

## **KNOWLEDGE ECONOMY AND INNOVATIONS AS FACTORS OF AGRARIAN COMPETITIVENESS**

**BRANKO MIHAILOVIC**

Institute of Agricultural Economics,  
Belgrade, Serbia.

E-mail: [brankomih@neobee.net](mailto:brankomih@neobee.net)

**VLADANA HAMOVIC**

Institute of Agricultural Economics,  
Belgrade, Serbia.

**VESNA PARAUSIC**

Institute of Agricultural Economics,  
Belgrade, Serbia.



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# KNOWLEDGE ECONOMY AND INNOVATIONS AS FACTORS OF AGRARIAN COMPETITIVENESS

## Abstract

Today, more than ever, development of agriculture leans on science research results and their practical application. Research in the field of agriculture is conducted by large network of public institutions, institutes and universities are mostly directed toward improvement of production. Economical research, at the level of husbandry, market analysis, or analysis and estimations of economic policy is poorly developed. Profitability of agriculture and food industry should be improved and supported by adequate research and application of gained results. Experience acquired in research and education systems of post-communist countries can help these countries change their economy towards knowledge, innovations and new technologies. But, in spite of great number of research workers and successful education system inherited from the communist period, it would be difficult for countries that were part of East Block to turn these potential advantages into commercially successful innovations unless universities and research institutions cooperate closely with private sector, what implies restructuring research system towards adjustment to agro-economy needs.

**Key words:** agro-economy, cooperation, performances, competitiveness.

## Introduction

Significant factors regarding agricultural competitiveness improvement are entrepreneurship, science and innovations. Scientific explosion is essential characteristic of time we live in. Until today it remains unlisted, among other things, a new scientific paradigm. The new scientific paradigm was established at the end of 60-ies, simultaneously in several branches of science. Namely, in many sciences, conventional Decartes-Newton mechanistic presentation of the world was replaced by conception of self-organizing systems in period of transition. By studying thermodynamic processes, barrier of Nobel Prize, Prigogine discovered corresponding "phases of transition" and "self-organization". In its transfer from chaos to order, matter necessarily goes through transition phases, especially decision making phases, choosing from different alternatives. Thus, the new scientific paradigm was established, "the synergism-theory of interaction".<sup>3</sup>

Possibilities for new scientific paradigm implementation in economy are obvious. In contemporary business ambient, only the changes are constant. In unpredictable

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<sup>3</sup> Djuričin, D. (1996): "Transition of economy", *Ownership and freedom*, Social Sciences Institute, Belgrade, p.141.

business surrounding only firms and economy systems that manage changes successfully subsist. Transition phases reflect in economy systems. Transitions in Serbia begun in 2000, when all the capital preconditions were met for its conduction. Liberalization of market relations and capital balance made possible for Serbian economy system to integrate into international finance and merchandise trends. Changes that had begun in economy domain, though under effect of numerous factors that amortized them, have gained characteristics of irreversibility. Namely, reform in economy system can hardly return back to its starting point, and crucial is to discuss its fluctuating tempo and instruments of macro-economical politics, which are often expected to establish balance between adversely situated economical goals.

Serbia improved its ratings progressing for 24 positions to 68<sup>th</sup> place of 175 countries estimated by business requirements, showed research conducted by World Bank and The International Finance Corporation in "Doing Business 2007" report. Serbia got ahead of all former countries of Yugoslavia, barring Slovenia. Although conducting numbered changes, Serbia lost leading position in reforms that it occupied in last year's report.

#### **Current situation in farming sector in Serbia**

Serbia has great potential in farming sector that is not entirely exploited. With appropriate farming politics, agriculture can contribute significantly to economical progress of the country. For its coherence and effect on other sectors, agriculture is of great significance for development in Serbia, as it employs directly or indirectly a large number of people partakes significantly in foreign trade, supplies with alimantal security of population, and contributes to rural development and ecological balance. Agriculture in Serbia is facing many problems that are among others, results of restrictions occurred during economical climate and farming politics that was led after The Second World War until disintegration of Social Federative Republic of Yugoslavia and just as much, results of difficulties that arose during the last fifteen years and difficulties in market economy adaptation.<sup>6</sup> Agriculture in Serbia is concerned with consequences of centrally planned economy in partial ownership rights and land usage. For development, politics that stimulates productivity by restructuring and investing is needed, which implies clarification of ownership rights and obligations and establishment of efficient land market, crediting and inputs necessary for farming companies.

Up to present time, role of farming companies reflected in:

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<sup>6</sup>Agricultural strategy in Serbia, Ministry of Agriculture, Forestry and Water Management, Belgrade, 2004, p. 8.

- Size economy of farming companies enabled appliance of contemporary techniques and realization and development of seed production;
- Concentration of expert staff enabled science and agriculture development and it's transfer to agricultural holdings;
- Farming companies were trigger buttons for establishment and development of food industry in same organizational frames of agro-industrial conglomerate;
- National and later on, social ownership, as a base for establishing state influence on farming companies, has granted them role of cheap goods manufacturers in function of self-sufficiency of elemental food products preservation, strategic stability of the country and social security of citizens;
- The concept of agricultural development, that enabled direct administrative control of farming flows gave those companies mediatory role between agricultural holdings on one side and input manufacturers of food industry on the other.

As all other companies, they have legal obligation of accounting book keeping, VAT (Value Added Tax), property and income taxation, so from the formally-legal aspect they are in far worse position then the agricultural holdings. The stress falls on production structure that is less laboring intense and with relatively high degree of specialization in particular manufacturing units. Farming companies have relatively high presence of agricultural regulations application (compared to agricultural holdings), where the size of the holding is not one of the restrictive factors. Their organizational structure is very complicated and often overly outspreaded and conditioned by business function development level and it's numerousness, by it's formally-legal position, production specialization and similar.

Agricultural companies still dispose of certain storage space and farming product processing capacities, considering that their expansion thrived towards large business systems of conglomerate type that implied food industry development within company framework. Most of the food industry had separated itself organizationally from agricultural companies into individual business systems, though some storage and product processing capacities stayed within companies.

At large and complex agricultural systems apart from lack of investments, most important problem is inability to survive, as a result of pressure to break large systems into smaller ones.<sup>7</sup> Reproduction chains are separated, as well as primary farming production from processing industry, and the market is dominated by dealers and importer's lobby. All the healthy functions of the previously existing, solid system are lost, which was based on big agricultural systems in farming industry that gathered agricultural cooperatives and small owners.

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<sup>7</sup> Focus group: Place and role of large agricultural systems in strategy of farming, food industry and rural development in Belgrade area, Belgrade Chamber of Commerce, May 23<sup>rd</sup> 2008.

### **Methods of knowledge economy affirmation and realization of long-term competitiveness of Serbian agricultural sector**

Long-term export strategy aims at optimal utilization of disposable productive capacities, increase the size of agricultural production, change productive structure according to demand in favor of more intensive productions, final and high-quality products. There has to adjust to international market when it is about productive structure modifications and production adjustment concerned with quantity, quality and competitiveness. According to our productive capacities and comparative advantages, it is necessary to project the strategy of technological progress, agriculture and rural development, food industry and offensive export orientation. The competitiveness on well organized goods and services market has non-replaceable role of efficient technological development filter, and it is up to a state to direct and support an intensity of technological development in general interest.<sup>8</sup>

The methods for realization of long-term development strategy can be separated in four groups:<sup>9</sup>

- long macro-programs – developmental politics,
- agrarian politics measurements,
- institutional solutions or coordination and development direction,
- science and staff education, as well as organization of professionally-consultative department.

In *permanent macro-programs* pertain all programs on which should permanently and systematically worked on according to established plans and which are necessary for agricultural production development and providing the industries with raw material etc. Necessity for defining the permanent macro-programs became as a result of very clear defining of all necessary goals. It is important for changes to extend in 3 ways:

- structure change (producers, property and institutions) which encircles land reform, institutions in agriculture, privatization in agriculture and management of forest and water resources,
- development of market and its mechanisms which encircle: suitable measurements of economic politics in market economy, agricultural markets, price politics and other measurements of agrarian politics for market support, as well as credit market,
- rural development and environment preservation encircles: rural development and questions of agricultural environment.

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<sup>8</sup> Mandal, Š. (2004): Technological development and politics, Faculty of Economy, Belgrade, p. 110.

<sup>9</sup> Strategy of Serbian agriculture, Ministry of Agriculture, Forestry and Water Management, Belgrade, April 1997, p. 98.

*The measurements of agrarian politics* are the most significant for realization of long-term development strategy. Because of its natural characteristics of land, climate and water resources, Serbia has great potential in agricultural sector, which has not been totally used. Along with adequate agrarian politics, the agriculture can give significant contribution to economic development of the country. For its connectivity and influence on other sectors it is extremely important for development of Serbia, considering that employs, directly or indirectly, numerous people, participates significantly in foreign trade, provides food safety for the inhabitants and contributes to rural development and ecological balance. Agriculture in Serbia faces many problems, which are, among other factors, the result of limits ensued in conditions of economic environment and agrarian politics led in period after the World War II till SFRY collapsed, difficulties in adjusting to market economy.<sup>10</sup>

*Institutional solutions* of agrarian subsystem in market economy have main role in achievement of developmental goals. Their large role is determined by specificities of agricultural production. Large number of institutions in which jobs are being doubled does not contribute to long-term development. The main thing is that Ministry deals with all jobs related to agriculture as specific and the most important field of Serbian economy, including all that is underlined in developmental policy, than agrarian policy: prices, export, import, stockpiles, and to have full insight in work of financial institutions evolved in agriculture.<sup>11</sup>

For development of science, *staff education and organization of professional-advising department*, it is necessary to provide suitable legal basis, especially Law on professional-advising department, quality control and etc. Today, more than ever, development of agriculture leans on science research results and their practice application. Research is under authority of Ministry of Science and Environmental Protection. Researches in the field of agriculture are conducted by large network of public institutions, institutes and universities and are mostly directed toward improvement of production.

### **Merging of farmers in function of knowledge transfer and innovations**

Network economy is a new enterprise organizational-process model, which is developed owing to new constituent elements (information, innovations, communications, new technologies and such.). It significantly changes performances of international trade and competition in general. According to that, there are some models of networking in further text. These models contribute to widening of innovations and improvement of competitiveness of agro sector of Serbia.

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<sup>10</sup> Strategy of Serbian agriculture, Ministry of Agriculture, Forestry and Water Management, Belgrade, 2004, p. 8.

<sup>11</sup> Strategy of long-term agricultural, rural and food-industry development, Ministry of Agriculture, Forestry and Water Management, Belgrade, April 1997, p. 128.

**Business Incubators.** Business incubators are the instruments of local economic development for the support to newly-established small enterprises in the first years of their growth and development when they are most vulnerable.<sup>12</sup> Namely, in order to minimize ignorance and lack of experience in management, account-keeping, knowledge of the market and leading business in the beginning phase of the existence of the new small enterprises, these functions are put together through mutual service and occasional presence of consultants that have done these jobs for all enterprises in the large workshop – the incubator of the new enterprises.

Most often mentioned terms of incubator in our society are:<sup>13</sup>

- ⇒ *Business and innovational centres:* Concept business and innovational centre (BIC – Business Innovation Centre) is promoted by European Commission as an instrument of regional development. BICs are rules capacities the aim of which is generating new innovative enterprises that are involved in the activities of high additional value, but they are not compulsory technological.
- ⇒ *Innovation centres:* Innovation centre offers advice and support in the development of new products and processes to small enterprises. That usually includes support in the development of prototypes for new enterprises, or help to the existing small enterprises to improve production processes. Unlike technological centres, they normally do not provide space for their clients.
- ⇒ *Centers for enterprises – Incubators without walls:* Centers for enterprises give advice and help to undertakers and small enterprises, but, unlike ruled work spaces, they usually do not provide space.

**Co-operatives.** Forming co-operatives of agriculture producers on the principles of contemporary co-operative society creates the necessary conditions for achieving satisfactory production and economic results. Such concept is possible to apply to forming a whole production chain, beginning with primary production, over getting a number of half-products, to the highest degree of finalization. Agriculture producers co-operative, built on the principles of contemporary co-operative society, can be seen as a business system – an enterprise with all its business functions that could be realized through services, actually through the employed with appropriate specialties. Producers would be bringing objects of work in it, means for work and their work, and the co-operative, on the other side, would be providing all other services necessary for successful functioning of the

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<sup>12</sup> Danilovic Grkovic, G., Kovacevic B., Sedmak A., Nedeljkovic M. (2005): "Establishment of business incubators of technical faculties in Belgrade", *XIII Telecommunication forum TELEFOR 2005*, Belgrade, Sava Centre, 22.-24.11.2005.

<sup>13</sup> Danilovic Grkovic, G., Kovacevic B., Sedmak A., Nedeljkovic. M (2005): "Establishment of business incubators of the technical faculties in Belgrade", *XIII Telecommunication forum TELEFOR 2005*, Belgrade, Sava Centre, 22.-24.11.2005

production: commercial – the supply of production materials, product sales, marketing; financial – finding loans for fixed assets, finding loans for current assets; accounting – doing accounts for the economy; logistics – putting things in stock, transport, distribution.

**Clusters.** Clusters can be defined as critical masses of enterprises and institutions in one place, of unusual competitive success in particular fields.<sup>14</sup> According to Porter, strong competitive advantages in global economy lie mainly in local things – knowledge, relations, motivation – differences that competitors cannot copy easily, and that can best be developed through clusters.<sup>15</sup> Cluster uniting means cooperation and being connected (by commonality and complementarity) of members, their geographic or local boundaries, active canals for business transactions and communications, creating a mutual product and/or services or mutual solving of some need or a goal.

The main factors in the development of clusters have to be enterprises participants. Only through their active participation cluster will grow stronger and develop. Educational institutions also have their role and in some cases they have proved to be a significant catalyst in the development of clusters. Universities can have educational role but they can also be key factors in research and development as well as in innovativeness in clusters themselves. Also, the constituent part of the cluster form organisations for providing business services with expertise that suit to the needs of the cluster such as marketing, consultancy and similar organisations. All these bodies can contribute to strengthening the development of the cluster and can have a legitimate role in its development. Finally, local authorities, regional development agencies and other bodies have a significant share in speeding up the development of the cluster by means of interventions, strategic directing, donations, creating favourable development circumstances, organising educational seminars in regions, diminishing risk for starting business or risk when taking loans etc. In the majority of cases creating a cluster along the line “from the bottom towards the top” leads to so called semi cluster, more precisely societies, that have a chance of becoming clusters in future. The following “clusters”, more precisely societies created owing to the initiative of members, not in order to get stimulus from the state, but in order for the enterprises within the cluster to take better positions on the market are worth paying attention

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<sup>14</sup> Porter, M. (1998): *Clusters and the New Economics of Competition*, Harvard Business Review, November-December, p. 78.

<sup>15</sup> Porter, M. (1998): *Clusters and the New Economics of Competition*, Harvard Business Review, November-December, p. 78.



to<sup>16</sup>: 'Society Fruitland', Cluster of agricultural producers in Kraljevo, ``Rakovica agriculture cluster``, Begeč society of vegetable producers.

### Conclusion

Affirmation of knowledge economy and innovation impulses can be acquired by economy actors networking in agricultural sector in Serbia and by obtaining stimulating business environment, first of all, through farming and macro-economical politics. Namely, with adequate agricultural politics, that can effect production increase, farming in Serbia can develop competitiveness and contribute significantly to economy progress of the country. Though a lot is done on the field of economy reforms, in up-coming period the country has the key role in favorable and stimulating macro-economical and business ambient creation, as the only basis for inducement of farming politics, directed towards restructuring, market development and agro-sector investment enhancement. Regulated country, well developed market, financial, institutional and infrastructural base, clear and edited law system and its efficient conduct – are the first and elementary presumption to enable competition of entrepreneurs on the market. To maintain competitiveness of agriculture, macro-economical management has to change basic elements of farming development strategies, above all, for creation of sustainable farming systems, whose development is directed by knowledge and innovations, towards market development and agricultural product chain.

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