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Foresight on biopharmaceuticals: Designing foresight methods for Spanish biopharmaceuticals [☆]

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Abstract

This paper has as its starting point the analysis of the systemic failures in the Spanish Biopharmaceutical Innovation System grounded in the study carried out by the same authors for the OECD between 2002 and 2004. Based on the evidence that one of the main failures is the lack of sufficient linkages between the different actors involved in the dynamic of the system, this paper proposes third-generation foresight as an instrument of science and innovation policy for resolving the problem of systemic failures. Foresight exercises could become an important instrument for reorienting policy, building new networks and linkages among the different actors, bringing new stakeholders into the strategic debate, exploring future opportunities for investment in science and innovation activities, etc. The objective of this paper is the design of a foresight exercise on biopharmaceuticals with the aim of solving, or at least reducing, the failures of this Spanish sectoral system of innovation and in consequence making it stronger.

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1. Introduction

Several factors have dramatically altered the conditions for firms in the production and diffusion of innovation leading to changes in the conditions for public intervention in research and technological

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development (RTD). As examples of these factors, we can mention the globalization of markets, the emergence of new markets and new competitors on technological issues, the increasing internationalization of companies and concomitantly of their research and innovation activities, the relationship between science and technology, the rising cost of RTD and the increasing arrangement of strategic alliances to cope with this and the rise of knowledge as the main economic source of corporate wealth creation. In this context, the logic of doing business and creating value has changed. Successful firms have to keep innovating to stay ahead of others. Even when the markets are the best drivers for growth and innovation, public intervention is absolutely necessary to create adequate conditions in which innovation can flourish.

There is no discussion about the fact that the success of countries is based on the success of their businesses. As Stahle [1] points out, the competitiveness of a nation these days lies not only in innovation but in being continuously innovative, i.e. a “*self-generative capability*”. The economic growth and the productivity of a nation are highly dependent on its investments in RTD. Consequently, over the last decade, this has been a priority for Spain, and indeed the whole European Union. The ambition of EU is to acquire a leading position in the global economy in comparison to Japan and the US by making a significant investment in science and technology. This is why the EU has decided to fix investment in R&D at 3% of GNP, with two-thirds of funding coming from the private sector by 2010.

1.1. Setting the context: the dynamics of innovation systems

The concept of systems of innovation related to geographical boundaries (national or regional) has gained support as an explanatory variable for the size, role and performance of innovation within the economy of each country or region. The national or regional system of innovation framework analyses specific factors influencing the companies’ innovative capabilities with respect to the level of political influence on their environment. This concept depends on the interaction between a series of actors whose actions and interactions are influenced by a set of factors: The financial subsystem, the business subsystem, the legal framework, the regulations, the skills of human resources and their mobility, the social relations and the way in which negotiations are practised. The components of the system are responsible for the accumulation and diffusion of knowledge, are involved in the education and training of the population, develop technology, produce new products and innovative processes, and distribute them.

The dynamics of the concept of a National System of Innovation (NSI) relies on this multi-intervention of actors. When we are talking about NSI we are not referring to any specific institution nor to particular activities but to a way of articulating diverse institutions and activities. We refer to a system because there is an ensemble of elements and actors which are internally differentiated but whose joint action in a harmonic and integrated way, represents the “*raison d’être*” of an NSI. From this, it follows that the general objective of an NSI will be the establishment of a broad framework which improves the concerted action of all the elements (their connection and fluidity) and helps to structure, drive and foster the sciences with the support and/or integration of science and technology aiming to contribute to the increase of the cultural, social and economic patrimony of the country. Another view of the system of innovation concept has looked at non-geographical types of boundary, e.g. those of an economic sector (from the “*sectoral system of innovation*” concept of Malerba [2]). Another integrative view uses the system of innovation concept to combine the analysis of sectoral activities within given geographical limits. In this approach, the system is composed of several agents and institutions, each one of them

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