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Improvement of Tariffs for Urban Public Transportation Taking into Account their Social Significance

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ABSTRACT

The necessity of developing a mechanism for calculating tariffs for urban public transportation, taking into account international practices and the social importance of passenger transportation as a mixed public good, is substantiated. A formula for calculating a social tariff and an organizational-economic mechanism for development of a regional market of transport services to the population (at the example of St. Petersburg) are proposed, and its key principles are highlighted.

According to the author, it is necessary to suggest a mechanism for calculating tariffs for transport services to the population, based not only on the costs of carriers, but also on the basis of economic interests of passengers. It is proposed to calculate a social or socially oriented tariff, taking into account the average income of citizens, the average number of monthly trips, the share of transportation costs in the total monthly income and the share of trips with multiple travel tickets. At the same time, the tariff for transport services to the population should not exceed the social tariff.

The suggested concept of «organizational and economic mechanism for development of a regional market for transport services to the population» includes a set of principles, goals, facilities and subjects, as well as key elements of the mechanism comprising organizational and economic ones. This approach allows us to take into account the interests of all participants in the transport services market while developing of tariffs.

The basic principles of such a mechanism should be: focused objectives, parity, consistency, complexity, sociality, transparency, effectiveness.

Keywords: public good, transport, transport services, public transport, social tariff.

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Introduction. Transportation services provided to the population in all their characteristics, including regulation of the fare and organization of transportation at the regional level, belong to the local mixed public good [1, p. 122].

The position of the author is that the public good means a vital good, ensuring minimum needs of the population, but not participating in market relations and not exposed to its mechanisms. Considering that point it is obvious that the problem of improving tariffs for urban public transportation is important, primarily from the point of view of their social significance.

The *objective* of the work is to propose and justify the mechanism for improving tariffs for transportation services provided to population, taking into account their social significance.

Methods of the study. As part of the study, the author used general scientific methods, value, regulatory, parametric and economic methods.

Results.

The problem of improving the process of tariff formation in the market of urban passenger transportation has traditionally been raised in many works of domestic and foreign scientists. The topic is relevant for all countries with a developed transport system, and is disclosed, in particular, in the works of A. V. Ryazanova, V. E. Bessonov, E. B. Lerman, S. V. Anureev, etc.

The analysis of the pricing process in the transport services market in St. Petersburg showed that the cost-based method is used when calculating fares for passengers. It implies that all costs directly related to provision of transport services to the population, add up with the planned profit and are divided by the number of passengers carried [2].

According to the author, when setting tariffs for transport services that are socially oriented, it is necessary to take into account the financial possibilities of passengers. The social importance of passenger transportation necessitates meeting the expectations of consumers of services and, most importantly, taking into account their economic interests. The mechanisms of accounting for social importance of transport services to the population are different.

In countries such as Belarus [3] and the Russian Federation, passenger transportation is partially subsidized to ensure that the fare is lower than the economic cost and, accordingly, citizens do not pay 100 % of the real fare. There is a statement in domestic works that «subsidizing passenger transport is an integral part of its successful functioning» [4, p. 220].

In other countries, the public administration covers most of the cost of transport services to the population. So, in Sydney (Australia), the state subsidizes about 2/3 of transportation costs [4, p. 219].

Some countries came to the decision to refuse at all to introduce fare in passenger transport, but with certain conditions. For example, in Estonia (Tallinn) transport services to the local population are free of charge, while tourists are required to pay the fare at the officially established rate [5]. A similar situation is observed in Luxembourg, where from 2019 it is planned to make all public transport free [6].

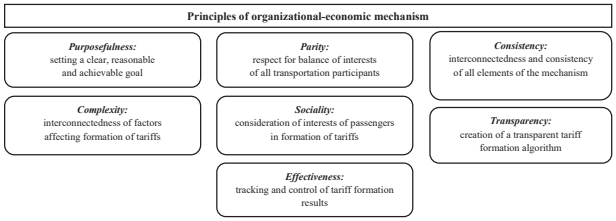
And, finally, financing of passenger transport on the basis of full coverage of carriers' costs at the expense of the fare can be considered as a rather rare phenomenon. Such a scheme operates, for example, in the cities of Hong Kong, Buenos Aires, Curitiba [7, p. 42].

As E. B. Lerman reasonably notes, «the world experience in passenger transport management shows that, for all their differences, there is one common specificity of this industry – its unprofitability, and therefore the state undertakes to finance urban public transport» [8, p. 79].

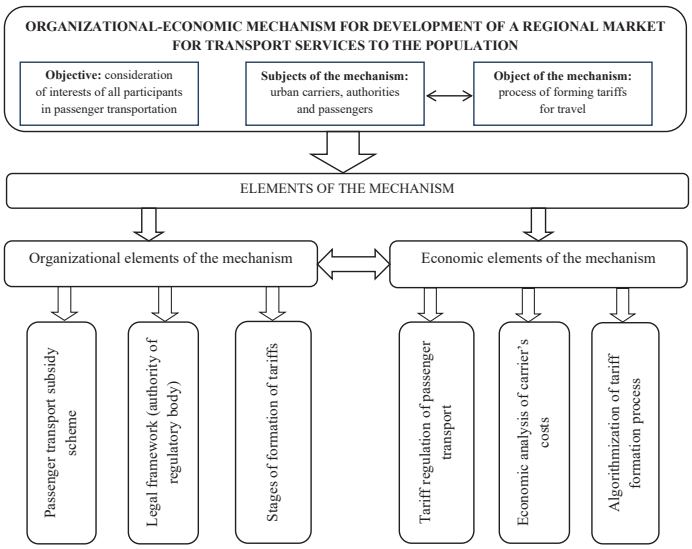
The article of S. V. Anureev [9, p. 4] presents an analysis of international experience, on the basis of which it was concluded that «public transport systems are not self-sufficient and need substantial budgetary subsidies», while rightly noting that citizens actually pay the fare twice: directly paying their travel fare and when paying taxes to the [local] budget that subsidies public transit.

From the foregoing it follows that the social significance of passenger transportation is indisputable. According to the author, it is necessary to propose a mechanism for calculating tariffs for transport services provided to St. Petersburg residents, based not only on the costs of carriers, but also on taking into account the economic interests of passengers.

It is proposed to calculate a social or socially oriented tariff (hereinafter – T_{soc}), taking into account the average income of citizens, the average number of monthly trips, the share of transportation costs in total monthly income and the share of trips using multiple travel tickets. At the same time, the tariff for urban public transportation should not exceed the social tariff.



Pic. 1. Principles of organizational-economic mechanism for development of a regional market of public transportation services.



Pic. 2. The organizational-economic mechanism for development of a regional market of public transportation services.

Principles: focused objectives, parity, consistency, complexity, sociality, transparency, effectiveness.

Thus, the formula for calculating the social tariff looks like this:

$$T_{soc} = \frac{S_{av.mon.} \cdot L_{c.trans.}}{N_{t.mon.}} \cdot S_{tr.}, \quad (1)$$

where T_{soc} – social tariff; $S_{av.mon.}$ – average monthly nominal wages; $L_{c.trans.}$ – level of monthly transportation costs; $N_{t.mon.}$ – number of monthly trips; $S_{tr.}$ – share of trips using multiple travel tickets.

In this case, the author's position is that the tariff set for the population should be less than or equal to the social tariff, as indicated in the condition below:

$$T_f \leq T_{soc}. \quad (2)$$

The formula proposed by the author for calculating the social tariff (1) and the condition (2) are part of the tariff formation algorithm, which is one of the economic elements of the mechanism for developing the regional market of public transportation services.

The concept of «organizational and economic mechanism for development of a regional market for transport services to the population» means, according to the author, a set of principles, goals, objects and subjects, as well as key elements of the mechanism comprising organizational and economic ones. This approach allows us to take into account the interests of all participants in the transportation services market while developing the tariff system.

According to the author, the basic principles of such a mechanism should be: focused objectives, parity, consistency, complexity, sociality, transparency, effectiveness (Pic. 1).

The organizational-economic mechanism for development of a regional market for transport services to the population (or of public transportation) is presented in Pic. 2. The subjects of the mechanism are carriers, passengers and authorities, the object of the mechanism is the process of forming travel tariffs.

Organizational elements include: passenger transport subsidy scheme, legal framework, and stages of formation of tarrifs [10, p. 71]. Thus, *passenger transport subsidy scheme* reflects all the author's proposals for improving the process of allocating budgetary funds to carriers [10, p. 68]. *The legal framework* is empowerment of the tariffs by regulating body, St. Petersburg Tariff Committee, with powers to coordinate the

volume of subsidies to carriers along with Transport Committee and Finance Committee of St. Petersburg. The stages of formation of tariffs summarize all the author's proposals and, thus, organizationally affect the process of formation of the tariff for transport services to the population.

Economic elements of the organizational-economic mechanism are: tariff regulation of passenger transport, economic analysis of carrier's costs and algorithmization of tariff formation process. *Tariff regulation of passenger transport* implies not only calculation of an economically sound tariff, but also calculation of the social tariff proposed by the author above. *Economic analysis of carrier's costs* is identification of carrier's costs, which should be idemnified at the expense of the public bodies as a net public good, but not be included in the tariff. *Algorithmization of tariff formation process* summarizes the above measures – tariff regulation and economic cost analysis – and involves construction of an algorithm for formation of a tariff for passenger transportation.

The mechanism proposed above makes it possible to put together organizational and economic elements that affect the process of tariff formation, and also to focus on the social significance of passenger transportation by identifying passengers as one of the subjects of the mechanism.

Conclusion. Transportation services provided to the population is a mixed public good. On this basis, the need to develop a formula for calculating the social tariff, taking into account the average income of citizens, the average number of monthly trips, the share of transportation costs in total monthly income and the share of trips using multiple travel tickets, is fully justified. In this case, the basic condition is that the tariff for urban passenger transportation should not exceed the social tariff.

The proposed innovations are components of the organizational-economic mechanism proposed by the author for development of a regional market of transporttion services provided to city residents.

This mechanism, pursuing the goal of taking into account the interests of all participants in the transportation services market and focusing on the social importance of passenger transportation, thereby solves the problem of improving tariffs for transportation services provided to the population.

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