the Innovation Union Scoreboard (IUS), previously called the European Innovation Scoreboard. The period under scrutiny is 1999-2011.

Robust trends in research and innovation policy funding

The analysis of research and innovation policy measures has detected several robust trends over this period.

The most notable overall evolution is an increasing importance of programme-based research and innovation policy channelled through concrete 'policy measures' (on which the present analysis is based) relative to institutional funding (i.e. the budget for the functioning of public organisations, mostly comprised of salary and administrative costs). This shift can be also observed in the number of policy measures that grew steadily until 2009. At that point, a process of re-examination and re-organisation of policy instruments for research, development and innovation (RDI) can be observed and can be attributed to the effects of the economic crisis. Overall institutional funding still constitutes a large share of total government expenditure on RDI.

Programme-based research and innovation policy channelled through concrete 'policy measures' increased in importance

The three dominant categories of policy measures implemented over the period, in terms of number and funding, are the following:

- Funding for specific public research programmes allocated in a competitive manner and referred to as 'competitive public research' in contrast to institutional funding of organisations, allocated as part of their budget appropriations;
- Measures aiming to foster collaboration between public organisations and businesses on RDI programmes, referred to as 'collaborative RDI programmes';
- Direct support to businesses for RDI through grants or loans.

Awareness-raising measures, support services for innovation, skill development, cluster programmes and support to networks carry much less financial weight in programme-based policy budgets. Although the availability of skilled people is often cited as one of the key challenges, there has been only a small share of funding devoted to support innovation skills development.

Funding allocated to support innovation skills development has been smaller than expected

Across the forms of funding, the analysis demonstrates a focus on industry-science collaboration. In the last decade, policy measures have been shifting away from individual research subsidies towards collaborative schemes in the expectation that these measures might contribute to higher innovation performance. This shift reflects the increasing emphasis on the commercialising of the results of research and development (R&D).

Policy measures have been shifting away from individual research subsidies towards collaborative schemes

Likewise, a slight trend towards subsidised loans as compared to grants is noted, although grants remain the most frequently used form of funding.

The analysis also shows increasing support for non-technological innovation in organisational innovation, marketing or design.

Despite those changes, funding priorities remain very much oriented towards scientific and technological research

The average duration of policy measures across all countries has been seven years, with a somewhat longer duration of those instruments that have been used in more innovative countries. This might reflect the maturity of innovation policies in innovation advanced countries and the shorter history of policies in new Member States.

In spite of these observable trends, funding priorities have not changed significantly in any country and prove to be very strongly oriented towards scientific and technological research and development.

Homogeneity and stability in the national innovation policy mixes

Firstly, the analysis shows that the policy mix pursued by each country has remained quite stable over the past twelve years. It confirms that changes to a policy mix require either a much longer time period or a more substantial 'policy push' if a country wants to reform its innovation system.

Secondly, the analysis evidences a relative homogeneity of policy mixes across countries despite them having fairly wide differences in technological and economic developments. This homogeneity of policy mixes may reflect the objective of raising the innovation performance but it also stems from the emphasis put on 'best practices' at the expense of a critical understanding of the specific challenges affecting each country and of an informed discussion on the most appropriate ways to address them.

When differences between policy mixes in countries are more closely scrutinised, the analysis discerns five different profiles. They are applied by countries which belong to different performance groups according the 2013 Innovation Union Scoreboard (IUS) – please see summary in the table below.

IUS 2013 performance groups	Policy mix group
Innovation leaders	2 – Science-collaboration focused: Finland, Germany, Sweden 4 – Business R&D and innovation: Denmark
Innovation followers	1 – Science-competitive R&D focused: Ireland, Slovenia 2 – Science-collaboration focused: Estonia 3 – Commercialisation-driven: France, Netherlands, UK 4 – Business R&D and innovation: Austria, Belgium 5 – Science and business RDI focused: Cyprus, Luxembourg
Moderate innovators	1 – Science-competitive R&D focused: Malta 2 – Science-collaboration focused: Greece 3 – Commercialisation-driven: Italy 4 – Business R&D and innovation: Czech Republic, Hungary, Spain, Portugal 5 – Science and business RDI focused: Slovakia, Lithuania
Modest innovators	1 – Science-competitive R&D focused: Poland 2 – Science-collaboration focused: Latvia 5 – Science and business RDI focused: Bulgaria, Romania

1 – *Science-competitive R&D focused*: Focus on competitive R&D programmes with an increasing share of business innovation support measures and the use of R&D tax incentives

2 – *Science-collaboration focused*: Focus on collaborative R&D, support for loan and venture capital funds and no use of R&D tax incentives

3 – *Commercialisation-driven*: Focus on technology transfer mechanisms, strong support for entrepreneurship, loans and venture capital and extensive use of R&D tax incentives

4 – *Business R&D and innovation*: Focus on direct business R&D and business innovation and use of R&D tax incentives

5 – *Science and business RDI focused*: Focus on competitive R&D programmes and no use of R&D tax incentives.

The analysis tends to confirm the mismatch between the innovation performance and the policy models which are implemented in countries. For example, the 'Business R&D and innovation' policy mix model can be found in leaders, followers and moderate innovators but not in modest innovators that might be expected to follow this policy mix as they are very weak in terms of business RDI.

Likewise, the prevalent research orientation of innovation policies may be appropriate for technology leaders but not necessarily for modest and moderate innovator countries that have, in principle, less absorption capacity for businesses to innovate.

Countries should be encouraged to develop their own specific policy models to a much greater degree

Countries should be encouraged to develop their own specific policy models to a much greater degree, so that each model represents a unique response to the particular challenges that each country is facing.

The policy mix must fit national conditions

The analysis indicates that no policy mix model is superior to any other in fostering innovation performance. Indeed, during the past decade, no country has substantially or lastingly moved up or down a performance group.

Country policy mixes do not necessarily respond to country specific innovation challenges and could be made more effective by a reorientation

It cannot be expected that there are policy models that are successful or less successful across all countries; a chosen model must be workable in relation to the conditions of a country. The review shows that the majority of the country policy mixes investigated do not necessarily respond to country specific innovation challenges and could be made more effective with some degree of reorientation.

Obviously, upgrading the innovation performance of a country and how this translates into concrete economic outputs cannot be limited to the sole innovation policy mix. Technology accumulation and innovation are strongly shaped by favourable or less favourable framework conditions and by the broader institutional environment. Workable innovation policy mixes cannot compensate for weaknesses in the framework conditions.

This limitation is particularly relevant when it comes to bringing RDI policies closer to the market and providing the right incentives for businesses to develop their investments in this respect. The effectiveness of policies aiming to boost collaboration with public research and/or to directly support business RDI activities requires specific assessments of the innovation capacity of businesses in the country concerned.

Effectiveness of policies to foster industry-science collaboration

The 'Science-collaboration focused' policy mix model can be found in all IUS groups and its focus on fostering cooperation between industry and research organisations has been at the core of EU Member States' innovation policy throughout the decade.

A mainstream thread in innovation policies is the 'systems of innovation' perspective, which is based on the assumption that innovation is an interactive process. Accordingly, this approach is focused on the importance of links. However, it cannot be an answer to everything. Other elements need to be brought into the equation, most notably the capacity of companies to 'absorb' the results of research.

Funding devoted to fostering industry-science links is positively associated with higher innovation collaboration between firms, education and research institutes

The analysis suggests that funding devoted to fostering industry-science links is positively associated with higher innovation collaboration between firms, education and research institutes.

Nevertheless, the use of industry-science links as a general solution and as a widespread instrument in all EU countries should be subject to greater scrutiny. Working on such links and interactions seems to be an appropriate policy response in a context where the major actors, such as firms and universities, are strong and well-organised. However, fostering links is a much less effective solution when these entities are weak, as is often the case for moderate and modest innovators.

In countries that are technology leaders and in some follower countries, a proliferation of global knowledge networks requires a re-examination of national science-industry links within a global context. International knowledge networks complement industry-science links. This new situation requires a much more forceful internationalisation of research organisations than has been the case to date.

A much more forceful internationalisation of research organisations is required

In countries with weak business RDI, where businesses cannot become equal partners in collaboration, the policy focus should equally support business RDI activities.

Mixed impact of grants to support business RDI

The measures targeting business RDI have given differentiated results. Looking at SME innovation as a performance indicator, the study suggests that support measures for start-ups and venture capital that are provided through financing instruments other than grants are more effective than direct subsidies to raise business innovation performance. Market-oriented support benefits SMEs further by bringing additional knowledge about market conditions.

Market-oriented support benefits SMEs

More support for innovation uptake in a specific market context should therefore be provided, particularly in modest and moderate innovators, where policies and funding are often too skewed towards science and leave very little for the support for business RDI. If those budgets were to increase, measures targeting the adoption of innovations on the demand side may prove to have more widespread effects for SMEs than direct support for RDI. A lasting improvement of SMEs' innovation performance could eventually improve their potential to engage in research-industry collaboration.

Measures targeting the adoption of innovations on the demand side may prove to have wider-spread effects for SMEs than direct support for RDI

The study and the database of policy measures underpinning the analysis are posted on DG Enterprise's website at http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/trendchart/index_en.htm.