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COMPARATIVE ANALYSIS OF DEVELOPMENT OF URAL INDUSTRIAL REGION AND INDUSTRIAL DISTRICTS OF FOREIGN COUNTRIES

Summary: This article is about estimation of regional development on the basis of comparative methods of research. As we know the comparative analysis of the similar functioning socio-economic systems helps us to research and understand the key factors of successful regional development, even under the conditions of internal and external shocks. At the same time the role of regions. Most local regional structures are the points of global growth. These circumstances form a new methodological approach for comparison. In the applied aspect, the examples of development of Ural industrial region (Russia) and Italian industrial districts are demonstrated.

Keywords: comparative analysis, industrial district (region), regional system, spatial development, points of global growth.

Introduction

There are a lot of studies about factors of regional development. At the same time the role of region has been changed. The particular interest among scientists is concentrated on spatial development and factors, that contribute to the development of regions as a points of global growth under the conditions of a new paradigm of the socio-economic system development. And the problem occurred, that widely used methodology for the strategic development of the regions significantly differs from the reality. That methodology has to be reviewed and updated according to the new knowledge, new conclusions, taking into consideration domestic and foreign experience. The goal of the article is to search the factors of the industrial districts spatial development as a points of world growth.

Good results are obtained by such a method of the research as a comparative analysis. However it is necessary to bind it to the peculiarities of the region as an object of research. The goal of the article is to present such methodology.

1. Methodology and methodical aspect of comparative analysis

Comparative analysis (comparative method of analysis – CA) is based on a comparison of the similarities and differences of the object. Usually the object is a system (country as a system, region as a system etc.). Many factors affecting the development of the system are revealed in the analysis of similarities and differences of systems. CA allows us to draw the picture of the divers development, to get new knowledge about the system and a factors effecting its development.

Nowadays, there is no one single method of CA. All methodical approaches can be divided into two groups. First approach suggests comparison of any system, but it is necessary to ensure the compatibility of indicators. Second approach deals just with the compatible systems, e.g. only developing countries. Recently, the search for deeper theoretical foundations of comparative studies of systems is taking place (comparison not only of typical systems but systems of various types).

According to A.I. Kolganov and A.V. Busgalin [2005] the logic of CA can be presented like this. Each system is presented as a set of parameters by which it can be compared with another system. So, firstly, we “build a model” of a system using the available empirical data (e.g. in the case of socio-economic system, among such data are population, total production etc.), in another words, we describe the system as they are. Than we highlight a set of additional, more detailed features and patterns of development of the system for further comparisons based on the characteristics of the current stage of development of the world economy. At the final step we have to construct a new model of the same system.

CA methodology is based on the following principles [Shelomentsev, 2014]:

1. As the object of study is the system, the model of the system (e.g. a model of the national economy, the region as a socio-economic system). Region has to be considered as a regional socio-economic system. In such conditions, the model of regional development is the complex of distinguishing elements of regional economy and its links providing the achievement of performance indicators.
2. The system has a unique combination of not only natural resource and geographical-economic conditions, but also the socio-economic potential, national and cultural features and historical traditions.

3. Subsystem of CA should be based on the peculiarities of the system. For example, a study of the region should be based on the study of real social and economic conditions of a particular national economy (specific country) and take into account the peculiarities of its historical path. At the same time, the motivation and behavior of the population living in the area are crucial as their needs are characterized by national socio-cultural peculiarities.
4. The variety of systems produces variations, and not predefined patterns.

2. Modern role of industrial regions (districts) in the globalized world economy

We will consider applied aspect on the example of the industrial regions (IDs). The essence and the role of IDs have been developed. In the theoretical aspect, the stages of the evolution of the foreign and native theory of IDs, development of the traditional approach were investigated by ourselves in the earlier researches [Frolova, Frolova, 2014]. The beginning of the IDs theory development refers to the founder of this theory A. Marshall. Then A. Markusen identified different types of sticky places in slippery space. But more excellent results were achieved by the Italian school of IDs districts. Borrowing term “industrial district, region, agglomeration”, famous Italian scientist G. Becattini developed his theory of the IDs. In accordance with those approaches scientists formulate IDs as a “geographical concentrations of firms in the same or similar industries”, “localized industries”, “agglomeration of SMEs” [Becattini, Rullani, 2015; Club of Industrial Districts, 2015; Frolova, Frolova, 2014a].

We also have focused on the geo-economic paradigm and the concept of “localized knowledge spillovers” as new discussion fields for IDs [Frolova, Frolova, 2014a; Frolova, Frolova, 2014b]. Thus, we determine the local structure “industrial district” as an area of strategic activities with economic borders (not geographical borders), which includes many particular links of international reproductive cycles and focus on the borders of operating (regions/countries), rather than type of the processes. Geo-economic paradigm considers IDs as a points of global growth in spatial economy [Frolova, Frolova, 2014a; Frolova, Frolova, 2014b]. It is possible to identify factors, that allow “industrial district” to perform as a point of global growth [Frolova, Frolova, 2014a]: the significant level of high-tech equipment and special innovation environment, the high degree of involvement of small- and medium-sized enterprises, the high degree of specialization in the production of certain products focused on the global business projects, the evident social component of business.

On this theoretical basis we can determine the modern essence of ID. “Industrial district (region)” is a local reproduction system the basis of which is formed by the highly specialized industries, presented by different institutional structures and localized on the geo-economic atlas. They are the chains of IRC-system and form the economic borders of regional activity [Frolova, Frolova, 2014b].

In practical aspect the process of definition of ID was prepared by ISTAT (Italy) following specific algorithm, it is quite complicated and consists of 3 steps: identification of municipalities, its aggregation into larger areas called Local Labor Market Areas, identification of ID.

Thus, the methodology and traditional methodical algorithm of comparative analysis of the systems must be adapted to the peculiarities of the industrial regions development in the contemporary epoch.

3. Adaptation of the methodical approach of comparative analysis to the case of the spatial development of industrial regions

We have adapted the traditional algorithm of CA and we offer the following stages for regions CA.

Stage 1. Determination of common basic features of the various socio-economic systems, which form the basis of subsequent comparisons (taking into consideration that other characteristics of territories may vary considerably). Thus, A. Shelomentsev [2014] carried out the research comparing regions in comparable climatic, geographic, economic, geopolitical conditions. At the same time they differ significantly on such indicators as the level of the development, the ethnic composition of its population, economic potential.

Stage 2. Building a model of development of that socio-economic systems using such indicators as structure of the economy, presence of infrastructure, demographical changes, and others.

Stage 3. Analysis of differences in socio-economic development of systems and the disclosure of their nature by comparing models of development, using real socio-economic indicators.

Stage 4. Identification of effective tools including institutions, factors and resources ensuring the dynamic development of regional economies (for the further use of experience).

Stage 5. Integration of the new borrowed elements into the existing system of relations or model of national region development. The basis for inclusion is a SWOT-analysis of competitive advantages with strengths, weaknesses, oppor-

tunities and threats of the regions. In addition, the successful foreign socio-economic development models are specific and can be transferred to the national conditions only after adaptation.

Stage 6. Inclusion in the Regional Development Strategy (official documents) all identified effective tools.

4. Comparative analysis of the similar functioning socio-economic systems: applied aspect for industrial regions

We will perform the applied aspect on the example of the industrial regions and compare the economy for Ural industrial region of Russia and Italian industrial districts. It is possible, because we consider regions as a system and we investigate the models of systems.

Firstly, we have to compare the macroeconomic indicators (the level of system). The fragment of comparison is presented in table 1.

Table 1. Comparison of Italian and Russian (Ural Region) economy development on the level of system (fragment)

Italy's economy [Country Report for Italy; Frolova, Frolova, 2014a; Frolova, Frolova, 2014b; Global Competitiveness Report 2014-2015; Global Innovation Index, 2014; Report Distretto Aerospaziale Pugliese 2013]	Ural region (Russia) [Sverdlovskaya oblast; Titanovaya dolina 2015]
1	2
General description of region economy: main figures	
<ul style="list-style-type: none"> – GDP growth – 0,5 % (2014)/1,9 % (2013) – Global Innovation Index (GII) – 31 place out of 142 countries (2014) (main factors are: cluster development, knowledge impact, ecological sustainability) – Global Competitiveness Index – 49th position – the economy is composed of many small and medium-sized family-owned companies – almost 70% of the Italian GDP is achieved in the service sector 	<ul style="list-style-type: none"> – area – 194.800 km² – population 4.400 mln inhabitants – foreign investments in region – more than 1 bln euro – trade partners from 125 countries – the leader of Ural region (Sverdlovsk) is in the “Top 10 regions of Russia” (3rd place in the volume of retail trade turnover; 6th place in industrial production and 8th in the volume of investment in the fixed capital)
Peculiarities and strategic goals of the enterprises in industrial district	
<ul style="list-style-type: none"> – the rationalization of costs and the efficiency of the offer of products through pricing policies – new investments in design, production diversification – the orientation in search for the new markets or niches with the purpose of internationalization; – the greater control of distribution channels for products – investments in IT applications and information technologies 	<ul style="list-style-type: none"> – the historically leading role with the 40% of all industrial production in Russia – region has a strong industrial diversification – the concentration of high qualified specialists – the strategic geographical location (region is situated in the hub of the intersection of the main transport flows which connect Europe and Asia)

Table 1 cont.

1	2
Foreign market	
As a main foreign market European Union amount to almost a half (42,5%), primarily because of the geographical proximity and simplified rules of trading. Russia is an important market for the Industrial District with the 7,6 %, and the BRIC makes 16,3%. As a future market expansion of Industrial Districts, BRIC countries are the main target	– foreign trade turnover – 8 bln euro – the share of engineering products in the export structure – high – 14,6% in 2013 – the main partners are industrialized countries (USA, Germany, Netherlands, China, and others.), their share – 45.7%)

At the next stage, we have to compare the indicators of industrial districts or regions (the level of subsystem). Peculiarities of industrial districts can be described as follows (Table 2). One of the bright example of such kind of clusters “Titanium valley” in Russia and Innovative District of Puglia in Italy.

Table 2. Comparison of the industrial districts (regions) indicators (fragment)

Innovative District of Puglia [Club of Industrial Districts; Country report for Italy; Frolova, Frolova 2014a]	Innovative cluster “Titanium valley” [Sverdlovskaya oblast; Titanovaya dolin]
1	2
Location	
Puglia province, Italy	Sverdlovsk as a leader of Ural region, Russia
Area	
19 345 km ²	584,4 ha
General description	
– Puglia population is 4,090 million inhabitants – number of companies of ID 8 269 (in 2012) – employees of ID 30 605 (in 2011) – export of ID 2 674 mln. euro (in 2012)	Expected results: – the total investment till 2031 will amount to 64.5 bln rubles, of which 54.3 bln – private investors; – jobs: 13,000 jobs – tax revenues: total – 118, 2 bln rubles
The field of region specialization	
Production equipment and machined parts; heat treatment of aluminum and steel; components in composite materials, surface treatment and non-destructive testing; aircraft interiors; spatial components; steering and monitoring based on space technologies; planetary exploration; advanced sensory systems	Production the aircraft industry; railway engineering, construction materials, equipment for the production of hydrocarbons; steel and chemical production. About 70% of the production output is being exported (40% of all needs for Boeing company)
Structure	
As a system the structure of the cluster is represented by the following elements: Large Enterprises Research Institutions Institutions and Associations Small and medium-sized enterprises (SMEs)	Industrial companies, laboratories, universities and scientific centers join into organization, developing mutually advantageous innovation programs, which have access to the financial support from the main government fund

Table 2 cont.

1	2
Peculiarities	
<ul style="list-style-type: none"> – the strong relationship between people and medium and small businesses involved in the same production – the Italian Institute of Statistics ISTAT defined 100 districts and assigns them special criteria: specialization in certain industries (textiles, furniture and ceramics, leather and footwear, agriculture); high concentration of small businesses in one area of the country (specially not urban areas); use of specific regional know-how and local resources 	<ul style="list-style-type: none"> – the innovation level of this cluster reached 40%. “Titanium valley” cluster is one of the 6 territories of Russia who got a status of Free Economic Zone – investment climate of the region is favorable which is confirmed by the numbers of international investment projects in the different industrial field, for example, production of electric locomotive (Siemens AG and Group SINARA), titanium component production for the airplane industry (The Boeing Company and VSMPO-AVISMA), etc.

The core of “Titanium valley” is a VSMPO-AVISMA S.P.A company, the worldwide leader in titanium production – 35% of the world share.

After this stage we have to begin the comparative SWOT Analysis IDs (both similarities and differences). The main results of comparative SWOT Analysis of the similarities are shown us the followings (Table 3)¹. Comparative SWOT analysis of differences is in table 4.

We have performed the comparative analysis for Finland too (on the example of FIMECC – Finnish Metals and Engineering Competence Cluster). The main characteristics are:

- there are 19 companies (Outokumpu, Rautaruukki, AvestaPolarit, Kuusakoski, ImatraSteel, OMGFinland, FundiaWire, Nordberg, Tamrock.), 15 universities and research centers, including Aalto University, Tampere University of Technology, University of Oulu, Lappeenranta University of Technology) in the structure of cluster;
- turnover is 27.2 bln euro (2014),
- steel, aluminum production specialization,
- state assistance (Programme for promoting healthy competition; Promoting effective competition through planning legislation),
- strengths (SWOT Analysis): credible and prudent economic policy, qualified labour and favorable business climate, high-tech industries, high living standard,
- weaknesses: highly vulnerable to the international economic cycle, industrial crisis and loss of competitiveness, finnish banking sector reliant on the Swedish and Danish financial sectors etc.

¹ The full version was presented at the ISIS conference in Prague, VSE, 2015.

Table 3. Comparative SWOT Analysis of similarities (fragment)

<p><u>Strengths</u></p> <ul style="list-style-type: none"> – presence of large companies based on the principle of global networking for the design and production of components and subsystems – skilled workforce – high concentration of universities and research centres – massive investments in production 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> – gap between university’s education and practice – difficulties to invest in R&D from the side of SMEs – concentration of sales to a few customers – low level of internationalization of SMEs
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> – entrance of the new payers, partners and companies – efficiency at the level of the network of business partner – presence of international technical experts – relevance of spill-overs 	<p><u>Threats</u></p> <ul style="list-style-type: none"> – high mobility of employees and dispersion of human capital – political situation inside and outside of country may cause the closure of projects

Table 4. Comparative SWOT Analysis of differences (fragment)

<p><u>Strengths</u></p> <ul style="list-style-type: none"> – Puglia industrial district has more experience being historical ID and “Titanium valley” is a new formed cluster – Puglia ID has much more companies-members – Cluster “Titanium valley” being “young” is more flexible, using just best-practice and latest innovations 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> – “Titanium valley” operates in very specific field, may be difficult to find new members – Lack of a proper aeronautical supplier chain for Puglia ID – High share of not certified companies for Puglia ID – Unwillingness to start a joint projects of strategic cooperation between operators belonging to different stages of the production chain in Puglia ID
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> – Start-up of meta-district National Aerospace 	<p><u>Threats (Puglia ID)</u></p> <ul style="list-style-type: none"> – Protection of innovation is not high – Capacity emerging in China, India and Russia

All findings allowed us to identify the following key factors of development of region as a points of global growth.

Conclusion

In conclusion, the functioning of the “industrial district” (IDs) as the points of global growth may be specified as the following:

- the notion of a IDs should be rethought and modified,
- local structures perform higher rates of development, but they need to be of spatial development,
- spatial development requires the active use of new kind of resources (non-material), which forms economical (not geographical or administrative) boundaries,

- integration into the global value added chains,
- typical characteristics should be replaced by advanced indicators, such as the branching network, data transmission rate, index of specialization of innovation and others,
- the core of the innovation process of the district is the search for knowledge,
- information and innovation components must be added to the industrial aspect,
- integration into national and international division of labor,
- the presence in the structure of the leading industries (in both cases, Titanium Valley and Puglia the leading industry it is aircraft),
- the ability to self-improvement,
- the ability to spread the impulse of development in the surrounding area.

Thus, the point of global growth – is a system of interconnected and mutually influencing elements, including knowledge, innovation, highly skilled labor, infrastructure, management etc.

References

- Becattini G., Rullani E., *Local Systems and Global Markets*, <http://www.dse.unifi.it/becattini/frame.htm> (access: 27.03.2015).
- Club of Industrial Districts, <http://www.urenio.org/2005/07/27/italian-industrial-districts/> (access: 27.03.2014).
- Country Report for Italy/European Commission, http://ec.europa.eu/economy_finance/ (access: 10.04.2014).
- Frolova E.A., Frolova E.D. (2014a), *Changes in Industrial Districts Development in Conditions of Knowledge Spillovers (Italian Case)*, “Economy of Region”, No. 3, s. 182-191.
- Frolova E.D., Frolova E.A. (2014b), *International Relations Analysis: Geoeconomical Approach [w:] International Relations Analysis 2014: Methods and Models of Regional Development*, Proceeding of the V anniversary scientific conference, University of Economics, Katowice, s. 57-65.
- Global Competitiveness Report 2014-2015*, <http://www.weforum.org/reports/global-competitiveness-report-2014-2015> (access: 2.04.2015).
- Global Innovation Index 2014, <https://www.globalinnovationindex.org> (access: 2.04.2015).
- Kolganov A.I., Busgalin A.V. (2005), *Economicheskyykomparativistika (Comparative Economics)*, INFRA-M.
- Report Distretto Aerospaziale Pugliese*, <http://www.osservatoriodistretti.org/node/353/dati-qualitativi> (access: 2.04.2015).

Shelomentsev A.G. et al. (2014), *Comparative Estimates of Kamchatka Territory Development and the Context of Northern Territories of Foreign Countries*, "Economy of Region", No. 2, s. 89-104.

Sverdlovskaya oblast (Sverdlovsk region), www.midural.ru (access: 12.04.2015).

Titanovaya dolina (Titanium valley), <http://www.titanium-valley.com> (access: 2.04.2015).

ANALIZA PORÓWNAWCZA ROZWOJU REGIONALNEGO URALSKIEGO OKRĘGU PRZEMYSŁOWEGO I WŁOSKICH DYSTRYKTÓW PRZEMYSŁOWYCH

Streszczenie: W artykule przeprowadzono wszechstronną analizę porównawczą poziomu rozwoju regionalnego systemów społeczno-gospodarczych w warunkach wstrząsów wewnętrznych i zewnętrznych. Uwzględnia się wpływ na rozwój regionalny nowych czynników oraz warunków, takich jak wymiar przestrzenny czy system innowacji, przez co we współczesnym rozwoju gospodarczym regionu jest określana jego zdolność do synergii w zlokalizowanych klastrach. Według autorów artykułu metodologia analizy porównawczej systemów musi być dostosowana do specyfiki regionów przemysłowych. Celem artykułu jest przedstawienie takiej metodologii na przykładach rozwoju regionu przemysłowego Uralu (Rosja) i włoskich okręgów przemysłowych.

Słowa kluczowe: analiza porównawcza, okręg przemysłowy (rejon), system regionalny, rozwój przestrzenny, punkty globalnego wzrostu.