

Transformation of Development Model of National Economies at Conditions of Postindustrial Society

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Abstract. The article considers the results of transformation of development model of national economies at conditions of postindustrial society. Determine the structural changes of national economies of postindustrial societies (the U.S., EU) and Ukraine at the period of 2001 – 2012. Substantiated that for development of Ukrainian national economy at terms of postindustrial society must stimulate the development of intellectual economic activities.

Key words: economic model, model of economic development, transformation, sectorial model of the national economy, postindustrial society, national economy.

INTRODUCTION

The development of the world economy at the late 20th – beginning of 21st century is characterized by rapid and significant changes (global economic, social and environmental transformations) of both positive and negative nature under the influence of scientific, technological and social progress at almost all areas of social activity. Innovative breakthrough at the field of information and communications technologies has provided unprecedented opportunities for doing business globally, promoted the formation of new geopolitical relations. At the same time, there is a growing threat of pollution due to the anti-environmental activities of economic agents. All this together led to the emergence of new models of civilizational development (global economic development and development of national economies).

At development models of national economy under the conditions of postindustrial society, there are significant changes: transformation of role of the state in

management of development, transition from intermediate industries to high-tech industries. Thus, the leading countries of the world economy are constantly improving their development models of national economies, which primarily involve structural and technological transformation of the national economy with the most efficient way of usage of all factors of production under conditions of the postindustrial society.

THE AIM OF THE ARTICLE

Issues of national economy development under postindustrial conditions are explored by both Ukrainian (O.I. Amosha [15; 18], V.M. Geyets [21], Y.V. Kindzerskiy [10], M.O. Kyzym [13], L.G. Melnyk, V.P. Semioshenko, A.A. Chukhno [3]), and foreign scientists (D. Bell [2], V.E. Devtntiev, M. Edelman [1], M. Gillis [5], V.L. Inozemtzev [9], G.V. Kolodko [11], M.P. Todaro [20], J. Shumpeter [19]). However, questions of the transformation of development models of national economies under the conditions of different types of societies remain badly researched.

The aim of this article is the empirical research of the transformation of development models of national economies at conditions of postindustrial society.

THEORETICAL ASPECTS OF DEVELOPMENT MODEL OF NATIONAL ECONOMIES

In the historical process of social development, there were formed classical and modern development models of national economy. Models of national

economies reveal similarities of theoretical and empirical content, which remain unchanged for a long time and are beyond the influence of seasonal factors.

O.I. Soskin defines “economic model”, on a basis of general methodological parameters, such as “abstract and informative description of the real state and prospects of development of system of relations that form the skeleton of the economy on a (micro-, meso-, macro-, global) level, using verbal or logical-mathematical (or both) methods of expression” [16, 39]. The author argues that any economic model that is studied or proposed system must include the system of relations between such economic forms (processes, events) as a form of property, sectors of economy, regulatory mechanisms, methods, principles and forms of economic activity, that form the skeleton of the economy.

At foreign literature, “economic model” is defined as “a simplified description of reality, designed to produce hypotheses about economic behavior that can be proven” [12; 14]. An important feature of an economic model is necessarily subjective in justification, because there is no objective indicators of economic activity.

Given the variety of interpretations of the category “model of the national economy”, we studied its semantics and as the result, proposed to define it as economic-mathematical description of the development of national economy, which determines the laws of functioning and on the basis of certain tendencies makes it possible to predict the trajectory of development and identify ways to achieve it.

Among the variety of development models of national economies, the most urgent, under conditions of emergence of postindustrial society, is a sectorial model that reflects the historical process of transformation of society according to technological criteria and reflects process of natural, radical, progressive, structural and technological changes in a national economy of country, which provide a transition to a qualitatively new level of development of society. During the 20th century, theoretical principles of sectorial model of national economy have undergone significant changes and evolved from two-sectorial model (A. Lewis) to three-sectorial (K. Clark, J. Furaste) and five-sectorial (D. Bell, V. Inozemtzev, A. Chukhno) models. Sectorial development model of national economy (sectorial theory, theory of structural transformations) was the base for industrial society.

Upon studying theoretical principles and taking into account the results of empirical research, proposed to interpret “sectorial model of the national economy development” as an empirical model that allows to explore the structural changes at the national economy in accordance with social needs and technological approach, that is based on the leading role of the productive forces at society development, and to establish relations between the structural elements and to forecast future periods. It should be emphasized that the

sectorial model of national economy development at terms of postindustrial society makes it possible not only to assess structural changes by the technological criteria but also to take into account the social needs and determine human's place in the economic system and his importance at the development of society.

RESEARCH OF DEVELOPMENT MODELS OF NATIONAL ECONOMIES AT CONDITIONS OF POSTINDUSTRIAL SOCIETY

To analyze sectorial models of national economy development, the types of economic activities were divided into five sectors with regard to their technological intensity and in accordance to international and national classifications: Primary Sector (S_1) includes agriculture, forestry and fisheries; mining industry and the development of mining; Secondary Sector (S_2) includes manufacturing industry; supply of electricity, gas, steam and conditioned air; water supply, sewerage and waste management; construction; Tertiary Sector (S_3) includes transport, warehousing, postal and courier services; wholesale and retail trade, repair of motor vehicles and motorbikes; arrangement of temporary housing and catering; Quaternary Sector (S_4) includes financial and insurance services; real estate services; administrative and support services; public administration and defense, compulsory social insurance; Quinary Sector (S_5) includes information and telecommunications; education; professional, scientific and technical activities; healthcare and social assistance; arts, sports, entertainment and recreation.

Thus, the basis of the national economy of postindustrial society consists of economic activities that produce goods with high proportion of intellectual contribution and actively introduce innovations, therefore new class of employees, who actively use their intellectual abilities, emerges. In such national economy, information and innovation are resources that contribute to trends and dynamics of the development of industries, which define information as main limiting factor in production of an efficient economic system.

The results of studies on the transformation of sectorial models of national economy.

Countries with postindustrial societies have quinary structure of the national economy, which has a high priority for Quinary (S_5) and Secondary (S_2) Sectors in the form of high-tech material and immaterial productions and in the same time have decrease in Primary (S_1) and Tertiary (S_3) Sectors and expansion of the Quaternary (S_4) Sector. At sectorial models of national economy development at postindustrial societies, there is constant growth of high-tech industries, which is also concentrated in the manufacturing industry. For example, in the U.S. up to 80% of national economy growth is achieved by development of high-tech industries [21; 22].

Table 1. Comparative analysis of sectorial models of national economy development of postindustrial society during 2002-2012

Sector	The United State of America	Countries of EU
Main Trend	gradual increase in sectors of immaterial production (Quaternary, Quinary Sectors) by reducing in the material production sector (Primary, Secondary) – by 3.3-3.4 percentage points	
Primary Sector (S_1)	consistently occupies the smallest share in the national economy of country (1.0%)	occupies the smallest share in the national economy of country (1.7%) and gradually reduces (by 0.5 percentage points during the studied period)
Secondary Sector (S_2)	share of manufacturing (12.7%) is gradually decreasing, by 1.8 percentage points during the studied period, mainly due to the reduction in low-tech activities	share of industrial activities (14.97%) is gradually reducing, by 2.0 percentage points during the studied period, mainly due to reduction of low-tech manufacturing industries and fixation of production specialization
Tertiary Sector (S_3)	the share decreases during the studied period (18.0%)	there is a gradual reduction of the share by 0.8 percentage points during the studied period
Quaternary Sector (S_4)	it is the foundation of the national economy with the largest share – 34.2%	holds the largest share of the national economy (29.0%) with trends of growth (by 2.1 percentage points)
Quinary Sector (S_5)	during the studied period, the share gradually increased by 1.9 percentage points	during the studied period, the share in national economies of EU gained 1.3 percentage points

Note: compiled by the authors based on the results of their own research

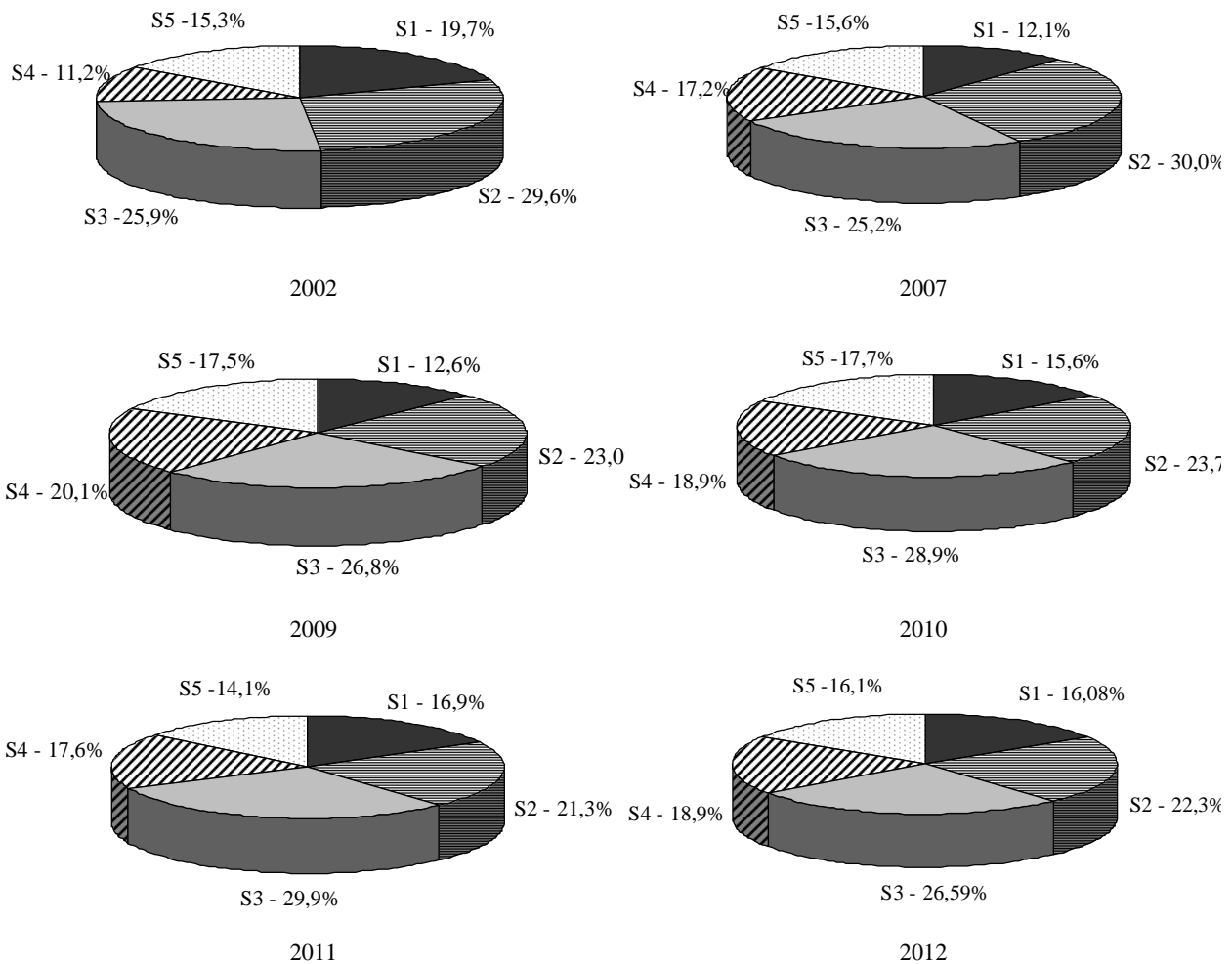


Fig. 1. Structure of sectorial model of Ukrainian national economy during 2002-2012

Legend: S_1 – Primary Sector; S_2 – Secondary Sector; S_3 – Tertiary Sector;

S_4 – Quaternary Sector; S_5 – Quinary Sector

Note: compiled and calculated by the authors according to the data [6-7; 17]

Industry remains the leading type of economic activity of the real sector of national economy as it accounts for over 27% of gross value added that is incompatible with the leading role of services that is inherent for postindustrial society. However, it is necessary to consider that internal structure of manufacturing industry of Ukraine has a "bias" towards heavy industry: steel and energy sector. During 1990-2010 period, the share of mechanical engineering, which is the basis for high and intermediate tech economic activities, fell almost in 3 times at industrial production structure: from 31% to 10.9% [8, 108], while the metal industry that is raw and intermediate tech economic activity, increased in 1.5 times, from 11% to 17.5% [8, 108].

Results of research of dynamics of the national economy of Ukraine in the framework of the sectorial model and investigation of impact of economic activities on the development of the country during 2001-2012 period gave us reason to believe that:

- economic development of the national economy of Ukraine was ensured by the traditional for industrial society economic activities, such as: mining and processing industry, which belong to the Primary (S_1) and Secondary (S_2) sectors;

- indicator of the gradual formation of the information society is gradual growth of the value of sphere of immaterial production, such as: financial and insurance services, real estate services, administrative and support service; despite of the priority of the economic activities of industrial society in the national economy;

- share of economic activity in the structure of the national economy does not influence on its importance for the development of the national economy. For instance, an increase by 1% at the financial and insurance services, which occupies 5.12% at the structure of the national economy, stimulate the growth of only 0.2989% of the national economy, while an increase by 1% at the transport, warehousing, postal and courier services, which have 8.53% share will bring growth by 0.8330%;

- economic activities that determine the development of the information society, such as: telecommunications and information, education, professional, scientific and technical activities, healthcare and social assistance, are capable to stimulate the development of the national economy of Ukraine.

To ensure the development of the national economy of Ukraine at the level of the information society, structural and technological transformations of the national economy must be introduced in two stages:

- Stage 1 – Achievement of the economical development level of Poland. Ukrainian national economy should grow steadily each year within 6.1-6.7 % range due to the Secondary (3.15-3.87 % with share of 31.7 %), Quaternary (12.53-12.94 % with share of 18.5-18.8 %) and Quinary (3.89-4.32 % with share of 19.2 %) Sectors;

- Stage 2 – Achievement of the level of EU countries (Germany, France). Ukrainian national economy should grow steadily each year within 5.2-5.4 % range due to the Quaternary (10.76-11.00 % with share of 29.0 %) and Quinary (2.32-2.51 % with share of 23.7 %) Sectors. Moreover, reduction of Primary (in 8 times – from 15.6% in 2010 to 1.7%) and Secondary (down to 24.8%) Sectors should be done. It is established that elimination of low-tech industries reduces the share of the Secondary Sector at the national economy.

CONCLUSIONS

As the results of the research of structural changes at the sectoral models of national economies at terms of postindustrial society can form the following conclusions:

- 1) development of national economies of postindustrial societies (the U.S., EU) is provided by the rapid growth of high-tech material and immaterial productions;

- 2) development of Ukrainian national economy for the period of 2001 – 2012 was provided by traditional economic activities of industrial society – mining industry and manufacturing;

- 3) in spite of decisive importance of economic activities of industrial society for the development of Ukrainian national economy, during the researched period, sphere of immaterial production (financial and real estate services, leasing, engineering and support of entrepreneurs), which is typical for postindustrial society, becomes more important;

- 4) to provide the development of national economy at terms of postindustrial society, development of the following economic activities, such as: information and telecommunications, education, professional, scientific and technical activities, healthcare and social assistance, should be stimulated.

REFERENCES

1. The Anthropology of Development and Globalization: From Classical Political Economy to Contemporary Neoliberalism / ed. by M. Edelman, A. Haugerud. – U.S.: Blackwell Publishing Ltd, 2005. – 416 (in English).
2. **Bell D. 1999.** Future postindustrial society. Experience socio prediction. – Moscow: Academia, 1999. – 956 (in Russian).
3. **Chukhno A.A. 2003.** Postindustrial economy: Theory, Practice and their Significance for Ukraine. – Kyiv: Logos, 2003. – 631 (in Ukrainian).
4. **DeVol R.C. 1999.** America's High-Tech Economy: Growth, Development, and Risks for Metropolitan Areas. – U.S.-California: Milken Institute, 1999. – 132 (in English).
5. **Gillis M., Perkins D., Roemer M. and Snodgrass D. 2002.** Economics of Development. – New York – London, 2002. – 605 (in English).

6. Gross regional product at 2001-2009 / State Statistics Committee of Ukraine; ed. by I.M. Nikitina. – Kyiv: LLC “August Trade”, 2011. – 150 (in Ukrainian).
7. Gross regional product at 2011 / State Statistics Committee of Ukraine; ed. by I.M. Nikitina. – Kyiv: LLC “August Trade”, 2013. – 167 (in Ukrainian).
8. Industry of Ukraine at 2007 – 2010 / ed. by O.M. Ovdenko. – Kyiv: State Statistics Committee of Ukraine, 2011. – 307 (in Ukrainian).
9. **Inozemtsev V.L. 2000.** Modern Postindustrial Society: Nature, Contradictions, Prospects. – Moscow: Logos, 2000. – 231 (in Russian).
10. **Kindzerskiy Y. 2010.** Economic development and transformation of the world's industrial policy: lessons for Ukraine // Economics of Ukraine. – 2010. – № 5. – 4-15 (in Ukrainian).
11. **Kolodko G.V. 2011.** Globalization, Transformation, Crisis – What further? – Moscow: Masters, 2011. – 176 (in Russian).
12. **Kooros S.K. and Badeaux L.M. 2011.** Economic Development Planning Models: A Comparative Assessment [Electronic resource] – Access mode: www.eurojournals.com/finance.htm – International Research Journal of Finance and Economics (in English).
13. **Kyzym M.O. and Moschytska T.A. 2011.** Research of regional disparities of socio-economic development in Ukraine // Problems of Economics. – 2011. – № 2. – 36-39 (in Ukrainian).
14. **Ouliaris S. 2011.** What are Economic Models? How economists try to simulate reality [Electronic resource] – Access mode: www.imf.org/external/pubs/ft/fandd/2011/06/pdf/basics.pdf – International Monetary Fund (in English).
15. Socio-Economic Situation in Ukraine: Implications for People and the State: national report / ed. by O.I. Amosha; National Academy of Sciences of Ukraine. – Kyiv: Vernadsky National Library, 2009. – 687 (in Ukrainian).
16. **Soskin O.I. 2011.** Theoretical and methodological aspects of the analysis of national economic models // Actual Problems of Economics. – 2011. – № 3 (117). – 36-45 (in Ukrainian).
17. Statistical Yearbook of Ukraine at 2012 / ed. by O.H. Osaulenko. – Kyiv: LLC “August Trade”, 2013. – 552 (in Ukrainian).
18. Structural Economic Reforms: International Experience, Institutions, Strategies for Ukraine: monograph / ed. by O.I. Amosha; National Academy of Sciences of Ukraine, Institute of Industry Economics. – Ternopil; Donetsk: Economic thought TNEU, 2011. – 846 (in Ukrainian).
19. **Shumpeter J. 1982.** Theory of Economic Development. – Moscow: Progress Publishers, 1982. – 455 (in Russian).
20. **Todaro M.P. 1997.** Economic development / ed. by S.M. Yakovleva, L. Zenin. – Moscow: Ekonomicheskies MSU, Unity, 1997. – 671 (in Russian).
21. Ukraine's economy: the long-term strategy and policy development / ed. by V.M. Geyets. – Kyiv: Institute of Economic Forecasting, National Academy of Sciences; Phoenix, 2003. – 1008 (in Ukrainian).