

The meso-level of development network forms of cross-border cooperation

Kovalenko S.I.

Ph. D (Economics), Associate Professor,
Danube Institute of National University "Odessa Maritime Academy"

The work is dedicated to exploration of main features inherent to meso-level of international integration formations representing network structures in intra-branch and inter-branch cooperation in the form of cross-border cluster systems encompassing macro-levels and micro-level of integration of national economy of multiple states. Possibilities of theory synthesis of international economic integration and cluster concept in economic area virtualization environment are revealed. Cluster approach is proved to be the most efficient mechanism to develop cross-border economic relations and represents, finally, a meso-level of competitive international integration systems and mandatory condition of quality advance for Ukrainian European integration.

Keywords: cross-border cluster system, meso-level, meso-economic synthesis, European integration, European region, innovations, competitiveness.

Коваленко С.І. МЕЗОРІВЕНЬ РОЗВИТКУ МЕРЕЖЕВИХ ФОРМ ТРАНСКОРДОННОЇ КООПЕРАЦІЇ

У статті досліджені основні характеристики мезорівня міжнародних інтеграційних об'єднань, що є мережевими структурами внутрішньогалузевого й міжгалузевого співробітництва у вигляді транскордонних кластерних систем, які об'єднують макро- і мікрорівні інтеграцій національних економік. Виявлені можливості синтезу теорії міжнародної економічної інтеграції і кластерної концепції в умовах віртуалізації економічного простору. Обґрунтовано, що кластерний підхід є найбільш ефективним механізмом розвитку транскордонних економічних взаємодій і, зрештою, є мезорівнем конкурентоспроможних міжнародних інтеграційних систем, а також необхідною умовою якісного росту євроінтеграції України.

Ключові слова: транскордонна кластерна система, мезорівень, мезоекономічний синтез, євроінтеграція, євро регіон, інновації, конкурентоспроможність.

Коваленко С.И. МЕЗОУРОВЕНЬ РАЗВИТИЯ СЕТЕВЫХ ФОРМ ТРАНСГРАНИЧНОЙ КООПЕРАЦИИ

В статье исследованы основные характеристики мезоуровня международных интеграционных объединений, представляющего собой сетевые структуры внутриотраслевого и межотраслевого сотрудничества в виде трансграничных кластерных систем, объединяющих макро- и микроуровни интеграции национальных экономик. Выявлены возможности синтеза теории международной экономической интеграции и кластерной концепции в условиях виртуализации экономического пространства. Обосновано, что кластерный подход является наиболее эффективным механизмом развития трансграничных экономических взаимодействий и, в конце концов, представляет собой мезоуровень конкурентоспособных международных интеграционных систем, а также необходимое условие качественного роста евроинтеграции Украины.

Ключевые слова: трансграничная кластерная система, мезоуровень, мезоэкономический синтез, евроинтеграция, евро регион, инновации, конкурентоспособность.

Formulation of the problem in general terms. One of distinguishing features of modern global economic development consists in worldwide economy entering a phase of misbalanced infinity which changes former opinion of scientific community about cyclic character and other objective patterns in development of postmodern economy. The postmodern is also known as an age of disappointed modernization with vanishing reality replaced with network structures forming a virtual economic space. The postmodern economy advance occurs as a result of leaving centralized control system of economic space for pluralism with further step from vertical hierarchies to horizontal networks. This process

was identified by Western scientists as "quasi-integration" with network clusters being one of its forms. Nowadays, topic of cross-border clusters development with purpose to homogenize manufacturing and innovations within the EU rises at the EU topmost level.

A sufficient number of positive examples may be found in cross-border business relations at the meso-level, including manufacturing and innovative clusters. However, corporative and public experience in this aspect is not sufficiently studied and no trends, obstacles and factors stimulating development of such cooperation system are revealed so far. Decreasing significance of territorial component with advancing

IT and self-organization of economic space of euroregions draws to formation of virtual inter-company networks and to opportunities to create *cross-border cluster systems* capable to evolve quickly in modern environment. The cluster approach, therefore, broadens and enables to involve greater number of corporations and states into global data exchange. The unified concept of European economic integration is not yet formed taking into account development methodology for international industrial and innovative clusters.

This problem statement may be described as a meso-economical synthesis of development strategies of international manufacturing and innovative clusters and international integration formations and, to the author's opinion, it enables to draw up both practical mechanism as well, as scientific idea of development for modern integration systems.

Analysis of recent research and publications. Review of researches and publications for the latest past years shows great interest in the competitiveness problems existing in regions adjacent to states' borders. Possibilities to apply marketing tools for clusterization processes are studies in works by M. Porter, H. G. Bolt, I. Tolentino, P. Doyle, F. Kottler, H. Lyce, J.-J. Lambain, E. Toffler and many others. As experience shown in advanced states development worldwide confirms, economic competitiveness may be only achieved by means of applying innovative development model with final aim of implementation to increase well-being of nation by means of acceleration in economic growth. [1, p. 10].

Problems in market structural modernization and competitive development as factors stimulating innovative activeness of economic systems are reviewed in researching works by J. Schumpeter, K. Arrow, R. Nelson and S. Winter. The enlisted scientists researched market subjects' integration mechanism, formation of innovations structures to generate manufacturing, technological and organizational advance. Representatives of the institutionalism O. Williamson [2], R. Coase [3], W. Nordhaus, F. Hayek contributed greatly to solve the problem in question. The enlisted persons in their works applied efforts in the areas, as follows:

1) pointed out drawbacks in information preventing mutually beneficial activities, discrepancies between apparent and hidden knowledge;

2) concentrated on studying influence of transaction expenditures upon advantages of various forms of organization. Modern sources

classify industrial areas, holdings, clusters, territorial manufacturing complexes as territorial forms of network industrial integration, encompassing regions, technological platforms, etc. [4]. As time ran the concept of "*industrial area*" evolved – analysis of notable characteristics was made by A. Marshall, G. Becattini, O. Williamson [2, p. 211].

Nowadays there are various hybrid forms in cross-border quasi-integration involving euroregional subjects of economy with stable long-term contacts and assigned control of common activities due to lack of legally supported proprietary titles transfer, such as clusters, business associations, strategic alliances, various network formations [4].

Michael Porter in his work "Competitive Advantage of Nations" draws a remarkable conclusion, as follows, «*developing an investment policy transition economy should strive to develop mutually dependent industrial cluster involving basic and auxiliary branches of industry*» [5]. Approach to estimate a regional competitiveness may be formulated basing upon a national competitiveness concept proposed by M. Porter.

Works by national economists, such as B.V. Bourkinsky, V.M. Heyets, M.I. Dolishniy, V.S. Kravtsiv, Yu.V. Makogon, S.I. Sokolenko, S.V. Filippova etc. Deal with development problems of forms and tools of cross-border regionalism on the quasi-integration basis accompanied by prevailing newer technological mode and newer challenges imposed by global instability reviewing various aspects of development innovative forms in network cooperation, including grounded strategies of economic progress in view of problems with European integration of Ukraine. Works by scientists, as enlisted above define theoretical and methodological aspects of competitive cluster development. Nevertheless, it should be worthwhile to note that mechanism of cross-border cluster systems in Ukraine is not practically explored which imposes a demand to deal with this subject. Academician V.M. Heyets noted a lack of methodological approaches to evaluate economic efficiency of cluster formations in various branches of economy, particularly for potential development of regional formations as structurally integrated and original territorial and administrative units.

The wording of article purposes (problem definition). Model "Expenditures – Production" was applied to review inter-branch cooperation within a cluster and tools selection to identify and evaluate clusters' development

level as well, as works by national scientists, such as M.P. Voynarenko, V.I. Zakharchenko, N.A. Mykula and foreign researchers, such as U. Aisard, V. Leontyev, P. Neikampf. Ukrainian research materials and publications dealing with problems of cross-border industrial clustering are insufficient so far. Furthermore, there is an obvious falling behind time of scientific evaluation and practical steps of development, which are already being implemented both by business and adjacent states for clustering regional economic space. Yet, needed theoretical foundation enabling to adapt the Porter's cluster concept for national specifics was represented by explorations of problems of cross-border regional competition carried on in Institute of Market Problems and Economical and Ecological Researches of Ukrainian National academy of Sciences. Still the problem remains unsolved as regards filling the gap between industrial cluster model theoretical construction and requirements of business and public entities to scientific grounding of adopted strategic decisions on the meso-level [5, p.17]. It means still existing necessity in development of methodological tooling of model application in developing trends and measures in cross-border industrial policy, development strategies and programs for the Black Sea euroregions, corporative competition strategies. Furthermore, cluster theory is being linked with corporative theory, theory of innovative development, theory of economic progress. However, with all the available substantial researches in network clusters, these structures in cross-border aspects remain insufficiently studied both in the terminology and sensual areas.

The work has as its aim providing a scientific grounding for synthesis of cross-border cluster systems as a meso-level of international integration formations, which become poles for euroregional economic progress and finding an opportunity to implement this concept in the process of European integration for Ukraine.

The presentation of the main research material. Modern industrial and innovations clusters take a form of international (cross-border) cluster systems, which may be regarded as a major research object for mesoeconomics, i.e. the crucial meso-economic system. Mesoeconomics should be intended to play a part of linking bridge between microeconomics and macroeconomics but is an under-estimated component of economic science, especially in view of modern international economic relations. In brief, meso-economics may be defined as a system

of interconnections between branches of economy consisting of networks and chains of certain types.

Meso-level of international economic integration is an organization structure of intraindustry and inter-industrial cooperation in a form of international cluster systems which integrate micro- and macro-levels of integration of national economies. Cross-border economic interactions should be highlighted as a component of meso-economy leading to cross-border regions formations (contact function performance) [6, p. 18].

National clusters, as their development advanced, became to expand beyond national borders in areas adjacent to national borders. In other words, the cluster paradigm shifted into a sphere of cross-border and international cooperation with the concept of cluster cooperation becoming a matter of several states instead of single. At the same time process of virtualization of intercorporation cooperation and, respectively, clusters' virtualization started gradually.

In general, international clusters system concept synthesis logics as a meso-level of international economic integrations bases on the criteria, as below:

- demand to increase efficiency of regional integration formations with accelerating economic and innovative cycles;
- development of meso-level of international economic integration (regions, institutions, intercorporations network);
- international cluster systems which display most completely meso-economic approach in modern conditions;
- international clusters as business and ecologic systems, evolutionary, network approach to development of international economic integration.

Cross-border cluster systems are advantageous since they generate certain synergy effects and increase efficiency being of low cost at the same time. Main synergy sources in clusters are knowledge exchange, accessible pools of skilled competent employees for participants in cluster or accessible general public benefits. Cluster in this context represent signal characteristics of "real" economics.

Cluster thinking and cluster strategies possess a potential to speed up regional economic progress and facilitate to economic restructuring. However, the most important factor in this context consists in clusters being a paradigm to a greater extent. So, the second reason to turn to cluster concept consists in capability of clusters,

further to a mere practical aspect, to provide a powerful paradigm to understand principles of economic life and economic policy.

And, finally, from the economic policy point of view, the third reason of modern turning to clusters consists in the clusters' capability to construct pre-manufacturing postmodern economic system and to evade rhetoric of obsolete "industrial policy" enabling, nevertheless, national authorities to strengthen national competitiveness.

Cross-border clusters form in regions adjacent to borders of two, or more States "over and beyond" their administrative borders. They encompass adjacent territories with institutions and corporations residing at either side of a border, or even at both sides. The cross-border clusters therefore may be defined as groups of independent companies which are geographically located in *cross-border region*; cooperate and compete; are specialized in different branches, connected with common technologies and skills and complement each other, all of which in total enables to obtain synergy and networked effects, knowledge and skills diffusion.

The *cross-border cluster systems (CBCS)* are proposed for consideration as strategic planning objects meaning territorially localized social and economic systems formed by a group of independent economic subjects at both sides of national border involving organization of public authorities of States representing both euroregion and civil society, cooperate steadily with each other by means of data exchange, services exchange, personnel exchange and funds exchange and achieve higher efficiency in comparison with other objects being not organized systematically. The CBCS may become centers of regional development by means of attracting investors, implementing and spreading innovations, forming personnel fund of newer quality, business culture, and adequate institutions development aiming to solve problems of national economy modernization in general.

The CBCS is considered as a network structure involving interconnected territorially and complementary enterprises located at either side of national border (including specialized suppliers of raw materials, components and services as well as manufacturers and customers) grouped around scientific and innovation centre with vertical links with local authorities to improve competitiveness of enterprises, regions and national economy. The «Cross-border Cluster» term displays the fact that corporations in the global instability conditions compete with each other not so much in productivity than in

the capability to innovations. The cluster unions of enterprises are capable to adapt to modern innovation processes. Cluster strategy of cross-border cooperation provides formation or territorially localized cluster units of regions adjacent to national borders around foreign innovation corporations whose network agents (manufacturers of innovative production and service providers, suppliers, infrastructure objects, scientific and research centers, higher education establishments) cooperate basing on principles of competition and cooperation and generating synergy effect, complementing each other and increasing competitive advantages of both individual corporations and the cluster in general.

Classic integration provides total control establishment both in respect of property and assets of united business entities. Depending on scope of activity a number of integration kinds may be classified. Horizontal integration consolidates manufacturers being at the same chain stage and provides advantage due to scale effect. Vertical integration represents a strategy protecting essential business from markets' deficiencies. Reverse vertical integration (at the initial stage of manufacturing chain) is normally necessary to protect from suppliers' monopoly. Direct integration enables to increase added value and influence final demand. The most common form of classic integration is represented by creation of various transnational holdings. The driving power of a holding formation consists in striving to keep stable links and to improve own stability in economy by means of forming a balanced business portfolio. There are various kinds of corporate management within the framework of holding structures. Common objective advantages inherent with all the types of holdings are as follows:

- substantial decrease in transaction expenditures;
- scale effect;
- substantial manufacturing synergy and risks hedging.

Since formation of cross-border cluster is an inherent evolution of social, technical and technological relations at the meso-level the cluster policy becomes a new policy in euroregional development. A cross-border cluster as an economic agglomeration of mutually dependent business entity is a "growth point" or an important factor of steady social and economic development for euroregions. In this view, the cluster policy, firstly, creates favorable conditions to activate innovations in real sector of economy and for its modernization for further technolog-

ical breakthrough. Secondly, such policy in poor resources environment and not always consistent national policy enables to solve social problems of a euroregion. With modern global economic trends and priorities social development becomes a prospective strategy to enable stability and competitiveness of peripheral territories. The part played by socially-oriented network clusters in euroregion becomes more important. M. Porter and M. Enright nominated, at least, three major reasons to stimulate development of cluster systems:

- 1) increase labor efficiency and manufacturing efficiency;
- 2) stimulate innovations;
- 3) facilitate knowledge and production commercialization.

In the modern theoretical economics “integration – disintegration” dichotomy is complemented with one more category – “quasi-integration” and “corporation – market” dichotomy is extended with the “hybrid” category. Applying the asters control criterion the quasi-integration may be defined as a process of establishing control of behavior of formally independent corporations with their property being beyond the control. There are various hybrid forms of cross-border quasi-integration as a grouping of euroregional business entities with stable long-term relations and assigned control of common activities without any legal transfer of proprietary titles: clusters, business associations, strategic alliances, various network groupings, etc. their common feature, as defined, is a greater share of medium and minor business, but not large business.

Quasi-integration structures are network structures to which industrial and innovations clusters may be assigned to full extent. In other words, industrial and innovations clusters are quasi-integrated structures consisting of legally independent corporations where, with uncontrolled assets ownership titles there is a control of their management.

Review of quasi-integration processes within the CIS economic area might be carried on most obviously basin on concept of sub-regional integration with a region as a quasi-corporation, i.e. a substantial subject of economic activity producing public and private *cross-border* benefits, cooperating with corporations and governments and, thus, being one of subjects of economic power. However, to the author’s opinion, cross-border integration is a complex process generating complicated systems. Therefore the cross-border euroregion contains multiple political and economic functions.

To the author’s opinion, it is corporative integration which plays a key part in a process of possible international clusters formation as a meso-level of integration within the European economic space.

Science, high technologies and cross-border network organization structure transform geo-economic space changing relations in manufacturing, influencing relations between cities and regions, “center – periphery” model. Advancing differentiation of local structures in network economy transforms global infrastructure of geo-economic system in total.

Thus, from the point of view of cross-border cooperation within the framework of international integration structures the most important criterion of its efficiency, to the author’s opinion, lies in the transfer to unified trans-border region by means of border contact function development as network cooperation.

Basing on researches it may be feasible to formulate certain specifics of a cluster model of cross-border cooperation as the most adequate in view of modern global economy development tendencies and stage of integration, in particular, within the framework of EU common economic space.

Cross-border business association (being either industrial or territorial union) is a form of horizontal integration. Its distinguishing feature consists in cooperation of competitors and partners from adjacent links of cost generation chain who provide their resources to develop and regulate common market, lobbying common interests in public entities, such form of integration becomes a key instrument to improve efficiency of industrial policy and enables sometimes to compensate both market failures and even national failures. Value of industrial communities lies in significant club advantages for their members (common brand or trademark, belonging to circle of chosen ones, lower costs of training, interests protection, information support, etc.). The most significant industrial benefit provided by the business association lies in interests lobbying at a lower cost, broad publicity and higher chance of positive solution. Specific feature of a cross-border cluster as a quasi-integration form lies in its geographical localization, preventing concentration of mutually dependent corporations, specialized suppliers and servicing organization within restricted territory, which compete and at the same time carry on common activities at both sides from national borders. Researching competitiveness problems M. Porter identified three major advantages of the clusters. Firstly,

the clusters improve productivity providing the access to specialized resources and labor, facilitating access to information, institutions, social benefits. Secondly, the clusters motivate higher temps of generation of newer business entities transforming former employees of existing enterprise into new businessmen. Thirdly, they increase opportunities for corporations to implement innovations by means of quicker diffusion of technological knowledge. Unique capability of cross-border clusters to speed up innovations diffusion permits to classify them as innovatively active economic formation or cross-border area of higher innovative activeness. Here the cluster positioning as a specific structural component of economy is complemented by its definition as a specific local social and cultural community with internal environment of trust and cooperation. The CBC facilitates the deepening of economic integrations of its members into global economy and increasing level of their international competitiveness due to formation of common manufacturing and sales chain, cross-border spreading of knowledge and innovation, costs saving achievement in manufacturing, reducing transaction expenditures due to common management bodies and reducing transport costs due to using common infrastructure, etc.

Cross-border cluster is an innovation model providing multiplicative effect in solving a complex of social, economic, scientific, technical, educational, political, investment problems of peripheral areas of Ukraine. The cross-border cluster system is a newer type of a system with a newer ideologically functional configuration enabling to expand sphere of functional and organization relations which generate complex activity connecting people, aids, resources and newer paradigms for Ukrainian information space formation, monitor logistic chain of integrated application of all the interrelated types of resources.

This it may be stated that a newer wave is generated in development of cluster theory. It confirms the significance of this topic and permits to develop this concept in the cross-border cluster systems.

Probable directions of the "second wave" in innovation clusters researches are enlisted below:

- clusters development in context of theory of evolutionary economics, cluster concept as business and ecological systems;
- possibilities and regulations of international cluster systems formation, including cross-border clusters;

- clusters as stimulating systems of internal and international economic progress;

- mutual competition and other synergies within the cluster and among clusters;

- reducing influence of territorial component of clusters' development, cooperation networks virtualization within the framework of "network space".

Important preconditions enabling to form objects of cross-border cluster systems are represented by strengthening of external and internal competition and necessity to involve euroregional enterprises into international chains generating added value. Essential factors facilitating clusters generation include activation of international cooperation between regions adjacent to national borders and implementation of large-scale joint projects of creating objects of transport, power-generating, touristic and leisure infrastructure.

Prospective industrial vectors of clusters development are visible in power-generation, transport and logistics, foreign trade, tourism and leisure complexes. Prospective sphere may include also scientific and technical cooperation between scientific and educational centers, which create favorable conditions for creation of cross-border innovations and implementation clusters.

Distinguishing feature of a cluster as a quasi-integration form is its geographical localization which is expressed in concentration mutually connected corporations, specialized suppliers and servicing structures within a restricted territory which compete with each other and carry on common activities at the same time. Clusters continue to remain such a theoretical construction which has not clear outline and positive external features. However, in a long-term future these quasi-integration forms will become a main driving force for innovative development. Essential significance from the point of view of treating clusters as a meso-level of international integration schemes is represented by modern tendency of changing territorial paradigm of global economy for specious paradigm both at theoretical and practical levels and – as a consequence – a tendency to reduce gradually role of territorial component of industrial and innovative clusters and development of information virtual clusters and *clouds of intra-cluster's and inter-cluster's relations*.

At the same time cluster concept is not dispersed as well, as it is not brought to an absolute. It is gradual reconsideration of the cluster definition as an eclectic concept within multi-

plicity of business entities and types of solution being selected that is taking place at the current moment

In view of described actual trends an insistent demand is rising to reveal and analyze externalities of international integration groupings and formations and cluster systems as “overflow” effects. Their merging forms a field of effects produced by international cluster systems as a meso-level of international economic integration. Basing on the analysis of international aspects in cluster development an *international cluster system* term has been introduced with its essential types outlined as international, cross-border and globalizing providing opportunities for development of said types of cooperation involving Ukrainian business structures.

The cluster concept itself experiences, to the author’s opinion, the “second wave” of scientific and practical interest expressed in research of opportunities for internationalization of industrial and innovations clusters, understanding clusters in the evolutionary economy context as business and ecological systems bringing necessary variety and capability to adapt to existing model of network cooperation and possibilities to reveal both positive and negative externalities.

Findings from this study.

1) The cluster approach becomes the most efficient instrument for development of international economic cooperation under modern conditions and, finally, construes a meso-level of competitive international integration systems and essential precondition for quality integration advance in European economic area.

2) Modern tendency to change territorial global economy paradigm for specious with consequent tendency to reduce gradually territorial component of industrial and innovation

clusters and development of information virtual clusters in euroregions involving Ukraine gains an important role from the point of view of considering cross-border clusters as a meso-level of international integration systems.

3) Thus, necessity of formation and identification essential meso-level particulars for international integrating groupings being organization or administrative structures of intra-industrial or inter-industrial cooperation in the form of cross-border cluster systems combining macro- and micro- levels of national economy integration is proved.

4) Newer postmodern reality lies in combination of post industrial manufacturing with network economic space providing for institutions transplantation by means of self-organization of hybrid network clusters at both sides of a national border, which becomes a factor facilitating concentration and free circulation of capital funding in euroregions. Competitiveness of a newer manufacturing mode is determined by innovations seed rate and capability to continuous upgrading. Thus the post-industrial economy evolved into a system of interacting institutions to form a newer cluster paradigm of postmodern in a cross-border dimension requiring virtual resources for its development, such as information, innovations, communications, knowledge.

5) In modern post-industrial paradigm of euroregional development priority of essential factors of deployment sustained substantial transformations changing the function of peripheral territories from physical basis as a location of deployment of material factors it is more and more shifting to specious environment for development of labor resources, innovations and self-development promotion.

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