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THE MODELLING OF INNOVATIVE ECONOMY DEVELOPMENT IN THE CONTEXT OF GLOBALIZATION

MODELOWANIE ROZWOJU INNOWACYJNEJ GOSPODARKI W KONTEKŚCIE GLOBALIZACJI

Adnotacja. W artykule badano pytania stopnia otwartości systemów w warunkach globalizacji nowoczesnej, współdziałania międzynarodowych relacji ekonomicznych, formowanie wspólnych związków, nieuniknioność przejścia do nowego modelu postępowego rozwoju ekonomii, powstanie w gospodarkach narodowych systemów innowacyjnych, formowanie rynku innowacji, tendencje i problemy modelowania rozwoju rynku ekonomii innowacyjnej, powstanie naukowo-produktywnej aglomeracji i kompleksów, rola klastrów w procesie ekonomicznym.

Annotation. The article researches degree of social systems openness in terms of modern globalization process, international economic cooperation, relationships establishment, the unavoidability of new progressive model of economic development transition, the emergence of a national economic innovation systems, the formation of innovation market, trends and problems of the innovative economy modelling, emergence of agglomerations and complexes, the role of clusters in the economic process.

Background. At the beginning of the XXI century a wide range of national economy models demonstrate different combinations of market relations and state regulation, market entrepreneurship

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and social orientation, economic patterns of international relations and non-economic impact factors.

The modern globalization intensifies both the social systems openness and the unbalanced processes in them. In accordance to the non-equilibrium thermodynamics principles, such a fact causes an objective self-organization tendency. Societies have to choose either self-organization or degradation. The self-organization process is embodied in complication and value, informational, social connections enhancement, which allows the resource, human and social capital of society to be developed and implemented. The capacity for self-organization is an adequate response to the economic **challenges** posed by globalization[1].

The over consumption of resources threatens the mankind existence and it is a negative trend of postindustrialization. The attempt to overcome the problem becomes more obvious now than ever before. An innovative stage of development appears to be the most radical way to avoid the disaster. That is an objective dictate of the time that allows the institutional and resource constraints of globalization to overcome.

Analysis of recent publications. A deep theoretical and practical investigation of the problem of innovation models functioning in the age of economic globalization was conducted by such foreign and domestic scholars as F. Fukuyama, S. Borras, J. A. Stein, B. Carlsson, O. Bilorus, V. Kulishov and others. Meanwhile, the current state of the innovation economy and its impact on global development determine the urgency of the case study.

The main material. Thorough analysis of the countries competitiveness and welfare, the global business efficiency analysis, conducted by the American scientist F. Fukuyama showed that high

[1] Білорус О.Г. Глобальний конкурентний простір: // О. Білорус та ін. Монографія. – К.: КНЕУ, 2007. – 680 с.

confidence level is a dominant universal cultural characteristic of the most successful societies. The spontaneous socialization is the most common form of its expression. It allows the various business actors to pool their resources, capabilities and knowledge, and concentrate them in certain direction. The origins of associations, which are primarily referred to as a corporate and professional alliances (separated from the property), are different, though the higher the spontaneous socialization level, the higher the performance efficiency[2]. These voluntary non-family Associations of Japan, USA and Germany are based on communal solidarity socialization. And vice versa, the family based socialization declines the international business efficiency. Familistic societies (China, Italy, Taiwan, Singapore and others) have the few corporations, and weak small firms which are incapable for transnational expansion; their capabilities come down to decision making about **their scope** of activity on the global market. An authoritarian culture (France) and state-form of socialization (Russia) have inefficient economic structures. The laws, contracts, government intervention replaces the trust institute and requires an additional transaction costs. The above shows, the global society has not yet reached neither socialization level required nor the cultural phenomenon of trust, thereby societies are highly differentiated. The question arises, whether innovative development will eliminate the resource, institutional and broadly defined cultural constraints of globalization? Could the scientific ideas become the specific way to create a new human culture?

This means, firstly, the creative human resources are preferred to the nature resources of economic development; secondly, real economic activity is stimulated. Economics is a part of the human world; it is primarily a psychosocial and social constant of life

[2] Фукуяма Ф. Великий взрыв. – М.: «Act из-во», 2004. – С. 266-290.

activities. This constant provides the material and spiritual benefits appropriation in order to ensure the vital activity of a human world. Human is a special element and generator of changes from mental sphere to economic sphere by means of socialization and personalization. That is with respect to the problem of economic forms creating. On the other hand, a human becomes a driving force of the innovation process at every certain level of his activity.

Scientific economic researches confirm the inevitable transition to a new progressive model of development, which is based on the careful and efficient **use of resources;** satisfaction of mostly intangible needs (creative self-expression, leisure, knowledge and culture familiarization, etc.); and, the most important is the scientific-based innovation model. That is referred to as innovative economy[3]. Therefore J. Stein's research is of particular interest, it proves the existence of European knowledge system as an innovation system prototype which includes not only the EU members but other countries worldwide[4]. As a result, the stable consumer should appear. There are known cases in modern history when consumers were prepared for acceptance the new-product, which does not yet exist in mass production. So before expansion the informational market, American companies formed a specific mentality of advanced informational American nation through the advertising campaign. Society had been prepared for the relevant private expenses before the certain product (computers, internet services, etc.) appeared. That is problem of both, culture and coherent worldview. Secondly, the obtaining of intellectual resources would serve the technological, technical, organizational and other improvements. Then, of course,

[3] Borras S. Introduction to special issue on a European system of innovation / S. Borras // Science a publ. policy. – Guildford, 2004. – vol. 31, №6. – P. 422 – 424.

[4] Stein J. A. Is there a European Knowledge system? / J.A. Stein // Sceince a publ. policy. - Guildford, 2004. – Vol. 31, №6. – P. 435 – 447.

the problem of intellectual resource origin arises. Quite clear, that creative human ability is that very intellectual resource origin.

Next matter is associated with the particular scientific ideas production, its next implementation, and the advanced technologies and specialized factors creating.

During the process of technological mode changes, the national innovation systems burgeon and evolve within specific countries. This emergence of the fundamentally new entity (that are innovation systems) inside the national economy is the main conclusion of innovation sphere development in the twentieth century. This entity is a set of production structures, law and financial support institutions, institutions of scientific knowledge and technology commercialization within national borders[5].

The concept of national innovation systems (NIS) is an integral part of modern economics. Throwing out the simplified relations model of society's intellectual potential and its implementation is the keystone of the concept which is aimed at socio-economic development. NIS allows public and government institutions, educational institutions and business to interact more directly and conduct general long-term strategy. The state plays a decisive role in strategy formation and the necessary institutional conditions assurance for its implementation.

Each country has specific objective factors of influence on innovative system: the country size, geographic location, climate, natural resources, historical development, state institutions and forms of entrepreneurship, etc. In addition, each innovation system has certain structure and organization degree which provide the satisfactory stable institutional interaction. National fundamentals of innovative activity are modified significantly due to global

[5] Carlsson B. Internationalization of innovation systems: A survey of the literature / B. Carlsson // Research policy. – Amsterdam, 2006. vol. 35, № 1. – P. 56 – 67.

production, labor and financial resources overflow at the beginning of this century. Globalization of innovation sector provides primarily the growth of the foreign funding share in scientific researches of the most developed and newly industrialized countries, creating more units of research within TNK in favorable areas[6].

It is notable, that aspiration of the most ambitious corporations is to create a global corporate culture and contribute to the global science. Though, the most foreign multinationals form research units in order to meet the needs of their own productive facilities in certain countries. The main function of units is to revise the goods in accordance to local needs or to develop a new product and technology for local market. But globalization is evident. In recent years the foreign TNCs activities aimed increasingly at the global scientific and technological capacity appliance. This includes highly skilled scientific and engineering personnel attracting, the joint research projects implementation and financing. There are various informal agreements, joint research alliances, the riskiest high technology projects implementation within some industries (communications, biotechnology). However the global innovation market is still in its infancy, though it has all the sufficient institutional preconditions.

The scientific ideas distributes instantly in global informational environment. This high mobility is a favorable motive to receipt a quasi-rent[7]. Symbolic form of scientific ideas expression occurs initially and there is no problem to spread them through the networks. The specific is that speed of ideas distribution is limited to a certain extent by the necessary **expenditures** of **time** for acquisition the idea. In addition, the negative chain reactions are

[6] КулішовВ.В., Одягайло Б.М. та інші. Глобальна економіка. / В.Кулішов, Б.Одягайло, О. Сазонець // Навчальний посібник. – Львів: Магнолія 2006, 2011. – 208 с.
[7] Ibid, p. 124.

much complicated in scientific sphere. Yet scientific ideas are almost unlimited, and their reliability is argued by hypotheses which could be generated at every certain level. Besides that, the scientific invention will not be exhausted if it is multiply applied.

All that concern to a global innovation market formation. Actually, the science budgeting sphere mainly applies the market elements and approaches. Informational networks still serves to the scientific ideas exchange, and have not still became a basis for free scientific ideas market. Meanwhile, the global market of science with mechanisms of supply, demand and the project quality estimation is still a subject of debate. Though, there are some doubts, whether market could drive a fundamental science in the long term perspective.

Of course, the open society ideology foresees the free market existence and its development will depend (only) on the information society capabilities. Informational and communicational networks are an all-purpose means, but their usage in various spheres has a certain specific. In trade and finance spheres the networks allow a global free market with different mobility and accessibility degree to be formed. Then, it is evident, that such a market could be formed in science sphere as well. Though, the market should take into account the specificity of particular product - the innovations which focus on the long-term goals.

In fact, scientific, academic and entrepreneurial culture, ethics and motivation are very different, and sometimes opposite. The combination of scientific creativity and entrepreneurship is not always successful. But the recent years practice shows that the scientific individual enterprises become the most dynamic segment and the driving force of modern science.

An important part of the institutional environment of innovative scope is scientific and industrial agglomeration and such complexes

as "science parks" (in the USA) or "techno parks" (in Japan), innovative banks, investment companies, venture financing, non-profit organizations of innovation programs. Thus, there are three types of "scientific parks" in the US: the "scientific parks" with the entire cycle of research, experimental and technological projects and their next manufacture implementation; "research parks" is different in that the new developments reach only the technical project stage; "incubators" (engineering firm), include universities, companies and government agencies, which provide land, buildings, the laboratory equipment depreciation and other services for a small rental charge[8].

The firms and organizations "incubators" facilitates the complex and laborious process of institutional unit formation in the innovation field. That process grows rapidly in developed countries. Generally, "incubators" are oriented to a specific set of technical services; though, there are universal services in specialized sectors and high-tech industries, where innovative business consults on the question of management, marketing, finance, etc. The highly skilled specialists from training centers, industrial corporations, and banks, are engaged for this purpose; all that provides a high efficiency of engineering firm activities. To reduce the venture capital risk, firms control over80% of a new company during the first year; the management is carried out by managers from engineering firm, a thorough and justified selection of innovative projects is conducted, a strict financial regulation is carried out[9].

The activity of Japanese corporations should be noted as well. They establish new research centers all over the world almost monthly to create new markets and increase their competitiveness level in terms of world economy globalization.

[8] Ibid, p. 125.
[9] Ibid, p. 126.

Technology parks are especially widespread in Western Europe. Thus, there are 35 parks in England, 60 science and technology parks in Germany and their number is still growing, about 11 techno parks in France[10].

Russian technology or science parks are created in residency at universities and actually serve as the "business incubator", promote research commercialization. Other techno parks structures are also framed particularly innovation and technology centers (RDC), which include innovative and service companies.

World experience has shown that a radical institutional tool of scientific and economic development acceleration is free or special economic zone. China reached the impressive positive results when applied such economic and law mechanism during its economic revival period[11].

Innovative banks of developed countries finance the whole cycle of manufacturing and replication of scientific and technical products, promote the most efficient researches selection, implement the mass distribution process. Innovative Bank conducts the innovations due diligence at its own expense, involves the high-qualified specialists in order to estimate scientific, technical and economic significance of the project. Innovative Bank becomes a co-owner of scientific development and ensures the costs return through the innovation sale profits. That encourages bank to examine responsibly the innovative projects and their funding.

Venture investment companies accomplish the risk loans and fund the small innovative companies, which develop new technologies. Venture capital sources are different in each country, for example, charitable foundations, government grants, special funds and other investment companies. To reduce the risk the venture

[10] Ibid, p. 126.
[11] Ibid, p. 127.

companies provide phase-by-phase budgeting, rather than the entire project budgeting: the first stage – performers team building financing, the second stage – financing the technological sample or prototype product design, the third stage – replication of new products financing and the stock exchange entry at the expense of “free from risk funds”.

Non-profit organizations provide the management and administration of government programs services to coordinate innovative projects and programs. In most developed countries innovation activity regulation is brought about through patent law, copyright and other intellectual property aspects[12].

Today, the innovative clustering is the most important and the most popular **method** of economic stakeholders involving into advanced motivation range.

Innovative clusters concentrate innovations in sphere of high density of specialized resources for innovative development, of highly qualified scientists, engineers, technicians, of available proximity of universities and research institutions and, more importantly, other innovative firms. Innovative clusters overgrow the individual countries and become centers of attraction for foreign direct investment, foreign scientists and specialists.

Innovative clusters creation and development are not possible without close corporations and state cooperation which allows conducting a long-term science and technology policy. An important element of it is increased research funding. An increase in research assignments can give impetus to innovative development of a country especially in the national innovation system framework[13].

[12] Ibid, p. 128.

[13] Кулішов В.В. Кластер – основа інноваційного розвитку економіки. / В. Кулішов // Інноваційна економіка. – Тернопіль, 2013. - № 2 (40). – С. 3-6.

Conclusion. Recently informational development has created a real opportunity for a sharp economic, scientific, educational and cultural development acceleration of different peoples and continents, for mankind unification to a global community. It should be noted that national consciousness revival has recently grown as a defensive society reaction against the globalization damage effects.

In general, the innovative field is a strong factor of globalization, value and social capital accumulation and, thus, it requires specific solutions to the global problems.

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