Dominant Theories of Regional Growth and New Forms of Territorial Organization of Industrial Production

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Abstract. In this article, the authors consider the dominant theories of regional growth and new forms of organization of industrial production in regional economy. They attempt to distinguish common sources of growth immanent to the regional systems, and show how the regional economy can transfer from stagnation to slow growth and at last to the situation when the growth becomes an optimal regional economic phenomenon. The meso-economic analysis contains a certain value system, affects the interests of various population groups and acquires a distinct social orientation. The development of innovative meso-economy is accelerated under the influence of modern digital revolution. This updates the theories of innovative regional economy. The active and direct participation of the state in the investment process, the planning and programming of innovative economic activity of the region are required to overcome the rigidities of the regional economy quickly. Increased investment should cause cumulative growth of income and achievement of full employment in the region. There will be created the conditions that provide opportunities for reinvesting the profits of entrepreneurs, mobilizing the endogenous industrial resources and diffusing the growth impulse arising from innovative sectors all over the regional economy. The structure of the regional industry undergoes numerous changes while modernization; all its elements pass through various stages of renewal.

1. Introduction
Inactive economic structure of the region, lack of capital, skills and technological knowledge determine the inelasticity of the supply of production factors in the short term. These factors cause difficulties in obtaining additional investments necessary for regional industrial production growth. At the same time, in some cases they do not allow to use the existing industrial capacity at full load even when there is a necessary effective demand for the produced goods and services. The existence of hidden unemployment, the predominance of small-scale households, the dominance of small agricultural production cause the situation when additional demand is focused mainly on food products, which supply is inelastic. The increase in income results in consumption growth and decrease in market surplus rather than in the increase in the production of consumer goods. To accelerate the regional economic growth it is necessary either to increase the rate of accumulation or to increase the capital productivity, i.e. reduce the capital coefficient by increasing the level of capacity utilization, changing the sectoral structure, modernizing production, etc. However, the ultimate
possibilities of the regional economy are not constant. The regional economy may exceed its production capabilities. There are two ways to develop it:

1) by increasing production factors (for example, discovery of new mineral deposits);
2) by using the latest achievements of scientific and technological progress, unique production methods to increase efficiency and to ensure high quality of goods and services.

Regional economic growth is an ability to produce greater volume of gross regional product. Investments are the strategic parameter of regional economic growth. The state is the only real force capable of mobilizing economic resources and giving a powerful impulse to innovative development. The efforts of the state should be mainly focused on increasing savings and turning them into industrial investment in the region. The important thing is massive public investment in infrastructure and basic sectors of the regional economy, which should reduce investment costs for business and increase the profitability of private investment. At the same time, it is necessary to expand the investment loan and reduce the interest rate, as well as use various types of direct and hidden subsidies for private investment in the industry of the region. Public investment does not mean restricting private entrepreneurship, on the contrary, it should stimulate regional economic situation and create a basis for a private-public partnership.

2. Problem statement
In the economic literature of the latter half of the twentieth century, both dynamic and spatial or regional theories and models of economic growth were developed. Five dominant areas are distinguished within modern theories of regional growth [1]:

1) neoclassical theories based on production function;
2) theories of cumulative growth, which are the synthesis of neoclassical, institutional and economic-geographical models;
3) new theories of regional growth based on increasing returns to scale and imperfect competition;
4) new forms of territorial organization of production based on industrial and regional clusters, value chain, economics of learning, national and regional systems of innovations;
5) other theories explaining particular issues of regional growth.

3. Research questions
In spite of numerous publications in economic literature, some theoretical aspects of interrelation of regional growth and new forms of territorial organization of industrial production are not sufficiently studied and specified. The question is: how are they theoretically solved? Why does the linkage of problems of regional growth and territorial organization of industrial production become relevant? Why is it necessary to analyze the concepts of regional growth and new forms of territorial organization of industrial production?

4. Purpose of the study
The purpose of the study is to form the holistic concept of interrelation of the regional growth and new forms of territorial organization of industrial production, reveal new forms of production organization and regional growth, which are appropriate to new economic conditions.

5. Research methods
The works of Russian and foreign economic scientists in the field of structural changes, regional economics and sustainable development have been the methodological basis of this research. In the article, the authors have used the dialectical principles to reveal the content of the current economic processes and phenomena, determine the trends of their development and the emerging contradictions. The general scientific cognition methods, such as analysis and synthesis, systematization and classification, comparative and multifactor analyses, have been used during the research. The authors have also relied on the expert methods of information obtaining and processing to substantiate the main provisions of the article.
6. Research results
The modern theories of regional growth are based on the concept of “mutual and cumulative causation” of G. Myrdal. The key notion in G. Myrdal’s theoretical system is the idea of cumulative growth. The cumulative principle highlights the processes that, once started, create the conditions for further development. They provide the final result, which immeasurably surpasses the initial impulse. At the same time, the effect of these processes is unidirectional. The most prominent representatives of the theory of cumulative growth are G. Myrdal, A. Hirschman, F. Perroux, H. Richardson, J. Friedmann, T. Hägerstrand, J.-R. Boudeville, P. Pottier, J.R. Lasuen, H. Giersch and others [2; 3].

F. Perroux’s concept of “growth poles” can be distinguished in the economic theory. It states that growth appears in some points or growth poles. From a certain point of time, new growth covers the entire economy with changing dynamism. Eventually the concepts of “growth poles” have been improved by a clear definition of the ongoing processes [4]. In this respect, J.-R. Boudeville's concept is rather interesting; it states that there are dynamic, propulsive sectors in the economy, which are the “development poles”. The novelty of P. Pottier’s concept of “growth poles” is the idea of development axes. It substantiates the idea that the territories located between the growth poles and providing transportation links receive additional growth impulses due to increased freight traffic, diffusion of innovations and development of the infrastructure of the economy. J.R. Lasuen in his concept considers in detail the growth poles and reveals their peculiarities and main features. H. Richardson in his model of cumulative causation substantiates the idea that growth is a process of cumulative causation, and the benefits are shared between those regions, which are already in a favorable environment. In another H. Richardson’s theory – urban agglomeration – the main factor of growth is the accumulation of industrial activity in the cities, which are the large industrial centers and growth poles. They are the accelerators of the industrial development. In economic geography, the “center-periphery” model, or the “core-periphery” model, is presented as a model of cooperation between central and peripheral regions in the process of their development. This model (J. Friedmann, T. Hägerstrand, P. Haggett) represents an attempt to develop a new approach, which states that economic growth is concentrated only in the cities. In this model, a small center combining advanced technological and social achievements is opposed to a huge periphery community of the remote and inertial areas with slow modernization, which is a source of resources and a consumer of innovations. In the model of “diffusion of innovations” or “waves of innovations” by T. Hägerstrand four “waves of innovations” are distinguished. T. Hägerstrand’s concept has been further developed in the model of “volcano” by H. Giersch. He proves that a large urban agglomeration with its developed industry and a strong scientific base has the highest level of per capita income. Here is the eruption of innovation lava, which is gradually spreading to periphery and results in increase in the welfare in other areas. All this is provided by periodic impulses of innovative activity. A major release of innovations from the “growth pole” penetrates the periphery. The intensive transformation of the peripheral economy takes place under the influence of this process. It is important that the growth becomes continuous and is accompanied by a gradual increase in the level of well-being of inertial regions. H. Giersch notes the frequency of innovative impulses. The growth poles mobilize the capital from internal sources and contributes to the diffusion of innovative impulses from urban agglomeration to the periphery.

At the same time, the innovations are gradually fading out under the influence of negative factors inherent in urban agglomerations (“volcanic attenuation”) [5].

In terms of globalization, the dominant trend is the transition from national to regional level of development [6]. It is related to the new role of regions, which are more suitable for creating innovative infrastructure. There can be various types of regional development in one country. This can be explained by the fact that there is rarely complete homogeneity in one economic area. In this case, it is necessary to adjust the existing systems of thinking to meso-economic conditions, as well as to find a set of initial prerequisites, conditions and factors for each situation and each stage.

This viewpoint has become predominant and widespread in various theories of regional growth [7].
In modern conditions, the theories of cumulative growth and the concepts of new forms of territorial organization of production are of great practical interest from the position of innovative development of the regional economy.

The unique processes creating conditions for further development are significant in the theories of cumulative growth. They provide the final result that significantly exceeds the initial impulse. The core of these models is the following fundamental aspects:

1) growth centers;
2) growth distribution channels in spatial economics;
3) formation of agglomerations and central places;
4) diffusion of innovations;
5) development of the peripheral areas;
6) constant returns to scale.

Two models of this school consider innovations and mechanisms of their diffusion as leading factors of regional development.

The concept of “growth poles” by F. Perroux and P. Pottier. F. Perroux is a head of the institutional and sociological approach. He has developed a number of basic principles of the dirigiste economic policy. F. Perroux is an author of the “domination concept”, from which he derives the principles of indicative planning. The dominant unit with a powerful “pulling effect” is a growth pole and generates an “agglomeration” effect. The growth poles, which can be a firm, a sector of industry, or a complex of industries having a powerful “pulling effect”, form points, zones or development poles in a region or a country. One of the most important directions of the state economic policy is the principle of selectivity, which is the basis of the concept of the “privileged points of use of force, i.e. the so-called points, zones or growth poles” [8, с. 3 - 4].

F. Perroux’s “growth poles” include three main component parts:

1) a leading role, the industry is a motor with strong growth potential and high capacity for innovations;
2) a group of local industries associated with it. The effect of the leading industry is transmitted on the entire economy through these interrelations;
3) spatial agglomeration of production providing enterprises with “external savings”. This creates a series of interrelated effects. Under optimal conditions, they contribute to the dynamic development of regions.

The most famous schools among the theories of new forms of territorial organization of production are: 1) American; and 2) Scandinavian.

American school of theories of new forms of production organization has a strong position in economics (M. Porter, M. Enright, M. Storper, S. Rosenfeld, P. Maskell, M. Larenzen and others).

M. Porter’s theory of industrial clusters. M. Porter is a pioneer of the “introduction” of clusters into economic theory. He substantiated the contribution of “economic clusters” to the competitiveness of large enterprises and countries in a number of his works of the 80-ties of the 20th century. This approach justified the formation of economic clusters as territorial concentration of enterprises. At the same time, it assumed the presence of stable geographical boundaries of the cluster, permanent participants, etc. [9]. The regional approach as a basic principle of the economic theory and practice of clusters has become common [10]. Many researchers have become supporters of the regional approach to the study of nature and peculiarities of economic clusters [11].

M. Enright’s theory of regional clusters. The author has made an assumption that competitive advantages are created at the regional level. A regional cluster may include:

1) industrial area of small and medium-sized enterprises;
2) concentration of high-tech firms connected through the development and use of common production methods (technologies);
3) production system with former enterprises of large multinational companies and firms detached from the parent companies as a result of the spin-off process.

According to M. Enright, regional clusters are specific objects of cluster policy.
The theory of regional clusters by S. Rosenfeld and P. Maskell. The authors suppose that a regional cluster is a geographically defined concentration of interdependent firms in the area where there are channels for production transactions, dialogue and communication between small and medium-sized enterprises.

Later P. Maskell, and M. Larenzen have developed this theory. In their opinion, the organization of networking cooperation between firms based on the confidence in the partner is the main condition to form a competitive regional cluster and improve competitiveness.

The important feature of American school (the theory of new forms of territorial organization of production) is the recognition of industrial and regional clusters as the main spatial form of economic development.

Scandinavian school of theories of new forms of production organization. The leading theories are the theories of the economics of learning and national system of innovations by B.-Å. Lundvall and B. Johnson (Denmark) and the theory of the regional system of innovations by B. Asheim and A. Isakcen (Norway).

The theory of the economics of learning by B.-Å. Lundvall and B. Johnson states that the invention of innovations and generation of new knowledge are the only option to increase competitiveness. Innovation is a cumulative and ubiquitous process. They use the concept of incremental innovation. The opinion exchange between the manufacturer and the consumer contributes to the generation of incremental innovations. According to B.-Å. Lundvall, learning is the main process to improve competitiveness of a small economy. It is a continuous process of improving skills and knowledge necessary for the production of innovative goods and services. New knowledge can be acquired:

1) during work process;
2) during professional education.

B. Johnson emphasizes that along with the accumulation of new knowledge in the process of learning, it is important to perceive new ideas; this makes it possible to modernize and improve the economy.

B.-Å. Lundvall considers the “national system of innovations” in a narrow and broad sense. In a narrow sense, it is “the whole system of organizations and institutions involved in the process of search and invention, i.e. research institutions conducting R&D, technological institutions, universities and divisions of private enterprises”. A national system of innovations in a broad sense includes “all aspects of the economic structure and institutional system, which affect the process of search and research, i.e. production systems, marketing system, financial system, as well as all subsystems that operate within the above-mentioned systems”.

According to B.-Å. Lundvall the national system of innovations includes:
1) internal organization of firms;
2) intercompany relationships;
3) public sector;
4) institutional environment for creating a financial sector;
5) intensity of R&D and its organization;
6) a national system of education;
7) a system of vocational training.

The theory of the regional innovative system by B. Asheim and A. Isakcen. The authors consider industrial areas as the source of innovations. Such areas have significant innovative potential for continuous invention of innovations. However, the potential of internal resources may not be sufficient to generate radical innovations in the process of forming a new technical and economic paradigm. According to B. Asheim and A. Isakcen, in such conditions, it is necessary to implement an interactive innovative model, in which knowledge is the main resource and learning is the main process. At the same time, the competitive advantages of regions should be developed basing on the process of learning in regional industrial areas. They have named these regions the regions of learning. An important feature of the regions of learning and regional innovative systems is the application of both internal and external knowledge.
B. Asheim and A. Isakcen single out three types of regional innovative systems by the ratio of internal and external knowledge. The first type is a territorially autonomous regional innovative network with predominance of internal knowledge over external one. It produces mainly incremental innovations. The network is coordinated by local firms on the basis of the regional economy of learning. The network is characterized by weak interaction with external organizations generating knowledge. Intraregional information exchange is stimulated by the geographical, social and cultural proximity of company employees. The second type is a regional network innovative system, where the firms are closely connected with local peculiarities of development. Nevertheless, the firms are largely export oriented. The clusters include local firms, affiliates of multinational companies as sources of external knowledge, supporting institutions that generate knowledge. The third type of the regional innovative system is a model of exogenous development. Here a part of firms and institutions is included in the international innovative system. At the same time, joint activities are based on a linear innovative model oriented to the invention of radical innovations. This industrial area works mainly for export. At the same time, it is a supplier of component parts for end consumers [12].

In general, Scandinavian school is characterized by special attention to:
1) the process of learning and diffusion of innovations;
2) state support of the activities of enterprises to ensure a continuous learning process to improve their competitiveness.

The concepts of Scandinavian school have substantially enriched the theories of American school with the idea of the necessity and significance of a continuous process of learning, improving skills and acquiring knowledge. They recognize the system of knowledge generation as one of the elements of the cluster. The key points in this process are: the expansion of knowledge consumption, emphasis on the creation of knowledge-based industries, use of innovative technologies and creative employees.

7. Conclusion
The authors identify the transition to innovative regional growth with the achievement of a certain critical level of per capita income, at which the existing regional economic stagnation due to general inertia gradually disappears. At the same time, the process of organizing new forms of production and sustainable growth is transformed into an optimally adjusted procedure in the regional economy. Solving the problems of sustainable regional growth could provide adequate responses to emerging internal and external threats [13]. Sustainable regional growth is a positive change that ensures the efficiency of the regional economy while minimizing the number of limited resources to obtain a unit of results, and increases the well-being of the population while preserving the natural habitat [14]. Here, the main issues are the development and adaptation of innovative technologies as the basis for the scientific and technological renewal of industrial production and the rapid growth of key sectors of the regional economy.

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