Strategic policies for capabilities acquisition and development: A taxonomy of policy models in terms of S&T priorities setting

Abstract submitted to the 6th International Globelics Conference "New insights for understanding innovation and competence building for sustainable development and social justice" to be held in Mexico City, 22 – 24 September, Mexico City

Authors:
- Manuel Mira Godinho (mgodinho@iseg.utl.pt), UECE / ISEG.UTLisboa
- João Caraça (jcaraca@gulbenkian.pt), ISEG.UTLisboa and Gulbenkian Foundation

Abstract

1. Objectives adressed by the paper

In recent years there has been a wide discussion in international policy fora on:

- the intrinsic value of countries defining S&T priorities with regard to national development and innovation policies;
- whether those priorities should be made explicit by policy makers or only taken as implicit and formulated in general terms;
- the extension of those priorities, in terms of number of objectives and specifying detailed goals;
- the degree of involvement of different economic and social actors in the priorizing of certain areas.

This paper is aims at assessing the international situation with regard to these issues, by comparing a group of the most developed economies and the BRICS group of emerging economies.

2. Background of the issues tackled by the paper

The publication of "Science the Endless Frontier" in July 1945 signalled the deep change occurred in the relationships between science, technology and society as a result of the war effort. In fact, the promise of modern science that through the knowledge of the laws of nature we could transform the world was finally being fulfilled through the development of science-based technologies. The main points of "Science the Endless Frontier" were that science was the new future of the US, the "new (and endless) frontier", that it was necessary to organize the application of new scientific knowledge to

technology and that the strengthening of the scientific basis was a legitimate concern of government.

But it took more than a decade (the launching of Sputnik by the USSR in 1957) to make the American public and society aware of the need to advance in new scientific fields leading to promising technologies. On May 25, 1961, J. F. Kennedy announced to the US congress his plan of landing a man on the Moon and returning him safely to Earth before 1970. As it is well known, the efforts associated with this objective had a strong impact on the S&T performance of the US economy in the coming years. Now, more than 4 decades latter, the US still keeps a strong flow of public resources to basic and applied R&D, namely in relation to the health, energy, defence and food sectors, through a complex system of federal agencies, public labs and research universities. It is widely recognized that these US arrangements have generated important spillovers harnessing the development of microelectronics, IT, biotech, the internet and other civilian and military technologies.

Many other countries have developed comparable systems of setting up S&T priorities. It is the recognition by both orthodox and heterodox economists of a market failure in R&D activities that has led to a generalised support of scientific activities and, in many cases, also of pre-competitive R&D. However, apart differences in the sheer volume of R&D financing, important variation exist in the institutional arrangements for priorities' setting up. In some cases the resources are distributed among disciplinary areas and then allocated exclusively or mainly in accordance to scientific merit and other academic criteria. In contrast, in other cases clear technological options are identified and the scientific priorities ensue from those options. While the degree of public intervention on these matters varies significantly, in the more advanced countries it is common nowadays that the private sector also participates in the financing of science, thus affecting the priorities. Further, the participatory mechanisms vary widely, with different models of parliamentary intervention, demand for scientific advice or systematic inquiry of S&T stakeholders.

3. Methodology

By recognizing the variety of solutions that have been put into practice, the purpose of this paper is to identify the main lines along which the national systems for defining S&T priorities differ. The paper will concentrate on the developed economies (OECD area) and in the emerging (BRICS) economies. In the attempt of proposing a taxonomy of policy models in this area, we will consider how priorities are defined in relation to major societal concerns, such as global warming, energy sustainability, transportation or potential pandemics. In addition to (i) the identification of what the priorities are by analyzing the amount of resources devoted to different areas etc, we will assess (ii) whether there is a proper agenda for priorities setting in S&T, (iii) what is the degree of formalization of the approaches put forward, and (iv) what sort of arrangements have been set up to involve different actors (business firms, academic organizations…) in the process.

In a first stage the paper will deal with quantitative indicators which reflect the S&T choices of different nations. In a second stage a questionnaire sent out to S&T experts in several countries will be analyzed allowing for a characterization of what the national approaches to defining S&T priorities are. The quantitative indicators and the information gathered through the questionnaire will be integrated into a database and submitted together to a cluster analysis, allowing for the identification of the major 'models' of setting up national S&T priorities.

4. Expected results

The paper will therefore have a practical value for both policy-makers and analysts in the sense that it will allow them to observe how each country tackles this issue of S&T priority setting in relation to the main approaches or 'styles' of strategic policy-making in the area. Further this sort of systematic information might be particularly relevant for countries where the S&T system is undergoing rapid changes or for the developing nations to whom the definition of S&T priorities is becoming a central aspect of their policy agenda.

Key Words: S&T policies; strategic policy-making; S&T priorities