

REFERENCES

INNOVATIVENESS OF THE NATIONAL ECONOMY

The last two decades of the past millennium and the beginning of the new one perform a period of global technological revolution, leading to significant changes in the development of society. The process of "creative destruction" in national economy has strengthened the need for a new vision for its development that is in harmony with the changes in technology and in society.

In response to this need, the monograph¹ of Prof. Rossitsa Chobanova, Dr. Ec. Scs. by the Economic Research Institute at BAS has appeared on the books' market. It is a systematic study of the highly topical problem - important for the Bulgarian economy - the problem of renovation in terms of accelerating the creation and use of new knowledge and globalization of innovation processes. Prof. Chobanova successfully combines many different research approaches to characterize the proposed concept of innovativeness of the economy by outlining the main problems it solves, and to determine its relationship with the new scientific school - knowledge economy and its characteristics. As significant results of the study she also highlights the formulation of indicators to assess the innovativeness of the economy and companies identification and evaluation of factors that have the strongest influence on, as well as formulated scenarios for the development of the Bulgarian economy.

The output of the author's thesis is that a national economy in terms of accelerated global technology change and participation in European integration can be competitive, if it has developed and implemented a specific national renovation concept based on the creation, adoption and use of new knowledge. In this context, the main objective of the study is to identify, characterize and propose a solution of the problem how to accelerate the renovation of the national economy, arguing directions and priorities for public influence on resolving the example of Bulgaria. In structural terms, the monograph is designed in two parts: the first one focuses the theoretical and methodological instruments (Chapter 1 and Chapter 2) and the second - on the applied analysis, synthesis, summary and conclusions of the results (Chapters 3, 4, 5 and 6). Contents and summary of the book are presented in English. The major part is published in a book in English in Germany.

The need for a new vision of economic development in an original way appears in *Chapter 1*. The essence of the proposed concept is that it is the concept of social influence on the renewal of the national economy, which is based on the creation, adoption and use of a new knowledge. As basic preconditions for it are determined not only research results of leading foreign authors, but also of authors from Bulgaria - an extremely rare occurrence in the national scientific literature. The practical implementation of this concept requires the development of tools to set social influence as a priority. This is the task, solved in *Chapter 2*. The chosen approach for development of instrumentation was first to analyze the existing two methodologies most widely applied in practice that have been elaborated to assess the development of the knowledge economy and the state of innovation at the level of national economy (methodologies of

¹ Rossitsa Chobanova (2012). Innovativeness of the National Economy. Sofia: „Prof. Marin Drinov Publishing House”, 435 p.

the World Bank and of the European Commission) in terms their ability potential to solve the research problem posed. The author concludes that their application has a high cognitive potential, and the collected information in a systematic unique database is a prerequisite for the further development of research in the field of renovation of the national economy, but they do not give a specific answer on the priorities for public influence on the creation, implementation and use of new knowledge within national economies that are used by decision-makers, such as determining the size and distribution of the state budget for research and development (R & D), or that of a large firm in the country. To answer this question, the author proposes a new approach. It's most important characteristic feature is the distinction between demand and supply of new knowledge and corresponding positioning parameters as indicators of demand and supply of new knowledge in the economy. Defined is a set of indicators to assess the supply and demand at the macroeconomic level, company level and external demand and supply of knowledge. Special emphasis is placed on the characteristics of the institutional structure of the demand and supply of knowledge as well as their differentiation according to their explicitness. It is used a set of parameters. Their positioning is shown in a table. Data are from official national and international sources and from the author's own database. Special emphasis is placed on identifying the results of innovation activities.

Based on the developed concepts and tools, the level and trends in the renovation of the Bulgarian economy are influenced, as Prof. Chobanova stated, by two sets of factors: those of the development of a market economy and in particular the demand for and supply of new knowledge in economy as well as their impact on society. In this respect, higher demand and therefore supply of new knowledge in the economy will lead to higher levels of replenishment.

The monograph provides an analysis and evaluation of the original set of factors in the demand for new knowledge: volume of R & D investments, gross R & D spending per capita, cost structure for R & D, structure of the current R & D expenditure by type. Particularly important is the structure of a demand for new knowledge by institutional sectors which is reflected in the share of R & D funding from the public and business sector, higher education, non-profit sector, external sources. It is essential that the impact of the decline in the number of researchers and their unfavorable distribution by institutional sectors and the decline in demand of intellectual property originating in Bulgaria. In conclusion, it is assumed that the characteristics of the observed factors of demand for new knowledge do not give grounds for optimism about raising the national level of innovativeness.

Prof. Chobanova demonstrates that the supply of new knowledge in the Bulgarian economy does not contribute to raising the level of its innovativeness. This supply is characterized with indicators like share of the population with secondary and tertiary education, the quality of secondary and higher education, structure of graduates by specialties, share of the population that is educating and/or training, the number of registered and patent applications, the application and registration of trade marks, designs, new plant varieties and animal breeds, and the number of scientific publications. The impact of institutional, economic and demographic factors is defined. In general there is a downward trend in demand of nationally/produced new knowledge. This trend is influenced by the development of the global information and communications

infrastructure and access to it. This trend leads to the fact that the supply of new knowledge in the national economy is a collection of world and national (achievements) as a part of them. On the other hand the supply of new knowledge in the contemporary Bulgarian society is determined by the self-development of science within the scientific community, but this development has boundaries defined by wages and quality of scientific equipment.

The demonstrated stronger impact of limited solvent demand of new knowledge for innovativeness in the economy justifies the study focused in *Chapter 4* on the factors that define it. As the most important among them are identified and assessed the level and change in the structure of GDP, gross value added (GVA), employment, foreign trade - volume, structure, and partners; generated relative advantages; institutional demand for new knowledge and specifics of the process of creation of new knowledge. Reasoned that despite the relatively high growth rate of GDP Bulgaria as a country with low average income per capita, could not soon achieve the level of income and the corresponding level of effective market demand for new knowledge of the countries represented in the average EU. Or, in other words, the current rate of growth in GDP and incomes restrict the demand for new knowledge in the country.

Identified priority areas to enhance the positive impact of foreign trade on the renovation of the national economy are: increase of the participation in international innovation networks in the sectors with absolute and relative comparative advantages, strengthening national based research in these areas and attract funding (mainly from the EU) to fund it. The author stands and characterizes the main institutional interactions, defining the demand for new knowledge in the economy: between government and science sector, between science and business, between science and education, between the state, business and education, between the state and science, business and education, between the financial institutional sector, science, education and business, among the population as an end user of the results of the innovative efforts of all institutional sectors of demand and supply of knowledge. Although the arguments adduced as evidence are not the last, due to the lack of change in national science, technology and innovation policy, proven negative trends are not only valid today, but intensified.

Most important for the transformation of knowledge into economic result on this stage of development are the companies, they are a micro fundament increase the innovativeness of the national economy. Therefore, in *Chapter 5* the innovativeness of companies is characterized. The author approaches this task defining costs and outcomes of innovation, as well as identifying the factors that determine them. They are classified and characterized. Among these factors are specifics of activities and company size, the sector covered, the form of governing and of property, own research capability and institutional interactions, objectives or mission of the company, level of internal information and communication infrastructure, the intensity of the use of internal innovation networks for generating ideas; external information and communication infrastructure and the intensity of use of external innovation networks to generate ideas.

In the monograph are displayed and evaluated the influence of the factors hindering innovation: funding (realized significant economic risk, high funding costs, a shortage of funds available for innovative projects and direct innovation costs), access to information (scientific, technological, regulatory, market) human factors (lack of qualified

technical personnel, lack of qualified management personnel, inadequate response to new products by consumers), organizational and managerial aspects of the implementation of innovative processes (organizational conservatism, lack of opportunities for cooperation with other companies or organizations, lack of external technical services).

Today, the cost estimates and the results of innovative activities is a complex problem because still empirical research in this area is scarce (as is most often limited to the analysis of R&D expenditure and the acquisition of patents) or absent. Here the results of innovative activities are observed and characterized in a much wider context, which is a contribution of the author. Firstly, they are associated with self-assessment of the achievement of objectives of companies such as launching new or improved products on the market, the introduction of new technological processes in the production, implementation of organizational changes to improve competitiveness, entering new markets and using new raw materials. Moreover, the proposed and applied methodology makes it possible to obtain data on the innovative results in three of the five areas of innovation in firms according to Schumpeter and recommendations of Eurostat and OECD and to add four new ones: number of innovative projects designed industrial property, export intensity, level of access to and use of information and communication technologies.

Capacity for innovation in the surveyed enterprises is determined by the characteristic size of the enterprise, its mission, embodied in the presence of relevant innovative projects, and the financial resources for their implementation. The „Neoschumpeter Hypothesis" about the existence of a positive correlation between innovation intensity and firm size is confirmed. It is argued that the corporate structure of the economy of Bulgaria, determined by the prevalence of micro, small and medium enterprises and a low share of high-tech firms, is corresponding to the low capacity for large innovative projects. The level of expenditure on R&D in the firms is assessed as low, which determines the lack of capacity to change their basic activities.

It is reasoned that to the poor update of the companies in Bulgaria has a particularly strong impact the low level of interaction in the innovation system in the country. Most often companies create their own new or improved product, service or process or buy it ready-made from another company or institution. Rarely they work together in creating innovations. It was found that intra-firm innovation networks are still of greater importance for the formation of ideas for innovation in enterprises in Bulgaria, although the companies are mostly small and without the capacity for renewal. From external networks, national networks have the greatest significance for the innovation, followed by local and international networks. Among international innovation networks the most important are the European, followed by those involving the U.S., Japan and others.

Other factors identified as important to the low level of innovativeness of firms are: lack of available financial resources, high costs of innovation projects realized economic risk and weak government support for innovation, low-tech specialization and export structure of enterprises, low-tech employment, short-term planning period in enterprises, weak human resources management, the shortage of venture capital schemes and schemes for high-tech jobs.

As a result of the analyzes and assumptions the conclusion is the *low level of innovation activities and insufficient innovation results show that both the demand and*

supply of new knowledge of Bulgarian enterprises are low. This implies the search for schemes that increase both the demand and the supply of new knowledge from the business sector, key among which are the active interaction with the research sector in the country and international innovation networks.

In Chapter 6. the author summarizes the main challenges and controversies in the renovation of the Bulgarian economy, highlights priority areas for impact on society. The defined major challenges are related to the need for: a significant increase in demand for results of nationally based research activities, as well as for funding R&D in the country, recovery of R&D and creation of industrial property in the business sector and strengthening the human potential of the economy, widening and better targeting of interactions between different actors in the national innovation system. Identified are the priority areas for updating the national economy by the representatives of the observed companies. They are: upgrading the technology infrastructure supporting communications, and above all providing a sufficient quantity and quality of information and services in electronic form; supporting academic and university institutions, updating their facilities and using it as training for both research and production purposes; enterprise support for activities related to training to acquire new skills related to improving quality and productivity, to standardization of production or applied procedures and the acquisition of relevant *certificates and licenses*.

Two scenarios are defined for the development of the Bulgarian economy. The first is the continuation of the downward trend for innovativeness of the national economy determined by the growing global supply of new knowledge and declining its market demand from creditworthy businesses in the country. The second scenario assumes increasing innovativeness through the formation and implementation of public policy impact of increasing demand and supply of new knowledge through active and effective interaction of the national business, science and education in the national and global innovation networks to accelerate the creation, adoption and application of new knowledge.

In conclusion Prof. Chobanova argues the concept, approaches, methods for solving the problem of increasing the innovativeness of the economy, and the results achieved can be used to shape and define the strategy and policy of the government, of the Bulgarian businesses in the country and abroad, of nonprofit organizations, functioning as centers of knowledge transfer. The specific results of the analysis may serve national and European institutions to set priorities for R&D funding in the country. The study can serve as a starting point for new research, and the creation of new curricula and courses in universities. The work could also be used as a valuable teaching tool.

Prof. Vasil Todorov, Dr. Ec. Scs.