National Systems of Innovation Using an Application on EU Data

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INTRODUCTION

Innovation is a crucial part of today's economic growth and the overall advancement of society. At the same time, this accelerator contributes to the divergence in growth between the economies that can and those that cannot afford to have innovation as a corner stone of their economy. Lack of innovation can have many sources that range from a lack of the innovative spirit of society to a lack of resources (e.g. funding, equipment, human capital). Regardless of the source, it is found that often the private sector's push is not enough to close the gap between the underdeveloped and developed economies, and it is not enough to achieve innovation-related societal goals as the private sector's orientation tends to be short term and unit-focused, while societal innovation, by design, needs to be a long-term solution for the masses. As a result, public officials design schemes that aim to both, increase involvement in innovation activities and (via the first aim) close the innovation gap.

Research and Development and technical change are directly related with industrial infrastructure, productivity effects and regional development. The term of "technological policy" indicates the national technological capabilities, and also the structure and the planning on research and development. This paper attempts to examine the role of "technological policy" and the effects on sustainable development, the implications on growth and social change, in particular.

This paper focus to examine the structure and role of technological policy and also the implications on sustainable development and social change. Particularly, this paper attempts to review the theory and the current literature of the national systems of innovation. Furthermore, it attempts to apply some statistical measurement and indices in order to estimate the effects and the implications on EU innovation systems member states. For this purpose, a presentation of data and indicators has been applied. The results indicate that there are significant differences among European countries regarding national systems of innovation and policy makers should give more emphasis on the promotion of knowledge development and diffusion, R&D activities, and R&D financing (Carvalho et al, 2015).

It is well known that the adoption and diffusion of new technologies affect the structure and the competitiveness level of the economy. The choice of technology depends upon a large number of factors: the availability of technologies, the availability of information, the availability of resources, the availability of technology itself and its capacity for successful adoption to suit the particular needs and objectives. The advanced countries in technological change have tended to put more emphasis on policies to encourage the development of research and technological activities (Freeman, 1991). Usually, technological policy should aim to create a favourable "psychological climate" for the development of research and innovations (OECD, 2010a,b).

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Countries that innovate slower will find hard to compete in the world markets where there are many successful innovators and these countries which innovate fast may also enjoy additional gains in productivity, growth, exports, even from licensing and patent fees. The government policies in new technologies and innovations aims exactly to this point: to reinforce the technological capabilities, in order to enhance the productivity, competitiveness and economic growth of their countries. The government support is usually taken under the form of "direct" and "indirect" measures, (as for instance, different grant, loans, tax concessions, and equity capital).

FOCUS OF THE ARTICLE

Most of the scenarios on national science and technological policies have been concentrated with the supply side of the science and technological system. Therefore, the governments have to examine the benefits and the cost from technological policy and related activities.

In technological and science policy economic forecasting are required, if economic gains are to be a major component of science strategy. For instance, there is little point in developing a new technology for which there is no market because of changing economic conditions. Otherwise, there is little point in developing a technology in a country when there are good reasons to believe that another technology will be developed in another country and supersede the indigenous technology, possible even before it is developed. The governments should pay more attention in the following points: First, to deal with multiple policy objectives in the establishment of priorities including their quantification. Second, to deal with uncertainty in the ex-ante assessment of cost and benefits for the proposed government-financed programmes. Third, to compare the cost-effectiveness of government intervention with other alternatives solutions. Fourth, to identify the appropriate type of government intervention. Technological policies aim to support and to promote the new technologies through different "direct and indirect measures". The "direct measures" usually include different subsidies, or different favourable tax treatments for research and technological activities. The "indirect measures" are carried out in the pursuit of other policy objectives (i.e. competition policy, monetary, fiscal policies etc.) and consequently affected the different research and technological activities. If there is availability of data and necessary information for research and technological activities, the safer plan is to make a separate analysis for each economic sector concerning the research and technological activities and take it into account in the perspective plans. The next step is to consider and to analyse some specific sectors that can be served as a guide for further government action. The final step is to choose the method for government action (Carvalho et al, 2015).

The experience in the most of advanced countries shows that the economic growth has been close related with that of technological growth and technological planning. The history of advanced technologically countries indicates that technology transfer has been essential contributed to industrialisation and to modernisation of the whole economy in the new industrialised countries and advanced countries. However, most of the advanced technological countries import a substantial part of the technology that they use, (as for instance happened with Japan and the other European advanced technological member states).

Policies designed to alter the rate of economic growth directly tend to focus on enhancing the technological advances and the quality of labour force. The rate of technical change is affected by research expenditures and the rate of improvement of the quality of labour force is affected by investment in human capital (such as training, and education). The investment in human capital affects positively the rate of technical change.