INNOVATION POLICY MIX FOR BUSINESS R&D AND INNOVATION

Rationale and objectives

Recent years have seen increased interest in the "policy mix" to support business R&D and innovation. This view of the policy landscape reflects a growing appreciation of the interdependence of policy measures and an understanding that the performance or behaviour of innovation systems requires the adoption of more holistic perspectives.

Questions regarding the policy mix are not confined to assessing existing policy arrangements. They also extend to the design of new ones. Thus, a policy mix concept can be used *ex ante* to assess the fit or lack thereof of new policy measures as well as *ex post* to evaluate the performance and fit of an existing array of policies.

Major aspects

New policy instruments are typically introduced into settings that already contain an array of instruments, often with the same or overlapping targets. The effectiveness of a policy instrument almost always depends upon its interaction with other instruments. These are often designed at different times and for somewhat different purposes. In principle, the selection and design of policy instruments should take account of such interactions, as these may conflict with as well as reinforce each other.

Accounting for such interactions is far from straightforward, however, for a number of reasons. To begin with, an expansion of the range of objectives of innovation policy and of the bundles of instruments deployed has made for an increasingly complex policy landscape. This widening of the "frame" of innovation policy has led to new rationales for policy intervention and has opened up a larger toolbox of policy instruments. Beyond core innovation policies, such as S&T and education, there are other policies whose impacts must be taken into account, *e.g.* taxation policy, competition laws and regulations, etc., as they constitute the framework conditions for innovation.

Achieving coherence and balance in the innovation policy mix is an important goal. This can be hindered by the compartmentalisation of relevant policies in different departments and agencies. The primary objectives of such policies may not be support of business R&D and innovation.

It is important as well to avoid inefficiencies arising from operating too many schemes at too small a scale. The incremental accretion of policy instruments, if widespread and long-standing, can result in complex and dense policy mixes. As the instruments built up over time normally have differing conceptions of the causes of specific problems and variations in how problems are framed, this also makes achieving policy coherence difficult. Using the policy mix concept in policy assessment and design work helps draw attention to inconsistencies and redundancies.

In a more dynamic perspective, finding an appropriate policy mix is not a task that is solved once and for all, since the scope and content of government policies evolve, driven by changes in external factors as well as in the level of economic and institutional development and the level of sophistication of government itself. These in turn influence both the set of attainable goals and the ability to achieve them.

Recent policy trends

Policies and associated instruments can be characterised in several ways: their target groups, their desired outcomes, the funding mechanism employed. Many of the most

popular characterisations are binary in nature, *e.g.* supply-side *versus* demand-side instruments, but should be interpreted not as alternatives but as complements. A key challenge is to strike an appropriate balance, taking into account the current state of the innovation system concerned and a vision for the future. The *OECD Science Technology and Industry Outlook 2012* policy questionnaire therefore invited countries to rate the balance in the policy mix for business R&D and innovation over time (ten years ago, today and in the next five years) for five policy categories. The results are shown in Figure 6.1 and are discussed below.

Population-targeted versus *generic (non-population-targeted) instruments:* Figure 6.1[a] suggests that many countries have moved towards more population-targeted instruments over the last decade and that this development will continue in the next five years. Such instruments target small and medium-sized enterprises (SMEs) and young firms, as well as particular sectors.

Technology-targeted versus *generic (non-technology-targeted) instruments:* Figure 6.1[b] shows that countries vary markedly in the balance of technology-oriented and non-technology-oriented instruments. While the aggregate changes little over time, there is considerable movement in individual countries; around 80% of those answering this question indicated past and/or future changes in the policy mix, with almost as many countries moving towards more technology-oriented instruments (*e.g.* Brazil, Greece, Slovenia and the United Kingdom) as moving towards more generic instruments (*e.g.* the People's Republic of China, Finland, Germany and Switzerland).

Financial versus *non-financial instruments:* Figure 6.1[c] shows that the bulk of support to business R&D and innovation has been financial in nature. While there has been some movement towards more non-financial instruments in about half of the countries answering this question, the balance in about three-quarters remains at the financial instrument end of the spectrum.

Direct versus *indirect financing instruments:* Direct financing instruments include credit loans and guarantees, repayable advances, competitive grants, technology consulting services and extension programmes, innovation vouchers, equity financing and venture capital investments etc. Indirect financing instruments include tax incentives on R&D and innovation, which may be both expenditure-based (R&D tax credits, R&D tax allowances and payroll withholding tax credit for R&D wages) or income-based (preferential rates on royalty income and other income from knowledge capital). The general trend across countries has been to increase the availability and generosity of R&D tax incentives, making the policy mix more indirect over time (see policy profile on Tax incentives for R&D).

Competitive versus *non-competitive instruments:* Figure 6.1[d] shows a strong preference for competitive instruments, *i.e.* those using performance rather than eligibility criteria in selection processes. Around 40% of countries answering this question indicated a shift towards more competitive instruments.

Figure 6.1. **Changing balance in the policy mix for business R&D and innovation, 2012**

Based on country self-assessments

**A. Population-targeted versus generic instruments**
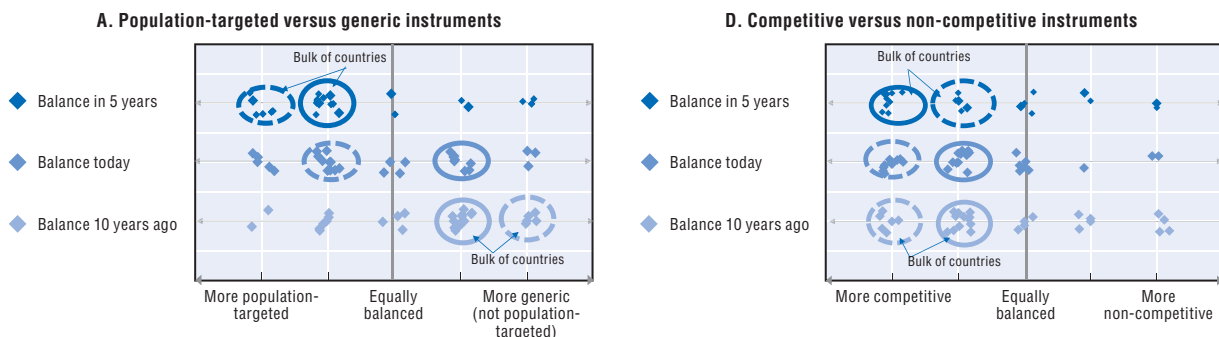
Population-targeted refers to instruments targeted towards specific populations, e.g. types of firms, SMEs or new-technology-based firms, specific sectors, etc.

D. Competitive versus non-competitive instruments

Competitive policy instruments are granted after a selection process based on established criteria of performance. Non-competitive policy instruments may be granted universally or after a selection process based on eligibility criteria.

B. Technology-targeted versus generic instruments
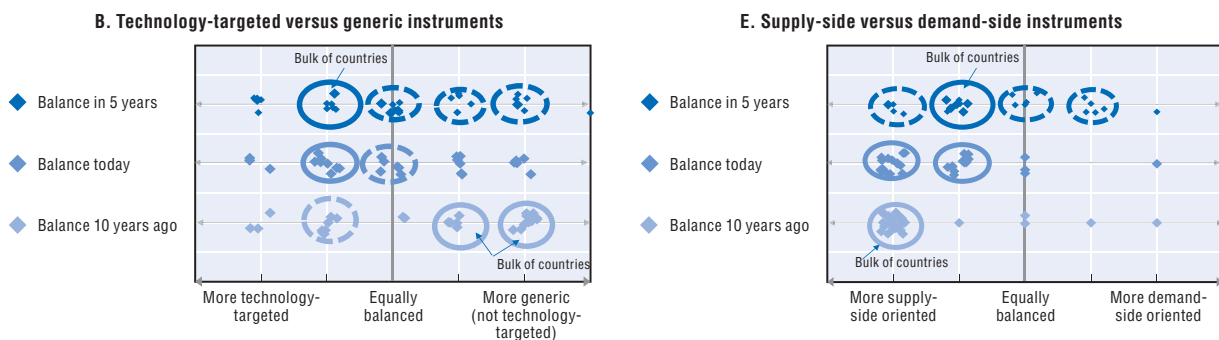
Technology-targeted refers to instruments targeted at specific technological fields of R&D and innovation, e.g. biotechnology, nanotechnology, ICT, etc.

E. Supply-side versus demand-side instruments

Supply-side policy instruments aim to boost knowledge production and supply in order to accelerate knowledge spillovers and externalities. Demand-side policy instruments focus on boosting market opportunities and demand for innovation as well as encouraging suppliers to meet expressed user needs.

C. Financial versus non-financial instruments
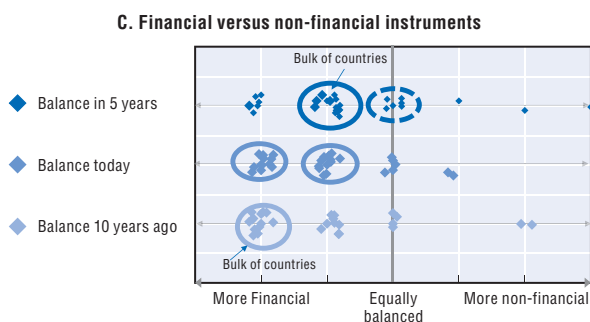
Financial instruments include both direct (credit loans and guarantees, repayable advances, competitive grants, innovation vouchers) and indirect funding (R&D tax incentives), while non-financial instruments include the provision of services, organisation of events, information campaigns, etc.

Source: Country responses to the OECD Science Technology and Industry Outlook 2012 policy questionnaire.

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Supply-side versus *demand-side instruments:* Figure 6.1[e] confirms the traditional focus on supply-side instruments but also the recent emergence of demand-side policy to stimulate and articulate public demand for innovative solutions and products from firms. Many countries indicate that the next five years will see increased emphasis on demand-side instruments, though the majority expect supply-side instruments to remain dominant.

In summary, based on countries' self-assessment of their policy mixes, it is evident that the balance of their policy mixes differs and that these balances change over time. Of course, given the nature of the data, results should be interpreted with caution. They provide an indicative rather than a fully reliable picture of variation and change. Nevertheless, the results tend largely to confirm common beliefs regarding policy mix balances and their directions.

References and further reading

OECD (2010), "The Innovation Policy Mix" in *OECD Science, Technology and Industry Outlook 2010*, OECD, Paris, pp. 251-279.