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Taras MEDVEDKIN

INNOVATION DEVELOPMENT OF UKRAINE IN THE CONDITIONS OF TECHNOLOGY TRANSFER AND S&T COOPERATION

Abstract

The paper investigates the theoretical and practical aspects of the innovation activity in Ukraine in the context of international science and technology (S&T) cooperation.

Key words:

Innovation development, scientific-technological progress, technology transfer, innovation activity of the country, innovation system, international scientific-technological cooperation, external turnover.

JEL: O31; O39.

Medvedkin Taras, Candidate of Economic Sciences, Assistant Professor, Department of International Economics; scientific fellow, Institute for Industrial Economics NAS Ukraine.

Actuality of the Study. In the late 20th – early 21st century, the world's leading countries have speeded up the rates of their socio-economic development by employing the advantages of international S&T cooperation as a constituent element of modern globalization processes, which provide the world economy with trade and, moreover, productive integrity based on the use of innovations.

Global changes in the world technological regime related to the employment of S&T achievements in the production area enabled the rapprochement between different parts of the world economic space. As the interdependence between the economies of separate countries increases, their state technology policy goes beyond national borders only given an adequate strategy of innovation activity, which makes further economic development possible. In addition, an effective innovation activity of a country contributes to the activation of international S&T cooperation and creation of the conditions for approximation of the innovation processes on the national and global scale.

The transformation processes in the Ukrainian economy related to globalization of the world economy precondition the need for economic reform and development of a qualitatively new economic system in Ukraine based on the principles of enhanced role for S&T, in particular innovation, components of economic growth as the factors activating and qualitatively improving the production in correspondence to major tendencies of the world economic development.

Theoretical foundations of the dependence of intensive economic growth on the factors of technological change were laid by A. Anchyshkin, M. Brown, Z. Grilliches, D. Kendrick, D. Lvov, E. Mansfield, R. Solow, M. Tuhan-Baranovskyy, C. Freeman, J. Schumpeter, and others.

At the present stage of economic development, international S&T cooperation contributes to accelerated development of the productive forces, scientific and technological progress, intensity in relations among the economies. The matter of *international transfer of technologies* with the allowance for modern trends of world economic development and deepening of S&T intensity of economic growth allows to view it wider than a pure integration process, since international cooperation in modern conditions produces a complex effect combining such factors as foreign capital, new technologies, integration capacities, and access to world markets, in particular, on world market of technologies.

The world market of technologies is determined as multilevel system of exchange and sustained relations among the world countries with respect to export and import of technologies as a good (innovations), emerging through innovation activity of the country, likewise via aggregate managing subjects and administrative leverages. Consequently, *innovation activity of a country* is a permanent process, grounded on attaining new research outcomes, and their technological introduction into production, in this wise ensuring the GDP growth on account of manufacturing science intensive products and services, using the fac-

tors of endogenous and exogenous origin. The innovation activity is proceeding in a certain environment, i. e. innovation system of the country.

It is worth noting, that in the conditions of international transfer of technologies the principle for national innovation system creation is a functional mission of the components, that is, how the contribution of the specified subsystems effect the innovation process within the frame of the system as a whole. A new point in this approach is distinguishing a subsystem of international S&T cooperation as a certain component of national innovation system, which reflects its growing role of the integration process component.

We offered the structural model of national innovation system in the conditions of S&T cooperation (Figure 1). The suggested major subsystems of national innovation system in the conditions of international S&T cooperation are the following:

s*ubsystem «A»*, the activity of which is directed at provision of innovation process with non-material resources;

subsystem «B», the elements of which directly take part in innovation process;

subsystem «C», its function is to provide innovation activity with material resources;

subsystem «D», its task is to coordinate the internal system and the conditions of international transfer of technologies.

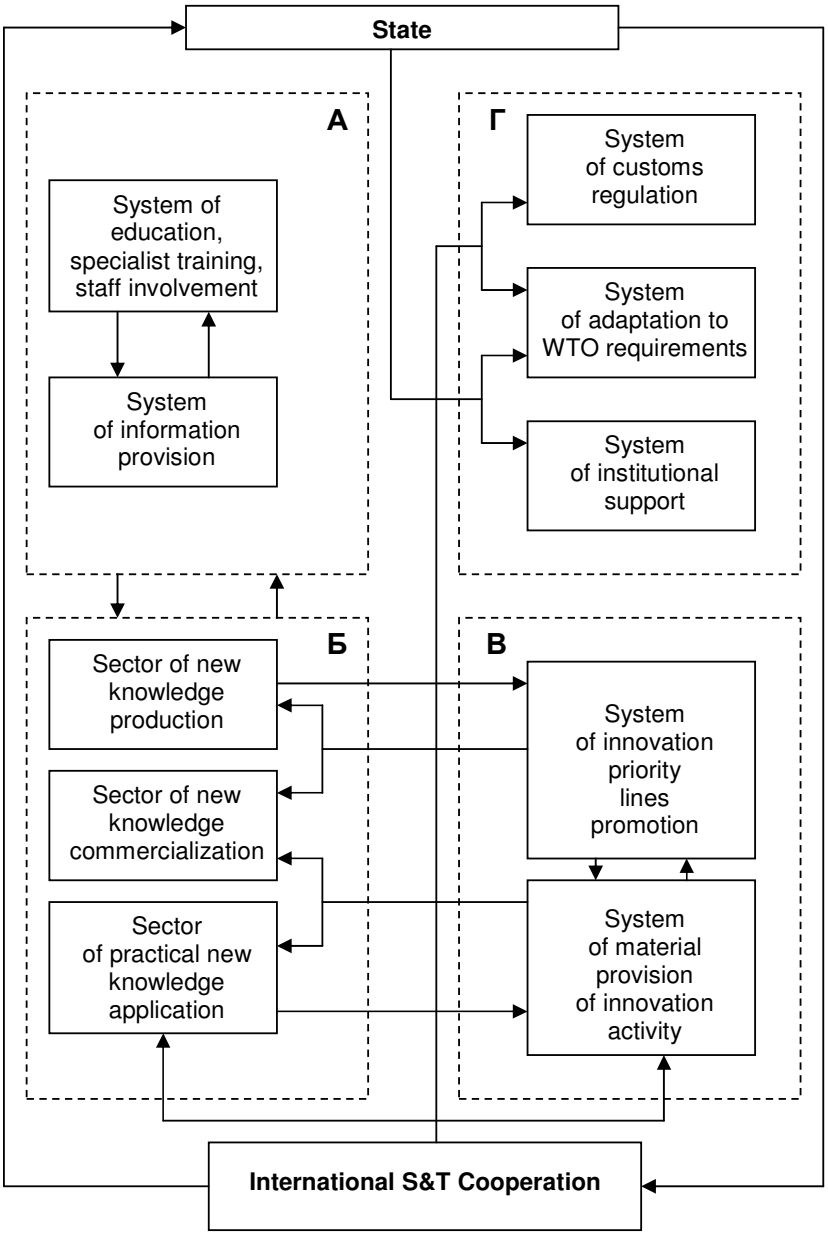
Consequently, economic growth of the countries in the conditions of international S&T cooperation greatly depends upon innovation activity of business structures, and their capacities to employ innovation technologies. Therefore, the transformation processes in Ukrainian economy need to be analyzed with the aim of insuring the economic development of Ukraine in the context of expansion of world technology market.

At present stage of world economic development, high concentration of S&T resources is observed in few industrially developed countries, in particular, 40% belongs to the USA, 30% – to Japan, 13% – to FRG. Ukraine's rate in the world volume of trade in science intensive products is about 0.1%.

The high-technology sector in Ukraine includes the following: machinery and equipment production; electrical and electronic equipment; transportation equipment production; pharmaceutical production. Analysis of sales geography of high technological goods reveals significant drawbacks in national strategy of promising markets conquering. The manifestation of that is minor volumes of high technological goods transfer from American continent, countries of Near East, South-Eastern Asia, Africa, as well as domination of Russian Federation in export, and import operations.

Figure 1.

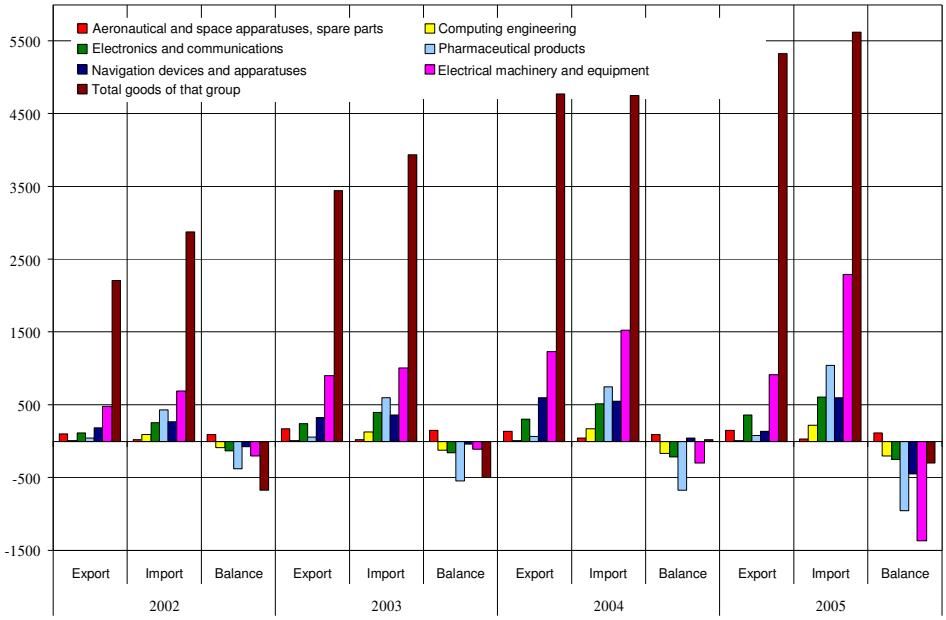
The structural model of NIS under international S&T cooperation



The exports and imports dynamics, and the balance of noted commodity groups, and their total integrity is shown in Figure 2. Low-technology sector is dominating in export-import operations enormously surpassing all other sectors. High-technology sector is lagging behind a low-tech one by more than four times. Its import ratio is the least with respect to export cover (0.7), which shows that high-tech production sector is import dependent.

Figure 2.

Dynamics of Ukrainian foreign trade turnover in high-technological goods in 2003–2005, mln. US dollars



Analysis of the presented information based on relevant calculations allowed to reveal the named facts with respect to foreign economic trade in high-tech goods.

First, the ratio of mentioned above aggregate high-tech goods in total export value in 2002–2005 was equal to average 14.3%. As for import operations, the ratio of mentioned above aggregate high-tech goods in total value of imports in 2002–2005 made 16.7%.

Second, among certain noted above commodity groups electric machinery and equipment made the largest ratio in the total export volume with 3.2% in 2002–2005. The similar situation describes the import operations with average portion of electric machinery and equipment of 5.1% in general export volume of 2002–2005.

Third, the trade balance dynamics of high-tech goods indicates that out of all mentioned above groups of high-tech goods the active trade balance had only one group, i.e. «aeronautical or space apparatuses, and their spare parts» with import-export ratio in 2002–2005 of 0.9, with variance from 0.77 in 2002 to 1.0 in 2004.

The tasks of national S&T development could be effectively met mainly in the frames of public sector, which would integrate and coordinate efforts of certain Departments, Agencies, Universities, and private firms to attract and employ external sources of S&T development resulted in reaching their own outcomes. It is worth taking into account that international transfer of technologies is an important factor of speeding up national economic growth and wipe out the lag in technology only under condition, when the strategy of the state is directed at employment of the technological achievements for the creation of the own highly developed potential in the area of science and technology with high competitive capacity on world markets.

Innovation model of development in Ukraine requires respective institutional changes in innovation area. The main components determining major mechanism of functioning of institutional infrastructure of Ukrainian innovation area is demonstrated in Figure 3.

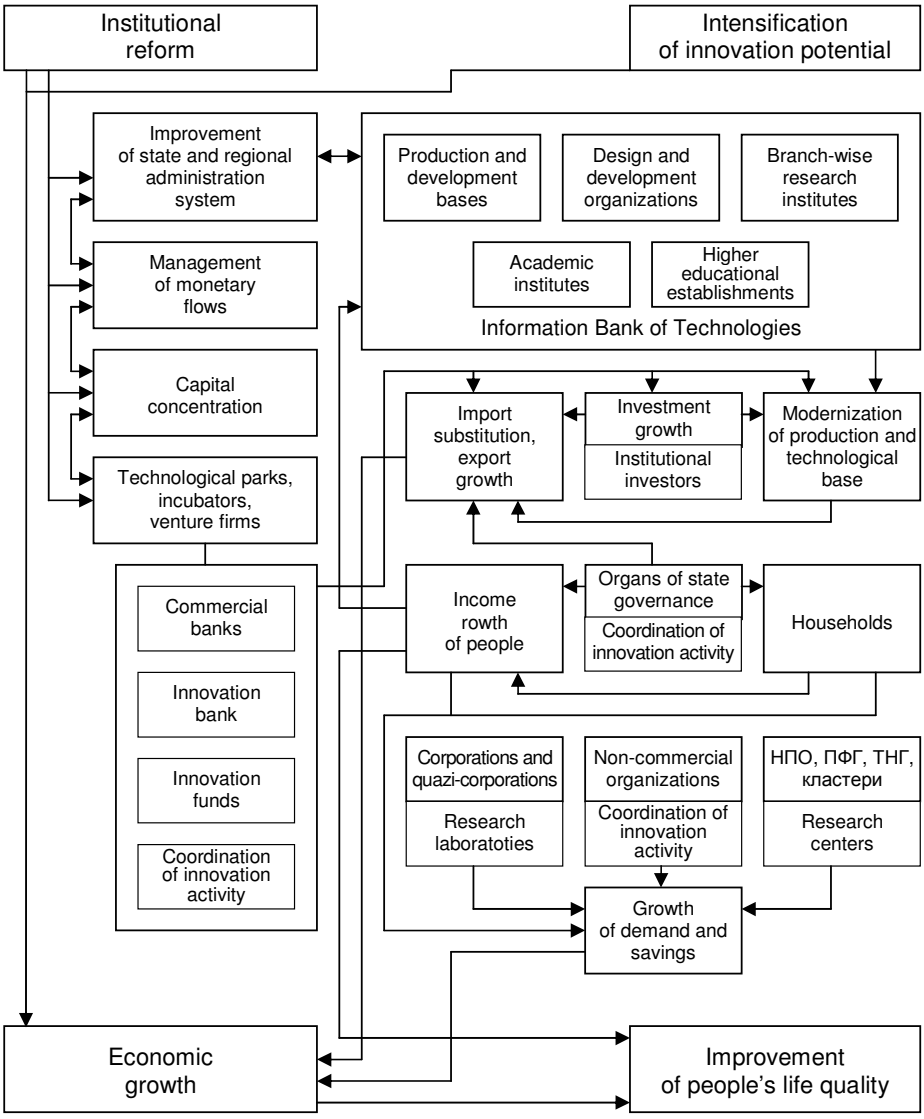
Institutional reform in the area of Ukrainian innovation activity has to ensure the system-wise transformations of all main components, including banking, public, corporate, technological, household, managerial system with allowance for international S&T cooperation. The noted transformation will produce positive effect on the capital concentration, creation of powerful economic and financial structures, which within the frames of ambitious targeted complex programs, public S&T programs of international cooperation, branch-wise and regional programs should embrace the whole cycle of development and production of new technologies, and products able to meet competition on domestic and world markets.

At the same time, under inalterability of developed strategic goals and objectives of S&T cooperation, the mechanism of that process realization can not be unchanged.

It has to respond timely and in full to the effects of national, regional, and global factors, which are rapidly changing. Therefore, the development of national policy in the area of international S&T cooperation is the permanent improvement of methods and forms of interaction on each stage of national development with the allowance for international politic and economic changes.

Figure 3.

Mechanism of institutional infrastructure building of innovation area in Ukraine

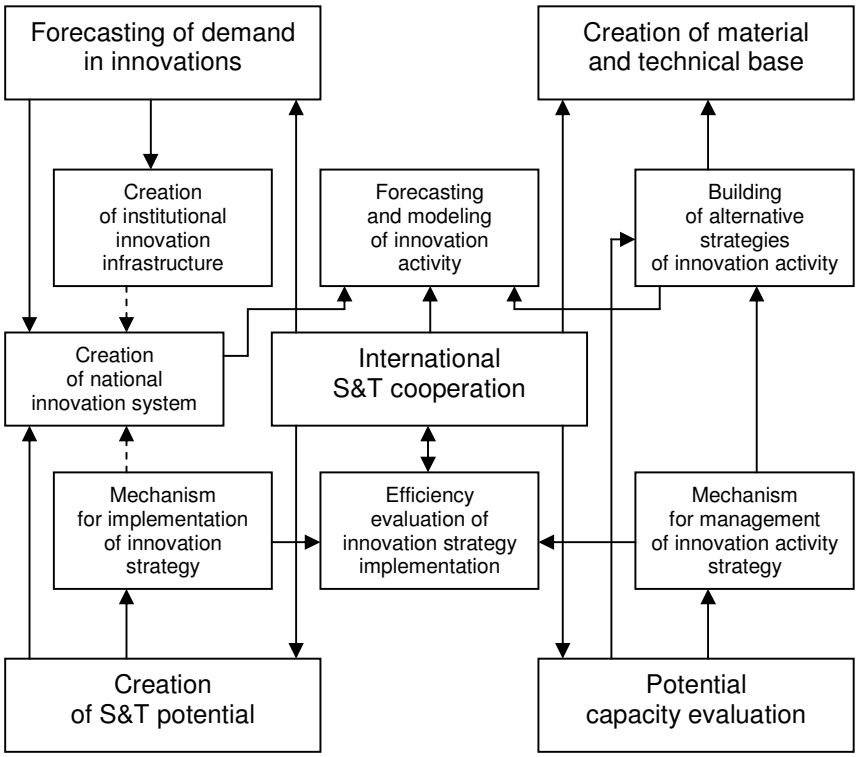


Proceeding from the analysis we offered the approaches to creation of innovation activity strategy in Ukraine in the condition of international S&T cooperation (Figure 4). The basic elements of the innovation development strategy should be the determination of innovation and investment climate, innovation potential of the state, increase of the innovation factors effects with the aim of development and realization of innovation projects.

The strategy of innovation economy building is an integral part of general strategy of the state development. It is oriented at the determination and achievement of promising goals in the conditions of global processes proceeding in world economy, which are resolved by foreign economic milieu and imply economic sovereignty of Ukraine.

Figure 4.

Approaches to strategy building of innovation activity in Ukraine in the conditions of international transfer of technologies



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