

Industrial Clusters as the Form of the Territorial Organization of Economy in Russia and Italy

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Abstract

In this study we analyse the best practice of clusters development (Italian model) and the factors of its success and we provide its comparative analysis with Russian economic reality.

We assume that the main factors for the clusters successful functioning are represented by business networks and governing structures presence, as well as by different environmental characteristics of entire cluster and of the enterprises belonging to it.

The model for enterprises relations analysis inside the cluster is proposed and its possible future development is described.

Keywords: Clusters, Networks, Input-output model.

1. Introduction

Phenomenon of cluster as an object of economic agglomeration of the interconnected enterprises in some territory is known since craft production. But, only since last quarter of the XX-th century, industrial clusters became the important factor of economic development of regions. Among the economists all over the world the increasing diffusion of the point of view, that regions with high development of territory clusters become leaders of economic development, is verified¹. Such regions – leaders determine competitiveness of national economies. However, there is a requirement for more exact concept that represents clusters and the phenomena connected with them to conduct researches and to make conclusions for economic policy decisions. For this purpose, an attempt to allocate the basic peculiar cluster characteristics and also to designate a circle of unresolved questions [1-4] is undertaken.

¹ From this point of view, Italy represents a very good example: according to “The Global Competitiveness Report 2009-2010” of the World Economic Forum, it occupied the third position (in the sample of 133 countries) between the economies with more widespread use of clusters and in the next report (“The Global Competitiveness Report 2010-2011”), developed on a sample of 139 countries, passed to the first place.

Surely general features of clusters can have the limited applicability on occasion. As a matter of fact, clusters are unique in character. Not all elements mentioned in [5], can be presented, or even are desirable, in a separate case. Some elements can be more significant under certain circumstances, and the interrelation between them can change. On the other hand, it would be premature to assert that absent elements aren't important for functioning of everyone separate cluster. In our research we will be concentrated on the experience of Russian and Italian models.

2. Clusters in Italian and Russian Economies

The originality of the district model represents a particular "Italian" approach to capitalism and it is based on a balanced mix of historical craft tradition and modernity, competition and cooperation, corporate profit and value of social capital essential for its operation and development. In a country like Italy, the economic policy should be concentrated primarily to lead over the crisis the industrial districts, which on the one hand are the main engine of the Italian economy, on the other make a major contribution to social cohesion in the country.

Different studies [9-10, 12-13] confirm that the strategies of successful districts are the cooperation with other companies up to the establishment of business networks cross the territory, the joint effort aimed at applying product and process innovations, the common marketing and internationalization strategies, the limited location, synergies with universities and research centers, collaboration with social partners.

The weight of the districts in the Italian economy has been growing ever since the early fifties until the mid-nineties, when we started to witness a slowdown in the expansion process. According to data made available by the Federation of Italian Clusters², the enterprises (mostly small, 84, 3% of them did not exceed 9 employees) operating in the districts in 2006 were approximately 188,000 and employed 1.45 million people. These districts produced 28.3% of the value added (67.1 billion euro), 31.4% of employment in manufacture (in 2005), and 26.9% of export (93 billion euro in 2007).

The data also confirm the reduction of the export value of the districts. In particular, the first half of 2009 showed a contraction in exports of 21% over the first half of 2008, a more emphasized decrease was registered in automation and mechanical districts (-30.9%), home furnishing-(-24%) and fashion clothing (-8.3%). On the contrary, the positive dynamics was revealed in the export of food districts (+4.2%) and hi-tech (+3.1%).

The last years demonstrate that in some cases the network between companies and techno structures worked well while in other cases it was found less effective [11]. The success of the districts, therefore, is contained in the improvement of links between business operations and service facilities. In this regard, it is interesting to note that the best experiences were those in which firms have expressed clear needs by exercising a proactive role. In this perspective, the role of the area becomes even more important to support the development of the districts. The circulation of knowledge must develop not only between companies but also established relations with universities, research centers, and technology centers to contribute to the further development of manufacturing districts.

However, it's obvious, that there is need of a specific area in which the relationships between companies and between companies and service centers are characterized by project-making ability. The territory becomes a competitive advantage if provides to the enterprises knowledge, production techniques, innovative financial services. To achieve this it is necessary to reset the governance of the districts, which currently is their main weakness. Governance must be able not only to comprise but also to anticipate the needs of enterprises and provide practical solutions to improve their competitiveness³.

² The National Observatory of Italian Clusters has surveyed in 2010 92 clusters in the entire Italian territory.

³ To make a district governance effective it is necessary to proceed with the identification of structures (District Boards, private bodies, etc..) and tools (agreements, plans, development programmes) encharged to district government. Besides it should be verified (and, where necessary, improved) the involvement of local (both public and private) bodies in the

As far as Russia is concerned, the above mentioned "The Global Competitiveness Report" ranks it on the 87th position as the development of clusters in 2010-11 and the 90th in 2009-2010 showing a positive, though slight, trend. From this point of view the clusters represent a good example of best practices adopting, especially observing the constantly growing relations between Russia and Italy⁴. In fact, clusters contribute much to the strengthening of Russian-Italian relations. In particular, during the V Session of the Task Force on the Italy-Russian Districts and SMEs (constituted after the meeting between Silvio Berlusconi and Vladimir Putin in 2002) held in Russia (Republic of Chuvashia) in October 2003 a Memorandum aimed at promoting the creation of industrial clusters in the Russian Federation was drawn up. This Memorandum was subsequently signed by the ministers at the Italian and Russian President Putin's visit to Rome in November 2003⁵.

Later, in 2006, during the Tenth Session of the Task Force held in Trieste "The three-year program of work 2007-2009" was signed which, among other objectives, provided for the creation of several industrial districts in Russia.

In parallel, in order to develop industrial production and technology, the legislative bodies of the Russian Federation have enacted on the July 22, 2005, an Act which regulates the establishment of Special Economic Zones (so-called SEZ) of two types:

1. Industrial/productive: with an area not exceeding 20 sq km;
2. Techno-scientific: divided at most in two separate areas with a total surface not exceeding 2 sq km.

The SEZs have a life cycle of 20 years, after which residents will have the opportunity to acquire both land and buildings settled in it. Among the objectives of the establishment of SEZs there are the development of manufacturing industry and of the areas of advanced technology, the diffusion of new industrial models and commerce of scientific and technological products. The main protagonists of this initiative were, beyond the Russian government, the Russian Union of Industrialists and Entrepreneurs, the Chamber of Commerce and Industry of the Russian Bank for Foreign Economic Activity (Vnesheconombank) and the Foundation for the Support to Small Innovative Enterprises.

Besides, the development of the SEZ⁶ is aimed to the reduction of the alarming dependence on Russian oil and natural gas exports. The Russian government wants to use the experience of the SEZs to boost scientific development and especially the innovative sectors of industry fostering the development of special industrial and technical-scientific zones, from which innovative technologies will develop to be transferred later to the big industry. One of these zones was set up right in Dubna, a city with considerable technical and scientific potential.

The Russian government established a program of incentives to attract Russian and foreign capital in these areas. The aim was to achieve for 2010 in the industrial and technical-scientific zones

decision-making process and management of industrial districts and the creation a partnership aimed to the presentation of innovative projects, and the presence of structures (foundations, observatories, service centers, associations and consortia, Universities and research centers, etc..) supporting the development policies of the district and district enterprises. Source: P. Pastore, *Normativa e Governance dei distretti dell'Osservatorio*, Osservatorio Nazionale Distretti Italiani, I rapporto, 2010, our translation.

⁴ In particular, the model of the Ligurian technological cluster (SIIT, Intelligent Integrated Systems), one of the clusters created in 2001 by the Italian Ministry of Education, was reintroduced in Ekaterinburg, capital of the Russian region of Sverdlovsk. In that area there is a strong concentration of hi-tech combined with a significant number of scientific disciplines and research centers, but there is no overall direction and the local Russian authorities have decided to borrow the Italian initiative. To make this operation as an intermediary in the transfer of know-how is Liguria International District, the regional instrument to promote the internationalization of Liguria. Liguria International has been active for some years in Yekaterinburg to support companies interested in investing in the Urals under an interchange agreement that binds the Liguria to Sverdlovsk Region.

⁵ In May of 2011 the 18^o work session of the Task Force took place at Ulyanovsk (Russia).

⁶ In 2005 the first six SEZ were created: four techno-scientific SEZs (Zelenograd, Region of Moscow, microelectronics sector; Dubna, Region of Moscow, physics and nuclear technology; Saint Petersburg, IT-sector; Tomsk, advanced materials development) and two industrial-productive SEZs (Region of Lipetsk, domestic electronics sector; Elabuga (Tatarstan), auto components sector and hi-tech products for petrol chemistry).

at least 250 resident companies⁷, with investment of one billion euro. The main point of the establishment of these areas and their gradual transformation into a "growing points" from which to sprout the new economy in Russia of qualitatively new type, based on innovative principles⁸.

The Russian government intends to develop activities in special areas based on a "state-private" partnership: in 2007 the state has invested in the project from 20% to 30% while the rest was borne by private investors. Not to be buried under the rubble of an economy based on exporting oil, Moscow seeks ways to diversify its economic system⁹.

To obtain the status of "resident" of a special economic zone, a company must provide an initial investment of \$ 13 million, of which 1.5 million payable in the first year of activity. For companies in the SEZ the unified social tax rate was lowered from 26% to 14%. Taxes on land and on the properties of all types were also abolished and the regime of free customs zones was introduced: imports and exports are exempted from customs duties and all other taxes.

However, if the imported products have to be then transferred to the rest of the Russian territory, the custom duties should be paid. In case the imported products should be subject to some processing in the territory of the area, residents can choose the type of duty to pay. The controls will be reduced to the minimum: the tax and other revisions will be realized once every three years¹⁰.

A comprehensive technical modernization of the Russian system of transport routes would allow the country to earn up to six billion dollars a year and provide jobs to more than two million people. To enhance the attraction of investors and companies resident in the Special Economic Zones, the Russian government has experienced in the SEZ Dubna, the system of "single window". In the operating room representatives of 17 federal services issue all necessary permissions and licenses to companies interested in working in the SEZ.

3. Main Research Hypotheses

From our point of view the efficiency of each cluster depends significantly from the interindustry linkages inside cluster. So we will pay special attention on the model that can be based on the input – output analysis [6].

There are fundamental assumptions for such analysis to the measurements of interindustry linkages. Especially they are:

1. Each sector in the model supplies a single commodity.
2. There is a unique relationship between each sector's output and its inputs.
3. There are no external economies.

For n sectors in the input – output system, the output of each sector must be sufficient to meet the intermediate demand for its output by all other sectors and still satisfy final demand:

⁷ This object was nearly realized: by the end of 2010 the SEZ in Russia counted 238 foreign investors.

⁸ Currently, technical and scientific research centers complain of the great gap that divides the research process, often linked to basic sciences, technologies and their translation to the Russian industry. In this context, the special economic zones are expected to become a practical tool for product marketing of scientific and technological research and, subsequently, increase the volume of products with high potential for scientific innovation. In this way Russia wants to remove the image of the country that exports oil, metals and other raw materials, but very few high-tech products.

⁹ The creation of these zones is the fertile ground for cooperation between Italy and Russia. During the summit in Milan in 2010 with the Italian premier, Silvio Berlusconi, President of the Russian Federation, Dmitry Medvedev, has repeatedly reiterated the call for Italian companies to invest in innovative technology projects in Russia, like Skolkovo center near Moscow, which will become similar to the Silicon Valley.

¹⁰ In addition to the Special Economic Zone, the transport infrastructure will be developed: according to a survey prepared by experts of the Council of the Russian state, economic growth (7.5% in 2007) was slowed by the inadequacy of the means of transport and their infrastructures. The country does not use its strategic geographic position between Europe and Asia: nowadays through the territory of Russia passes less than 1% of the flow of goods between the European and Asian countries, the potential for transport in Russia is used just 5-7 percent. If Russia was able to channel into their lines of communication 5% of the Euro-Asian cargo flows, the country would earn up to a billion dollars a year.

$$X_i - \sum_{j=1}^n x_{ij} = Y_i, \quad (1)$$

where $i, j = 1, \dots, n$; X_i - the output of sector i ; x_{ij} - the amount of i -th input, that is used in the production of sector j 's output; Y_i - final demand for the output of sector. More exactly, if we have direct purchases of inputs by sector j from sector i as a_{ij} , then in components we have

$$X_i - \sum_{j=1}^n a_{ij} X_j = Y_i \quad (2)$$

Or $X - AX = Y$ in matrix notation. The solution needs to invert matrix and leads us to

$$X = (I - A)^{-1} Y, \quad (3)$$

where $(I - A)^{-1}$ - matrix of Leontief inverse coefficients of direct and indirect effects of delivery to final demand.

Surely the assumptions of the input – output model are restrictive. But we will assume them for the short – run analysis that is valid for input – output economies.

The entries of an input – output tables represent backward and forward linkages. Although the model is sensitive to aggregation, contains restrictively linear assumptions, does not concerns externalities, nevertheless it is can be exploit for the short time analysis. The attempts of researchers here were focused on linkage indices [7]. But to specify cluster origin (not individual industries) another mathematical background must be used.

4. Industrial Clusters. Quantitative Aspect

We know that in some cases industrial clusters can be regarded as an industry groups with relatively strong intragroup linkages, but relatively weak intergroup linkages. The similar things we have with industrial complexes which are subgroups of clusters which have similarities in the location patterns. Clusters, therefore, do not have spatial dimension.

If every good and service in economy is needed (directly or indirectly) to produce every other good, industrial cluster analysis contradicts the input – output model (the case of indecomposable economy). But for decomposable cases – when we can divide the system for sub economies, which is usual for open region economies, we can obviously apply our analysis.

From analytical point of view matrix A ($n \times n$, $n > 2$) is completely decomposable if by arrangement the matrix can be portioned into bloc-triangular form.

There is a well known method of triangularization of rearranging of sectoral format, so that many entries as possible move below or over the main diagonal. The method can provide us with main results of structural analysis: dependence/independence, hierarchy, circularity [8].

Let us look at idealized table below, assuming that all transactions flows X go in one direction (from sector i to sector j). The extend of one direction flow is accomplished and is determined by the degree of linearity:

$$\lambda = \frac{S_{\max}}{T} \times 100. \quad (4)$$

Here S_{\max} is main diagonal sum, T – sum of all interindustry transactions. It is also known that the linearity of 100 percent is practically non achievable.

	Sector 1	Sector 2	Sector 3	Sector 4	Final Demand	Output
Sector 1	x_{11}	0	0	0	F_1	X_1
Sector 2	x_{21}	x_{22}	0	0	F_2	X_2
Sector 3	x_{31}	x_{32}	x_{33}	0	F_3	X_3
Sector 4	x_{41}	x_{42}	x_{43}	x_{44}	F_4	X_4
Added	V_1	V_2	V_3	V_4	V_F	V
Total	x_1	x_2	x_3	x_4	F	X

5. Conclusions

The practical implementation of the above model is the subject of our planned investigation for the future. Actually it needs the gathering of some statistics for Russian and Italian industrial clusters.

By finishing this and by making comparison in their behavior, we plan to be able to give some recommendations for economy planning.

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