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**APPROACHES TO SOLVING ECONOMIC PROBLEMS
IN THE GOVERNANCE OF METROPOLITAN AREA**

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Abstract

Agglomeration settlement systems are the basis for the innovative development of national economies. The reasons for this are agglomeration effects, which are represented by economies of scale, localization effects, and urbanization effects. However, some of the largest agglomerations in Russia and the world are facing a slowdown in economic growth, lagging behind the growth rates of medium and small agglomerations. This situation is due to a number of disagglomeration effects. Their presence is caused by exceeding the optimal size of agglomerations, the presence of external effects, and institutional problems. Purpose of the article: identification and grouping of disagglomeration causes in the economic sphere, as well as generation of proposals for their solution, which will remove the limitations of agglomeration development. Research methodology: problems were identified when studying various sources of information (academic articles of scientists, interviews of city and regional officials, strategic and territorial documents). Three groups of agglomeration problems have been formed. The problems of the economic group are considered to indicate their causes, examples are given, the consequences of solving or ignoring the problems. A total of 30 agglomeration problems were proposed, of which a detailed analysis was carried out for 13 economic problems. The conducted research can be useful for officials involved in managing agglomeration systems and large cities.

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Keywords: Agglomeration development, agglomeration management, agglomeration problems, inter-municipal cooperation, territorial interaction



1. Introduction

The emergence of negative effects from the concentration of population and resources in the agglomeration is the reverse side of the positive agglomeration effects that stimulate this concentration. Therefore, scientists considering ways to increase labor productivity within the framework of agglomeration settlement systems inevitably raised the issue of agglomeration problems. First of all, it should be clarified that in this article, agglomeration will mean the concentration of the population in a large settlement, or the concentration of the population in a system of interconnected nearby settlements (the terms agglomeration and metropolitan area are equivalent in the second case). This approach to understanding the term lies within the European tradition of regionalism (Christaller, 1966). The growth of a large city and the gradual folding of agglomeration around it leads to a splicing of problems from the concentration of resources in a large city and from the fragmented management of agglomeration settlements. This provides a basis for considering these issues together. Classical works in the field of studying agglomerations are the works of Marshall, Weber, Richardson, and others. With an excessive concentration of resources at one point, a disagglomeration effect occurs. According to Weber, the disagglomeration effect is a situation in which it is no longer profitable to further concentrate production, but it is profitable to disperse it (Weber, 1929). This effect manifests itself in many sectors of the economy (Weber, 1929). The reason for the disagglomeration effect is the rise in land prices, the rise in wages for workers in the center of the agglomeration. The rise in land prices in the agglomeration may be caused by the increased demand for it from commercial enterprises, with which industrial enterprises cannot compete in terms of profitability (Marshall, 1920). This pushes entrepreneurs to look for cheaper resources, which leads to city sprawl. However, urban sprawl leads to transport problems in the form of increased distances to be covered. At the same time, the continued concentration of resources leads to other transport problems, namely, to an increase in the time spent on overcoming the former short distance within the city (traffic jams are formed). Accordingly, a stalemate arises. This situation is typical not only for transport in the agglomeration, but also for many other areas of activity.

Another reason for the disagglomeration effect is poor governance (Richardson, 1977). It can manifest itself both for an agglomeration in the form of a large city and for an agglomeration in the form of a system of settlements. The presence in the agglomeration of several settlements at once with their own leadership (fragmentation of management) leads to numerous negative external effects (externalities). It is difficult for municipalities to agree with each other on the internalization of these externalities. As a result, agglomeration problems have not been solved for decades. Among modern researchers of agglomeration problems and their solutions are Combes et al. (2019), Börjesson et al. (2019), Moreno-Monroy et al. (2020), Duranton and Kerr (2015), De la Roca and Puga, (2017) and others.

2. Problem Statement

Agglomeration problems are, in a sense, “market failures” that need to be managed. Typically, “market failures” within an agglomeration include externalities, the provision of public goods throughout the agglomeration. The intervention of public authorities, in particular of municipalities, should eliminate these problems. However, here, in turn, an ineffective functioning of institutions, called “state failures”, is

possible. In agglomerations, they manifest themselves in the form of defending the interests of the bureaucracy, asymmetric information. Solving the problems of "market failures" and "state failures" can lead to a more optimal state within the agglomeration system. In particular, the concentration of resources in a large city will decrease due to the development of the periphery of the agglomeration, but bureaucratic barriers will not be able to destroy the resulting effect.

3. Research Questions

Research questions in this article:

1. What problems of the development of the agglomeration can be identified in the economic, political and social spheres?
2. What tools for solving specific agglomeration problems exist? What can be offered in the areas of distribution of powers, finance? Is it advisable to expand the jurisdiction of the central city to the rest of the metropolitan area?
3. How will the choice of this or that decision affect the development of the agglomeration? Will these solutions result in new problems that are worse than the previous ones?

4. Purpose of the Study

The aim of the study was to identify economic, social, and political problems of the development of the agglomeration. Due to the limited space of the article, the focus is on economic issues. To achieve the goal, several tasks were set. First, we need to give a description of the problems, the negative consequences of ignoring them or making the wrong decision. When solving this task, it is important to take into account the interests of not only the municipal, but also the regional levels of government, which are involved in the management of the agglomeration. Secondly, it is necessary to offer several options for solving the identified problems. Third, it is necessary to indicate the possible positive and negative consequences of these decisions. Analysis of agglomeration problems and solutions is carried out advantage for situations typical for Russia.

5. Research Methods

Various sources of information were analyzed to identify the most important agglomeration problems. Were used academic articles by scientists, strategic and territorial documents for the development of territories, interviews with officials. Further, all identified problems were grouped into three areas. As a result of mental modeling, the consequences of different solutions to each problem were evaluated. Of all the identified agglomeration problems in this article, due to the limited scope, a detailed analysis is presented only for economic problems. There is no quantitative analysis in this work. This is due to the fact that for its full-fledged implementation, it is important to first establish the logic of the formation and solution of agglomeration problems (which is done in this article).

6. Findings

As a result of the study, there were 30 agglomeration problems. They are grouped by spheres: 13 economic problems, 10 political, 7 social (Table 1).

Table 1. Agglomeration problems

Spheres	Problems
Economy	<ol style="list-style-type: none"> 1. Deficit of municipal budgets 2. Difference between municipalities by budget 3. Negative externalities: personal income tax 4. Different tariffs for services 5. Deteriorating investment climate 6. Decrease in labor productivity in the agglomeration 7. Provision of services to non-residents of the municipality 8. Autonomous development in the tourism sector 9. Growth in infrastructure maintenance costs 10. Developers-builders' unfair practices 11. Duplication of functions 12. Territorial disproportions in development (anthro-semi-desert) 13. Transport collapse
Politics	<ol style="list-style-type: none"> 1. High fragmentation of public authority 2. Decline in democracy 3. The process of reducing the powers of municipalities 4. Lack of regulatory and legal support 5. Low ability to make compromises among the leadership of municipalities 6. Problems of inter-municipal cooperation 7. Competition among municipalities 8. Not knowing the best practices 9. City Sprawl 10. Difficulties of taking part in state programs
Society	<ol style="list-style-type: none"> 1. Waste management, ecology 2. Organization of cemeteries 3. Difficulties in obtaining social services throughout the agglomeration 4. Formation of a weak population structure 5. Growth of immigration and crime 6. Lack of personnel and their low qualifications 7. Low availability of housing

Source: author.

Economic problems. The category of economic problems includes issues from the spheres: labor productivity, population stratification by income, municipal budgets, taxes, etc.

Deficit of municipal budgets. Problem. The deficit of municipal budgets is a well-known and urgent problem. Due to the deficit, not only the quality and volume of services rendered to the population decreases, but also the budget for the joint development of the territory disappears. Municipalities are unable to single-handedly implement large infrastructure projects (construction of a bridge, airport, etc.), there are also no free resources for joint development of the territory. As a result, the lag in infrastructure development leads to a decrease in the competitiveness of all municipalities in the agglomeration.

Solution. Solving the problem is disadvantageous for the regional authorities: with an increase in the independence of municipalities, the number of levers of influence of the region on them will decrease. A conservative solution is financial transfers from the regional level. The disadvantage of this decision is that

the municipal authorities are limited in the freedom of their spending: transfers are targeted in nature, and also limited in time (they need to be quickly mastered). A significant part of the transfers are subventions, which the municipalities simply redistribute to the recipients.

Another solution is to reform the tax system. It is logical to transfer some taxes to the municipal level. For example, in Russia the tax on property of organizations is fully credited to the regional budget, which reduces the economic incentives of municipalities to attract investment.

Difference between municipalities by budget. *Problem.* Municipalities have different budgets per capita in such areas as education, health care, housing and communal services, social policy, water supply, street cleaning in winter, electricity supply, heating, etc. This affects the quality of services, for example, there are interruptions in their supply. As a result, migration processes arise: qualified personnel leave the lagging municipality and move to the advanced municipality, which leads to a new round of income decline and finally turns the territory into an outsider. In the case of the implementation of agglomeration projects, rich municipalities are not always interested in subsidizing poor municipalities.

Solution. The unification of the agglomeration territory into one municipality will lead to the fact that, as a result, the rich territories will subsidize the poor. Equalizing development (for example, building points of economic growth in lagging areas) can lead to inefficient dispersal of resources. Another option is to maintain the necessary level of social services in lagging territories at the expense of transfers, but without diluting resources to create dubious growth points.

Negative externalities: personal income tax. *Problem.* The levied personal income tax (hereinafter - personal income tax) in Russia is distributed in the following proportions: 85% goes to the regional budget, and 15% goes to the local one (from 2 to 15% depending on the type of municipality). Sometimes the region can transfer part of the personal income tax to the local budget. Because Personal income tax is withheld by the employer, then the funds are received not at the place of registration / residence of the employee, but at the location of the enterprise. Accordingly, the local budgets of satellite cities, whose residents work in the core of the agglomeration, receive less income. At the same time, there is a load on the infrastructure of these satellite cities.

Solution. The redistribution of taxes can weaken the core, which will reduce the concentration of financial resources and the ability of the core to set trends in the implementation of agglomeration projects. There are the following solutions:

1. Territorial changes: for example, the unification of related territories.
2. An experiment in the tax system: citizens pay their own personal income tax at the place of registration (as in the USA). It is quite easy to track debtors, since debt can be calculated by the amount of social payments paid by the employer.
3. Solution through digitalization: the Federal Tax Service has data on personal income tax, as well as the place of registration of the payer. There are no technical difficulties in transferring the tax received by the Federal Tax Service at the place of registration.
4. Transfers: the region can collect information on personal income tax and compensate for the shortfall in income through transfers.

Different tariffs for services. *Problem.* The municipalities included in the agglomeration provide services at different rates, which prevents the formation of unified agglomeration markets for energy,

housing, labor, capital, etc. One-time equalization of tariffs is difficult due to the different status of the municipalities included in the agglomeration. Another reason for the difficulty in leveling tariffs is the different level of well-being of the population of the agglomeration.

Solution. Despite the importance of single markets (they facilitate migration within the agglomeration, stimulate production activities, etc.), the degree of need for their creation should be critically assessed. For example, equalizing tariffs for services in cities and municipalities can undermine agriculture or the desire of some businesses to locate outside the city.

Deteriorating investment climate. *Problem.* The metropolitan governance model influences the formation of the investment (business) climate, the volume of investments and the rate of economic growth. Doubling the degree of fragmentation in an agglomeration (the number of municipalities) reduces the growth rate of labor productivity by 6% relative to an agglomeration where fragmentation is lower (Ahrend et al., 2014). If an agglomeration governing body is created (even if the existing fragmentation is preserved), then this penalty is reduced to 3%, i.e. 2 times.

Solution. The relationship between fragmentation and economic growth is presented as follows: fragmentation prevents the solution of the transport problem (which in itself reduces labor productivity), complicates balanced strategic and territorial planning, firms in different jurisdictions are forced to take into account the differing requirements of municipalities, unbalanced development leads to a lack of social and economic infrastructure, all this reduces the attractiveness of territories for enterprises. The solution to the problem lies in the choice of the optimal model of agglomeration management in the existing conditions (voluntary, one-tier, two-tier municipal, regional).

Decrease in labor productivity in the agglomeration. *Problem.* In some agglomerations of Russia and the world, a situation has developed when the growth rates of labor productivity in them lag behind labor productivity in non-agglomeration territories. Enterprises in the core of the agglomeration may lose out to enterprises in the periphery of the agglomeration.

Solution. The reason for the lagging behind agglomerations is a set of agglomeration problems that negatively affect entrepreneurs. The costs of maintaining production processes are growing, as a result, the competitiveness of agglomeration enterprises decreases, they begin to lose competition. Due to the disagglomeration effect, the agglomeration begins, as it were, to “eat up” the resources concentrated in it. Sometimes it is advisable to “unload” agglomerations from enterprises by creating new points of growth.

Provision of services to non-residents of the municipality. *Problem.* In some sectors of the social sphere (cemeteries, travel for privileged categories of citizens, ecology, etc.), the volume of services provided is calculated from the number of residents registered in the municipality. Therefore, residents of neighboring municipalities can create an irregular load on the infrastructure, which leads to problems of underfunding, inconsistency between the capacity of the infrastructure and the load on it.

Solution. Regulation mechanism: through regional transfers; through grants in the form of a subsidy from the municipality in which the non-resident of the municipality who received the service was registered.

Autonomous development in the tourism sector. *Problem.* Municipalities are not trying to create a unified tourism brand and infrastructure. Tourist flows from the core of the agglomeration can negatively affect the preservation of cultural, historical and natural objects of the periphery. This is especially true for those objects, access to which is impossible to restrict or charge a fee from each user. The damage caused

by tourists to the ecosystem will be restored by the municipality, in which these tourists are not registered and do not pay taxes.

Solution. The development of a single brand of the metropolitan area brings more benefits than the autonomous promotion of itself by each municipality. It is required to study the sources of pressure on tourist sites and implement a policy on their joint content within the agglomeration.

Growth in infrastructure maintenance costs. *Problem.* When constructing objects near the borders of municipalities, the choice of the source of communication connection arises. If to pull the networks from your municipality, then the lengthening of communications leads to losses in the process of supplying electricity, heat, etc. Additional costs are needed to maintain the required pressure in the networks. Accordingly, sometimes it is easier to lay communications from a neighboring municipality. This is where technical and institutional problems arise. Technical: existing infrastructure facilities do not always have sufficient capacity to meet additional demand. Institutional: the municipality can resist the additional burden on its networks as an increase in intensity can reduce the life of the equipment, reduce the quality of the supplied resources (for example, power surges will begin). These problems are common in the electricity, water, lighting, and other industries.

Solution. When municipalities cooperate, a common infrastructure can be built, which is maintained together. This leads to a reduction in the burden on budgets.

Developers-builders' unfair practices. *Problem.* Some social infrastructure facilities in satellite cities may not be available at all. It's all to blame for non-complex development: the entrepreneur is not sure that the project will be successful, therefore he minimizes risks, makes the project cheaper by saving on everything (from the construction of normal roads to elementary objects of social, energy and other types of infrastructures). If the project turns out to be successful, then the problems with the provision of infrastructure will have to be solved by the municipalities. Usually large areas are built up on the periphery of the agglomeration, but municipalities in these areas are unlikely to have the funds to cover the shortcomings that have emerged. Therefore, the problem is solved at the expense of the core of the agglomeration or region.

Solution. Joint strategic and territorial planning in the agglomeration.

Duplicate functions. *Problem.* In the absence of a metropolitan administration, there is duplication in the provision of services in the police, fire brigade, health care and other areas. Each municipality is forced to overpay for services instead of creating a single service center to save costs. A situation arises of the presence of many backward social facilities instead of the presence of several modern inter-municipal facilities. Also, the problem of competition of parallel management structures (for example, several regional ministries) for the budget is characteristic, there is a lack of information about the ongoing processes in neighboring structures, the complexity of coordinating joint actions, shifting responsibility to each other.

Solution. In some cases, striving for “unification” is unacceptable. For example, in the 1960s, many “unpromising” settlements were abolished in Russia. This led to the undermining of the settlement system, the formation of an anthro-semi-desert. Therefore, even in unpromising settlements, it is necessary to create conditions for a minimum social security. At the same time, it is advisable to open advanced social facilities on an inter-municipal basis.

Territorial disproportions in development (anthro-semi-desert). *Problem.* Territorial disparities can be between the center and the periphery of the agglomeration, between the agglomeration and territories outside the agglomeration. Disproportions can be positive and negative for agglomeration development (Pavlov, 2020). It is believed that it is necessary to combat negative imbalances in the social sphere, it is necessary to strive for an equally high level of basic social services. However, the equalization of economic development can lead to undesirable consequences, when resources are evenly “smeared” with a thin layer, which will not give breakthrough points of growth. On the other hand, the hypertrophic development of the nucleus and the transformation of the periphery into "sleeping areas" leads to a decrease in the quality of life in both parts of the agglomeration. In the center, the ecological situation is deteriorating; in the periphery, people spend too much time traveling to the center.

An example of an industry disparity is the presence of single-industry towns. The economic development of a monotown is unstable and depends on the development cycles of a particular industry. Diversification scatters resources into other industries, which reduces the competitiveness of the main industry of the monotown. The positive effect of diversification is that the sustainability of the city's development increases.

An example of a striking territorial disparity is the formation of an anthropo-desert. The population from the region is being drawn into the agglomeration, the region becomes deserted. In an agglomeration, natural growth is insignificant or negative, and the agglomeration can become the “gravedigger of the nation”. These processes can occur on the scale of an entire state, when the metropolitan agglomeration pulls all resources onto itself (for example, Moscow from the rest of Russia).

Solution. If we prevent the pooling of resources in the centers, then these centers may become uncompetitive: qualified specialists may begin to leave for other states or regions. Therefore, it is important to determine the optimum degree of polarization. The same is with specialization: it allows you to get the effect of localization, get rid of duplication of functions, which gives the agglomeration a competitive advantage. Rational spatial planning is not able to completely solve the problem of imbalances, since residents periodically change their place of residence.

Transport collapse. *Problem.* The main transport problems in the agglomeration:

1. The unbalanced distribution of population and jobs in the agglomeration leads to an increase in traffic flows. The existing infrastructure is failing; there is no unified transport policy for the subjects of agglomeration management; municipalities do not always manage to agree on the joint construction of transport communications.

2. Inter-municipal transport lines are not always convenient for passengers: the route may end at the border of municipalities, which forces passengers to make transfers to other vehicles of the same type to continue the trip; travel rates may differ in neighboring municipalities; changes to other vehicles at the border of the municipality lead to higher travel costs, etc.

3. Poor-quality public transport forces people to use a private car and additionally load roads.

4. Transport fatigue of the population: lengthening the travel time to work more than 1 hour in one direction can negatively affect the mental health of people, their performance.

5. In the core of the agglomeration, due to the influx of daily migrants, there are traffic jams, a decrease in labor productivity due to time costs. 6) Highways divide the area into unconnected territories,

as a result of which damage to the environment can be caused (due to the absence of eco-duct crossings, wild animals die under the wheels of cars).

6. There is no connection with the transport infrastructure of important parts of the metropolitan area. For example, in the Samara-Togliatti agglomeration, the problem is the spatial isolation of Syzran from Samara, the absence of bridges across the Volga. In municipal districts, which are actually an agglomeration (there is a general governing body - a district administration, a common infrastructure - a district hospital, etc.), it may be difficult for the population to get to the district center.

Solution. The solution to the transport problem may be disadvantageous to the regional administration or the authorities of the agglomeration core. After all, this will lead to an increase in suburbanization and a decrease in the population of the core, which will have a detrimental effect on participation in federal projects in which there are conditions for the size of the participant's population, and will also reduce the tax base of the core. This issue can be resolved through the growth of the agglomeration core territory.

Alternative approaches to solving the transport problem:

1. Formation of points of employment on the periphery of the agglomeration to reduce traffic flows to the center; reduction of daily traffic flows through the creation of rental housing (for example, with capsule rooms, mini-apartments).

2. Inter-municipal cooperation in the transport sector: combining several municipal contracts for the construction or maintenance of road sections into one lot will increase the volume of purchases and receive a discount; joint construction of infrastructure with a high barrier to entry (airport, pipeline, etc.); a comprehensive plan of transport services for the population and improvement of the work of inter-municipal transport; development of alternative modes of transport.

3. Construction of high-speed highways or high-speed intercity trams will reduce the desire of people to move to the core from the periphery, enhance the diffusion of innovations, reduce the growth rate of real estate prices in the core, etc.

7. Conclusion

Agglomeration problems arise in the interaction of territories under different jurisdictions. In a broad sense, agglomeration problems also cover typical urbanization and even rural problems. Agglomeration problems are based on negative externalities, city sprawl, and diminishing marginal utility from resource concentration. At some stage, the effect of the concentration of resources in the agglomeration becomes negative. The productivity of labor, the quality of life of the population, the level of provision with infrastructure, etc. are decreasing. Sometimes such effects are characteristic only for the core of the agglomeration, and sometimes for the entire agglomeration.

Agglomeration problems can be conditionally divided into spheres: economic, political, social. All problems are interconnected, so a comprehensive solution is needed (Pavlov et al., 2019). It lies in the field of management: coordination of the interests of territories of different jurisdictions, government bodies at different levels, joint infrastructure development, strategic and territorial planning. Internalization of the problem, taxes, transfers, subsidies, licensing, reforms in the field of administrative-territorial structure, etc. act as solutions. The combination of a set of tools creates a unique metropolitan governance model.

Practice shows that a voluntary metropolitan governance model is rarely able to eliminate agglomeration problems. This is due to a variety of political reasons. The decision requires an external arbiter who is able to coordinate reforms in the following areas:

1. Changing the boundaries of the municipality.
2. Change in the status of the municipality.
3. Transfer of powers and finances between municipalities, region.
4. Changing the composition and methods of forming municipal government bodies.
5. Formation of an institutional structure for the management of the agglomeration.

To select effective tools requires constant systematic jewelry work. The high complexity of agglomeration management obliges to avoid voluntaristic and hasty reforms.

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