

The Systems Approach to Managing Regional Socio-Economic System

A. G. Ataeva
Sector economics mathematically modeling
ISER USC RAS
Ufa, Russia
e-mail: ice_lu@mail.ru

E. R. Mustafin
Sector economics mathematically modeling
ISER USC RAS
Ufa, Russia
e-mail: ed_mustafin@mail.ru

D. V. Shagapova
Sector economics mathematically modeling
ISER USC RAS
Ufa, Russia
e-mail: dilna86@mail.ru

V. V. Oreshnikov
Sector economics mathematically modeling
ISER USC RAS
Ufa, Russia
e-mail: voresh@mail.ru

Abstract¹

This article describes the problems of management of regional development, the analysis of characteristics of the region as an object of modelling. The main characteristic of the subsystem of the Russian Federation. Describe the criteria to build a model of regional development. Shown model of cash flows of the regional economy.

1. Introduction

Output of the Russian Federation to the next level of development is impossible without the support of the regions. Only strong and developed subjects of the federation could be the basis for the entire economy. To solve the problems of the region have different technologies. Developed a special program development, strategic plans are built, using cluster technology. A special place among the projects of regional development is the process of modeling of regional activities. The construction of any model requires a systemic approach. Need a detailed description of features of the object modeling. This article is devoted to systematic approaches to modeling of socio-economic system-level region.

2. Publication

The region is a complex, dynamic system, so many problems of management of regional development. Among which are the following:

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1. These decisions are not justified. Management decisions made at the regional level are developed based on intuition, decision makers. Lack of scientific validity due to the adoption of subjective decisions. The consequence of this is the inefficient use of resources, including the budget. According to the control of the Counting Chamber of the RB in the first half of 2007, 119.8 million rubles of the budget of the republic have been used effectively [1]. This does not apply modern information systems.

2. The decision only current tasks, without the challenges of development. This entails maintaining the existing business model for a regional system without correcting the deficiencies. Very often the decisions taken at the regional level, relate to the specific situation and do not correlate with long-term development programs. Achieving short-term objectives only applies to the operation. Long-term goals are directly related to development.

3. Management of regional development requires long-term and large-scale investments. The effect of these will manifest itself only in a few years. Most of the subjects of the Russian Federation are the grant and do not have sufficient funds for long-term investments. Attracting private investors is very difficult process, because most regional development projects do not involve getting high profits in the short term, do not submit their commercial interest.

4. The complexity of assessing the impact of decisions taken in one area of management, to the development of the situation in other areas of life. Because of the complex interrelationship occurring within the economic system of processes is often the decisions positively affect one area affect another. It is essential to calculating the

influence decisions in different areas of the economy. Thus, to develop programs of regional development requires an integrated and systematic approach, which allows you to assess the consequences of decisions.

5. The limited resources of the region (financial, labor, material and other) do not allow to implement all the projects. In this regard, for the current state of economic development is particularly important resource management, which ensures the most effective achievement of goals.

6. Duality of regional management. To date, the tasks of management of regional development are resolved by the federal and regional authorities. In addition, the municipal authorities within their competence as well have an impact on the development of the region. In this regard, requires taking into account the links between different levels of management and the effects of intersection of control actions. Interests various levels of government in management decisions must be respected, and duplication of functions should be excluded [2].

7. The presence of specific features of regions. Each region has its own inherent only to him, economic, natural resource, social conditions and characteristics. Each region is at a certain level of economic development. Accordingly, for the management of regional development, we must take into account the peculiarities of the territory.

8. The presence of uncontrolled parameters and external influences. The region is an open system and an element of larger systems (a group of regions, countries). It is exposed to external factors that are not managed by local authorities (the price fluctuation in international markets, changes in foreign exchange rate, foreign policy situation, the supply of resources in the region from the outside). This leads to the fact that the person responsible for making certain decisions in the sphere of socio-economic development can not take into account the diversity of these factors, the impact of some of which may be hidden or indirect.

9. The presence within the region of agents whose goals are different from goals of other agents and the government (and in some cases contradict). Accordingly, management of regional development must take into account needs of all elements of the regional system and must exclude imbalance in the development of region. [3]. In addition, various business entities are not homogeneous on the legal status.

10. No single criterion for optimal development. Before the authorities put multicriteria problem which does not have a definite decision. Can be obtained many options for the development of the situation, with their advantages and disadvantages. The list of indicators that characterize the quality of state services, is unstable. The objectives of public administration, as a rule, do not fold into a single goal which can assume the rest. Therefore,

there is no integral indicator of governance. At the same time attracting a large number of experts on various issues to develop a balanced solution requires a significant investment of resources (including the harmonization of the decision).

Many problems in management of regional development are interrelated and interdependent. In this connection requires an integrated approach to address them. The main problems of regional development are presented in Figure 1.

Before constructing a model of the region must take into account the peculiarities of the region as an object modeling.

1. The region (as an object modeling) is a complex semi-structured system, simulation which involves the identification of a large number of complex causal relationships between factors.

2. Region - a self-regulating system. In the region there are internal mechanisms of regulation: first, the normative-legal regulation in the form of regional legislation, and secondly, the system of administrative agencies: the representative, executive, judicial, and, third, intra-regional economic regulators, etc.

3. The region is a stochastic system. Most of the processes taking place in conditions of uncertainty. This fact must be taken into account when building predictive models.

4. The region is the social system. The problem of development of the region aimed at improving the quality of human life. In the simulation of economic processes is important to consider both the social interests of society as a whole and the individual. From economic theory we know that the model of self-regulating market with no foreign government support is inefficient, because it does not allow the interests of disadvantaged groups and lead to social tension in society.

5. A large number of cause-effect relationships. It is related to the definition of the region as a complex system. The region has a complicated structure. It includes various administrative, economic, social, political, mental subjects. These subjects are interlinked with each other and with external systems: the federal center, other federal entities, other states.

6. The consideration of a large amount of information. To build an adequate model of the region requires a large set of indicators that describe all the main economic agents in the region.

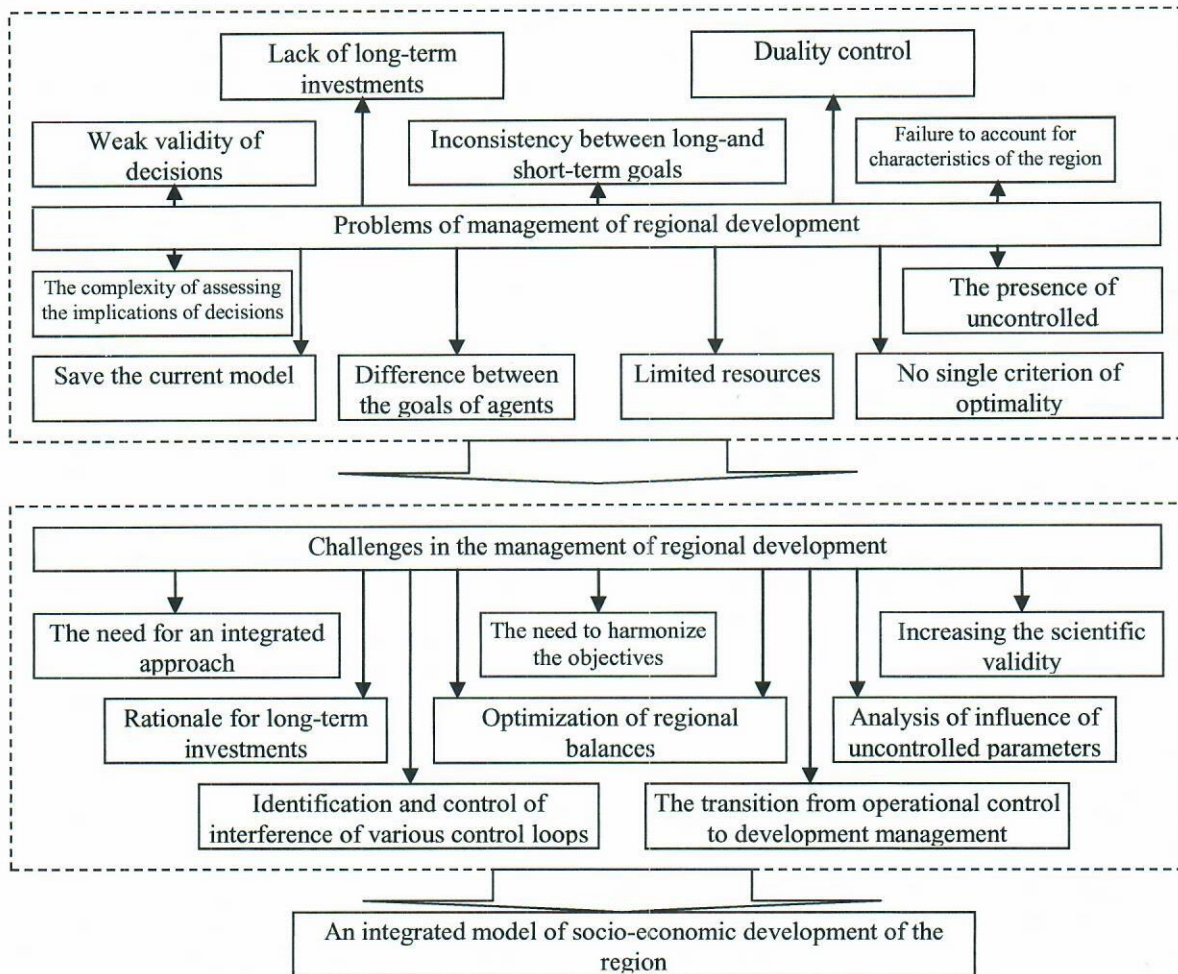


Fig. 1. Problems and challenges of management of regional development

7. Statistical information describing the region in the complex is not always available. In addition, there are some important indicators of the economy, which are classified as non-observed data. This fact must be taken into account when constructing a model of the region.

8. The region is a dynamic system. Investigation of regional processes requires consideration of historical dynamics, cycles of economic growth, the natural processes of growth and decline of production. The maintenance of economic equilibrium provides the normal development of the region.

The region is a complex system and it is difficult to formalize it. Be sure to highlight the main agents that can be used to provide a simplified model of the region, consisting of the following major subsystems (Figure 2).

Based on these subsystems, we can provide general circulation models of real and cash flows of the regional economy (Figure 3).

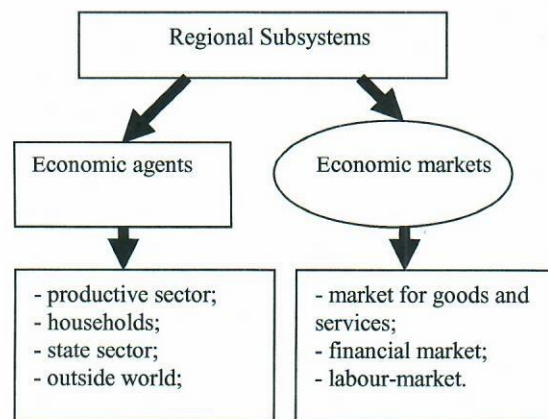


Fig. 2. The main subsystems of the region

Agents of the economy characterized by the following indicators:

- The outside world: exports, imports, external borrowing, provided by external loans;
- Business: profit; production subsidies, investment companies, dividends, taxes on production;
- Labour: wages; UST; payroll;
- Households: wages, dividends, social transfers, private consumption, individual taxes, household savings;
- Production: gross output, intermediate consumption, payroll, gross profit, indirect taxes, depreciation;
- Government: taxes on production, income taxes, individual taxes, UST, external borrowing, government consumption, social transfers, production subsidies, fiscal investment, foreign loans granted;
- Agents of the economy characterized by the following
- Goods and services: GRP; imports; final consumption, private consumption, government consumption, gross investment, exports, final demand;
- Capital: profit, taxes on profits, gross profit.

Before constructing a model of regional development based on these indicators is necessary to formulate the basic criteria of constructing a regional model, among which are the following.

1. Consistency – the coverage model of the entire set of essential elements and relationships of the simulated object. The system of national accounting is proposed to use as a tool for the systems.
2. Scientific validity – use of scientific methods in the model, in particular the methods of economic-mathematical modeling, providing a rigorous formalization and thus the reliability and verification of simulation results.
3. Balance – a holistic account of sources of education and use of resources for the conservation of the basic reproductive ratios in modeling. This problem can also be carried out by using standard system of national accounting.
4. Variation – the possibility of a model to evaluate the impact of alternative development strategies, taking

into account possible changes in the conditions of internal and external environment. Tool to achieve – the use of methods of scenario modeling.

5. Applicability – most important condition for ensuring the possibility of bringing the theoretical calculations to practical simulation results.
6. Adequacy of official information and statistics, which provide bring theory to practical modeling results;
7. Cost – the adequacy of cost consumers to buy, install, operate and maintain an information system;
8. Adaptability – the possibility of using existing models for analyzing and forecasting the development of other socio-economic systems. Determine the need to change the basic parameters of the model, changes in existing relationships, a set of indicators, the value of the database;
9. Flexibility – the ability of models to reflect adequately the object under certain changes in its parameters;
10. Realization as a software product – bringing the conceptual model to the level of software and implementation in the form of an information system (Decision Support System, Analysis and Information System, etc.);
11. The stability of the system to changing parameters;
12. The possibility of adjustments – the user's ability to intervene in the process of modeling and change some aspect of the simulation.

These principles will overcome or reduce the impact of restrictions in the construction of an integrated model of the region.

3. Conclusion

- The article discussed the main problems of management of regional development.
- Been established features of the region as an object modeling.
- Have been established regional subsystems: the economic agents and economic markets. The paper was a model of the circulation of real and monetary flows of the regional economy.
- The paper identified key indicators of economic agents in the region.
- We have formulated the basic criteria for constructing a regional model.

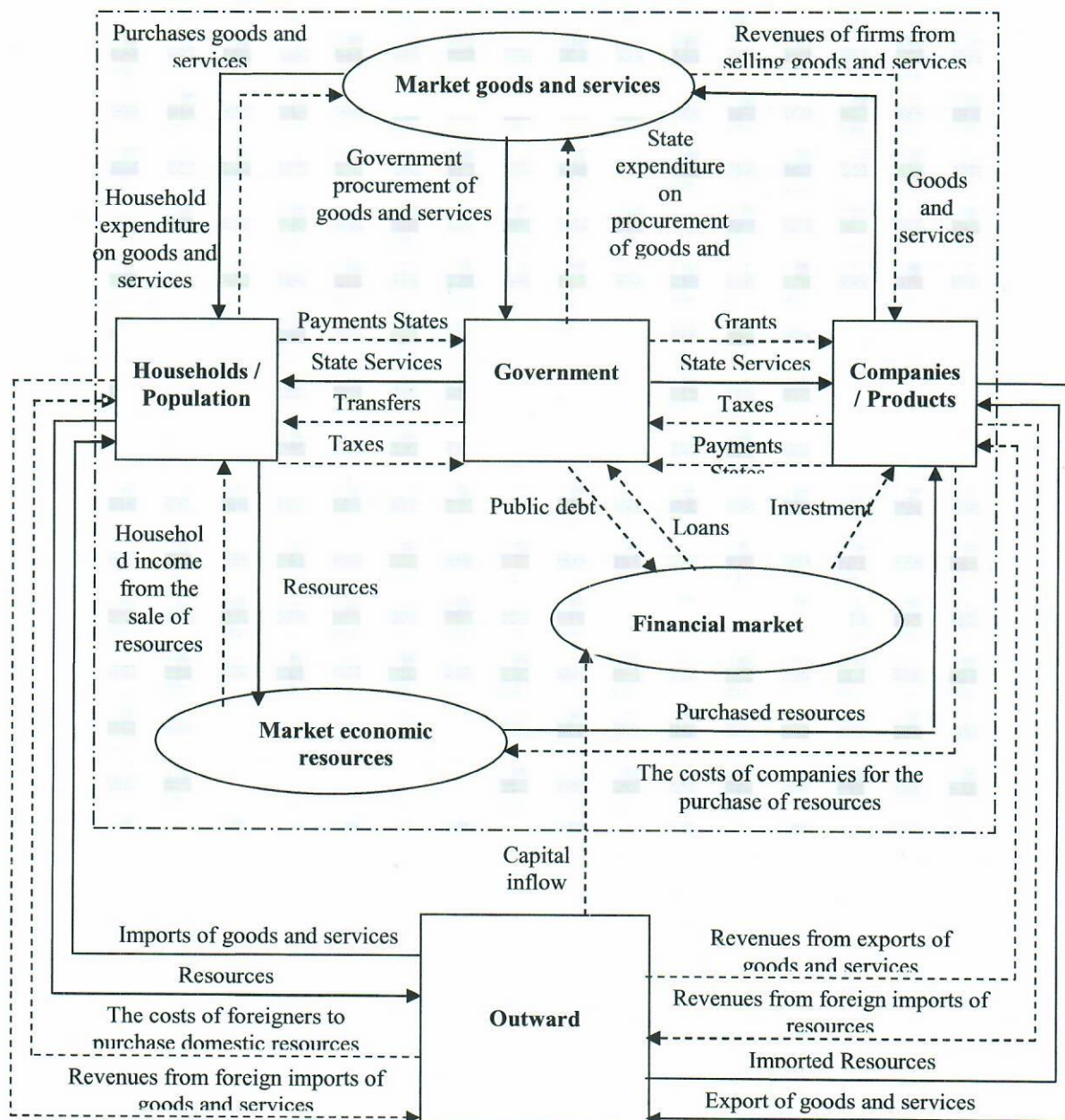


Fig. 3. Circulation models of real and monetary flows of the regional economy

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