TAXI FARES, DANGEROUS FOR PEOPLE

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ABSTRACT

The article discusses the issues of improving the tariff system, methodological principles of costing and determining tariffs for taxi transportation in Moscow. The analysis of the existing international practices was carried out, which shows that in the leading megacities of the world, for example, New York, London, Beijing, Paris, Berlin, there is a state or regional legislation regulating the tariff setting when organizing transportation by taxi. In Moscow, there is no such regulation, and the existing level of tariffs, and accordingly, hourly revenues, do not allow, provided that the work and rest schedule is observed, to ensure the established average salary for drivers in the city. Moreover, the tariffs from the «aggregators» operating on the taxi market can be qualified as dangerous (causing risks of accidents).

Keywords: cars, taxi transportation, aggregators, tariffs, methods, hourly revenues, safety, emergency risks, regulatory legislation, international experience in tariff setting.

Background. *The appearance of the so-called «aggregators» on the world taxi market was a revolutionary stage in transport mobility. Due to digitalization and mobile applications of «aggregators», time for taxi delivery to customers in Moscow decreased from 30–40 to 5–7 minutes. However, along with this, the activity of new companies led to serious negative consequences.*

Objective. *The objective of the authors is to consider different aspects of taxi fares formation in Moscow.*

Methods. *The authors use general scientific methods, comparative analysis, evaluation approach, mathematical and economical method.*

Results.

Tariffs, salary, accident rate

Taxi order aggregators are, in fact, in violation of the current legislation, engaged in tariff regulation of passenger transportation services. They dictate their tariffs to charterers, however, they are not responsible for safety of the service. The pricing system, meanwhile, should work in the reverse manner: taxi companies and individual entrepreneurs who transport passengers by passenger taxis should send their tariffs for transportation of passengers to the aggregator (s) on a voluntary basis. Aggregators are obliged to freely place for potential charterers a full menu on tariffs for all companies (depending on the type and class of rolling stock, etc.). The charterer, that is, the future passenger, when ordering a service for transportation, has the right and opportunity to choose an acceptable tariff from the general «menu» of the aggregator. This will ensure real competition in the taxi business, which will ultimately lead to increased transport safety and economic stability of charterers.

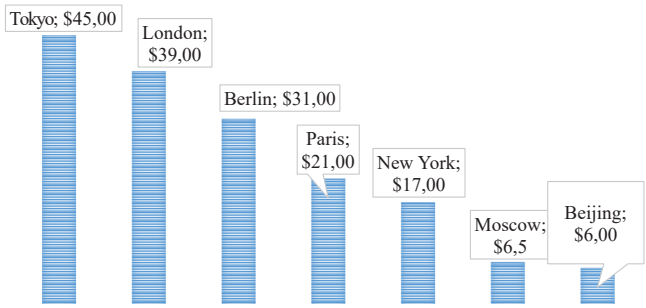
The analysis of international practice shows that the leading megacities of the world – such as New York, London, Beijing, Paris, Berlin – have state or regional legislation regulating tariff setting when organizing transportation by taxi cars. At the same time, Moscow remains one of the few capitals of the world where tariffs for taxi transportation are not regulated [1–10].

Studies show that the Russian capital is one of the «cheapest» cities in the world in terms of cost of an average taxi ride, which is estimated at $6–6,5 USD. Taxis are only cheaper in Beijing, and the most expensive ones are 6–7 times higher than the Moscow level (Pic. 1).

The current system of tariffs for taxi transportation in Moscow is contrary to the concept of improving traffic safety. The main disadvantage of this system is the widespread violation of work and rest schedules by drivers. In accordance with the procedure established in the Russian Federation, the normal daily work time for a taxi driver cannot exceed 8 hours, and for a six-day week working on a calendar with one day off – 7 hours. In cases where the working conditions cannot be kept at normal working hours, the drivers are given a summary accounting of their working time per month. The duration of the daily work (shift) of drivers cannot exceed 10 hours [11–13].

According to the results of the first half of 2018, in the Russian Federation there was a decrease in the main accident rates [14]. However, despite certain positive changes in statistics, the level of road traffic accidents in the country remains high, and every tenth accident was fatal. A total of 69565 (-2,4 %) accidents were registered, in which 6974 (-7,9 %) people died and 88599 (-2,9 %) people were injured (varying severity).

Along with improvement in the overall situation in nine regions of the Russian Federation the number of dead and wounded increased over the same period last year.

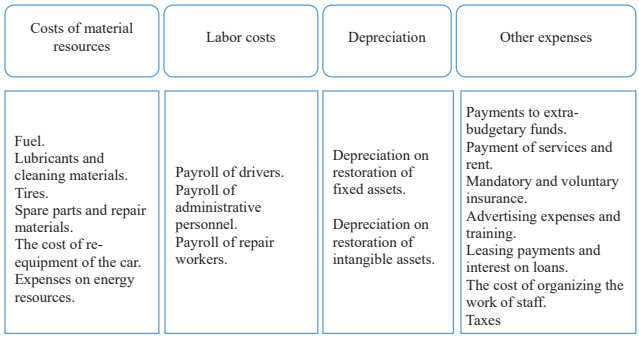


Pic. 1. The average cost of a taxi ride at 8–10 km in the largest cities.

Table 1

Taxi safety indicators, %

No.	Indicators	Russia	Moscow
1	Number of accidents	+20,5	+37,1
2	Number of fatalities	+7,1	-8,3
3	Number of injured	+12,8	+28,7



Pic. 2. Structural elements (cost items) that form a taxi fare.

Table 2

Taxi costing at the rate of one car per month

			Model 1	Model 2
I	Material costs		43 273,30 rub.	41 204,30 rub.
including	1.1	Fuel	32 343,30 руб.	32 343,30 rub.
	1.2	Lubricants and cleaning materials	700,00 rub.	675,00 rub.
	1.3	Spare parts and repair materials, tires	7 000,00 rub.	5 900,00 rub.
	1.4	Cost of refitting the car	3 230,00 rub.	2 036,00 rub.
	1.5	Cost of energy resources	–	250,00 rub.
II	Labor costs		52 455,00 rub.	58 983,42 rub.
including	2.1	Payroll of drivers (average salary in Moscow according to Rosstat for the workers with the category «driver»)	52 455,00 rub.	52 455,00 rub.
	2.2	Payroll of repair workers	–	1 920,12 rub.
	2.3	Payroll of the administrative personnel	–	4 608,29 rub.
III	Depreciation on restoration of fixed assets and intangible assets			
IV	Other expenses		58 967,98 rub.	84 900,58 rub.
including	4.1	Payments to extra-budgetary funds	8 828,76 rub.	1 971,58 rub.
	4.2	Payment for services (banking services, TRP, other, advertising, training, rental of premises)	12 133,00 rub.	5 249,00 rub.
	4.3	Rent for the use of a taxi car	–	41 600,00 rub.
	4.4	Rent	2 000,00 rub.	–
	4.5	Lease payments	–	32 200,00 rub.
	4.6	Mandatory and voluntary insurance	4 000,00 rub.	3 600,00 rub.
	4.7	Transport tax	230,00 rub.	230,00 rub.
	4.8	Other (stationary goods and household expenses)	50,00 rub.	50,00 rub.
Total amount of current costs			154 696,28 rub.	185 088,30 rub.

In the first six months of 2018, seven of eight (88,1 %) accidents occurred due to traffic violations by drivers. In total, 61337 (+1,8 % compared to the previous period) of such accidents were committed, 5919 (-7,2 %) people died and 80903 (-0,2 %) people were injured. Every third (38,8 %) traffic accident is associated with a violation of traffic rules by pedestrians (7896 traffic accidents; -8,0 %).

Table 1 shows comparative data for the period under consideration for taxi transportation.

From the analysis it follows that the main indicators recorded a deterioration and decrease in the level of safety both in the Russian Federation as a whole and in the city of Moscow. In the capital, the only indicator with a positive trend is the number of fatalities, but the number of injured has increased by almost 29 %. Drivers are forced to overtire to get reasonable wages.

Table 3

Average cost of work per minute of a taxi car

Taxi car class	Existing tariffs		Estimated value	
	Model 1	Model 2	Model 1	Model 2
Economy	13,13 rub.	13,13 rub.	20,53 rub.	22,73 rub.
Comfort	15,09 rub.	15,09 rub.	21,75 rub.	26,13 rub.
Business	28,13 rub.	28,13 rub.	36,77 rub.	38,76 rub.

Table 4

Average cost of a kilometer run of a taxi car

Taxi car class	Existing tariffs		Estimated value	
	Model 1	Model 2	Model 1	Model 2
Economy	23,86 rub.	23,86 rub.	37,34 rub.	41,33 rub.
Comfort	27,44 rub.	27,44 rub.	39,55 rub.	47,52 rub.
Business	51,14 rub.	51,14 rub.	66,86 rub.	70,47 rub.

It should be noted that today, according to Rosstat [Federal Statistics Service], for drivers who transport passengers, the average salary is 52,5 thousand rubles [15].

Method of calculating economic indicators

To form a balanced position on revision of existing tariffs, it is necessary to analyze in detail the costs incurred by all participants in the process. Pic. 2 shows the main possible cost items, they can be divided into four categories:

- *costs of material resources;*
- *labor costs;*
- *depreciation;*
- *other expenses, including payments to extra-budgetary funds, rent, lease payments, interest payments and services.*

To create an adequate cost estimate, you should take into account the specifics of organizing a taxi business. During the analysis of the taxi market in Moscow, two main business organization models were identified.

The first model: a taxi driver at the same time is an owner (lessee) of a car and bears all the costs of the activity as an individual entrepreneur.

The second model: a driver rents a taxi car and his expenses are reduced to paying for fuel and rent, the remaining costs are borne by the landlord.

The general formula for calculating the cost of organizing transportation by taxi car is as follows:

$$S = C_{m.r.} + P_{LC} + A + C_{o.e.}$$

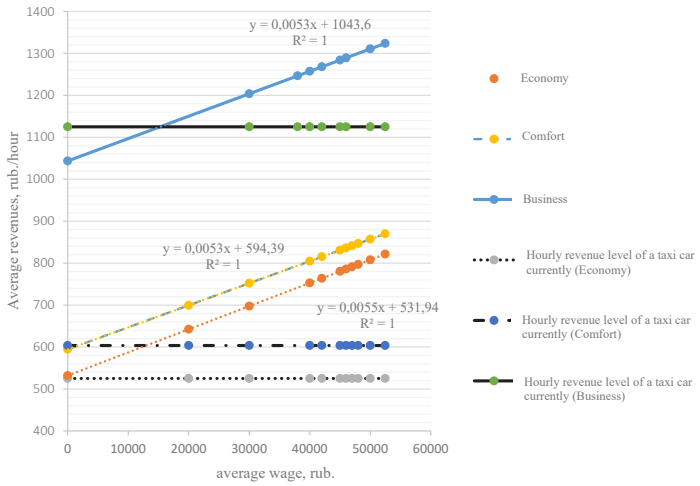
where $C_{m.r.}$ – costs of material resources; P_{LC} – labor costs; A – depreciation on restoration of fixed assets and intangible assets; $C_{o.e.}$ – other expenses, including payments to extra-budgetary funds, rent, lease payments, payment of interest and services.

Table 2 summarizes the results of the calculation of the cost of transportation. As the initial data for calculations, information from taxi companies in Moscow was used.

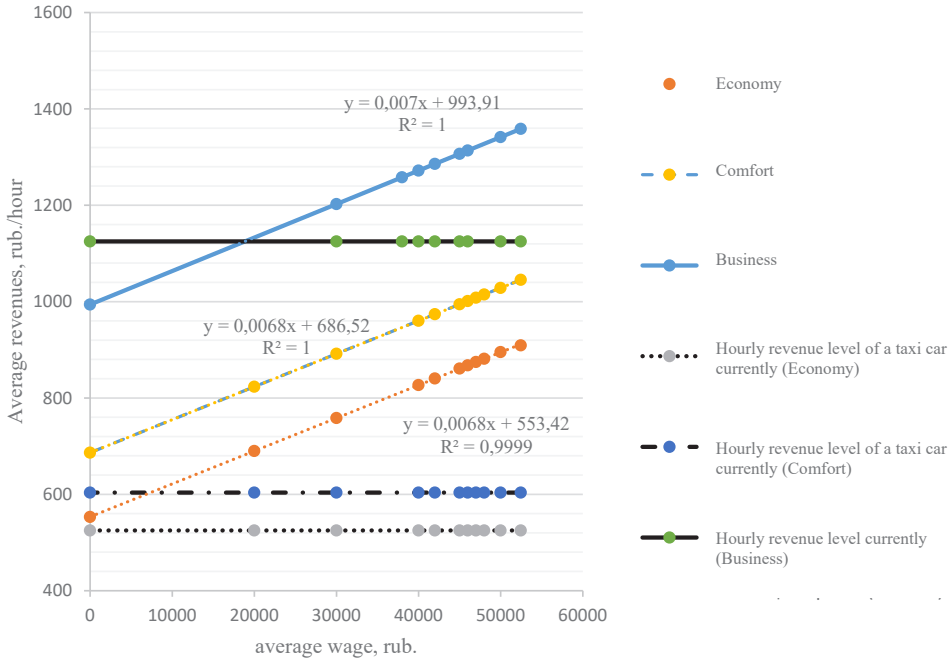
Calculations show that with a minimum level of profitability of 5 %, compliance with work and rest schedules, the established wage level for taxi drivers is the average hourly rate, taking into account the aggregators' commission, is: for model 1 – more than 800 rubles; for model 2 – more than 1000 rubles. The hourly rate for model 1 is lower, but it is necessary to additionally take into account the financial risks of vehicle downtime for maintenance and repairs after an accident or for technical reasons. When working on model 2, the taxi company replaces the car in case of forced downtime.

Determining the number of «paid» minutes and kilometers of the average taxi car run for one hour, the cost expression of the minimum tariff rate (T_m – fare for one minute of trip, T_{km} – fare for one kilometer of trip) is calculated by the formulas:

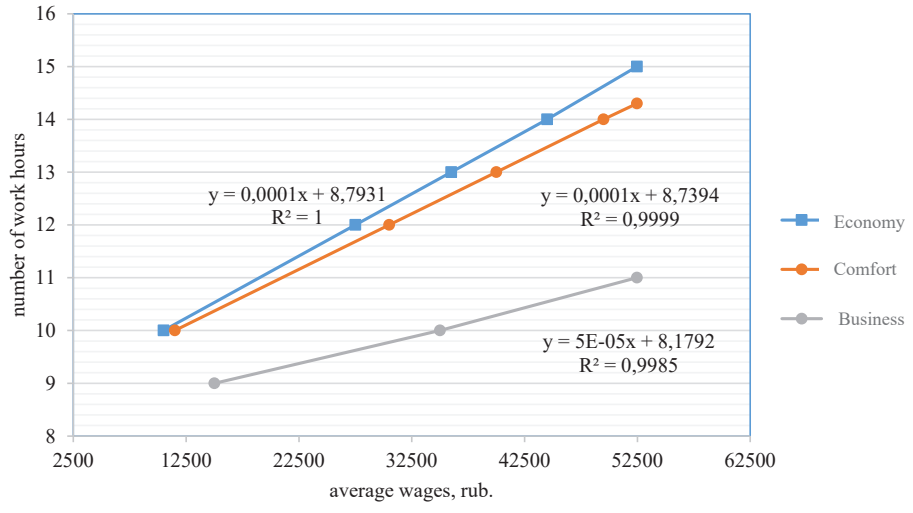
$$T_m = R_{av.h} / N_{min},$$



Pic. 3. The dynamics of the wages of a taxi driver (model 1).



Pic. 4. The dynamics of the wages of a taxi driver (model 2).



Pic. 5. The dynamics of the wages of a taxi driver, depending on duration of work (model 1).

where $R_{av.h.}$ – average hourly revenues of a taxi car; $N_{min.}$ – number of «paid» minutes of work of taxi per one hour.

$T_m = R_{av.h}/ N_{km}$,

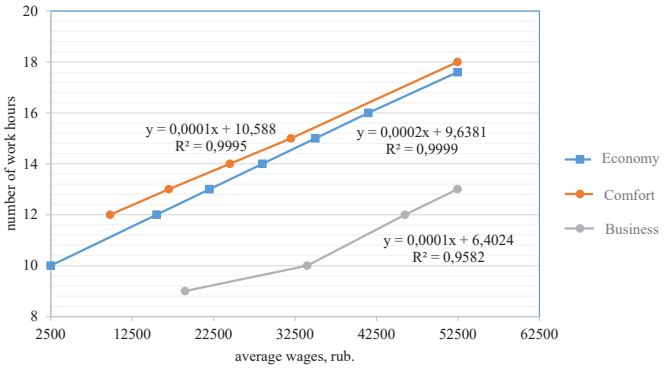
where $R_{av.h}$ – average hourly revenues of a taxi car; $N_{km.}$ – number of «paid» kilometers of taxi run per one hour.

Tables 3–4 show the calculation of the cost of a «paid» minute and kilometer run (using the statistics «Yandex Taxi» and «Service 2412»). The analysis of the values showed that the average number of «paid» minutes per hour is 40. During this time, the car's run is on average equal to 22 km.

At the next stage, a study was conducted of the wages of a taxi driver when changing hourly revenues and taking into account that all mandatory expenses, safety standards, including the length of the working day, are constant. Pic. 3 shows the dependences of changes in wages in the context of tariffs «economy», «comfort» and «business» for model 1, and Pic. 4 – for model 2.

Next, the task was to determine the number of working hours of a taxi driver, which would provide wages comparable to the established level. Pic. 5 shows the dependences of the change in wages in terms of «economy», «comfort» and «business» tariffs for model 1, and Pic. 6 – for model 2.

Conclusions. *The analysis of the results shows that the current level of tariffs and, accordingly, hourly revenues do not allow, while respecting work and rest schedules, to provide an established average wage for drivers in Moscow. Tariffs from the aggregators operating on the taxi market can be qualified as dangerous (causing risks of accidents), predisposing to driver overloading and emergency risks.*



Pic. 6. The dynamics of the wage level of a taxi driver, depending on duration of work (model 2).

The established wage level for the «economy» tariff plan is possible with 15 hours of work per day on model 1 and 17 hours – with model 2; for the «comfort» tariff plan – 15 and 18 hours, and the «business» tariff plan – 11 and 13 hours, respectively.

Maintaining the existing system of tariffs for taxi transportation, which is largely a consequence of competition between aggregators, rather than charterers, will lead to a gradual reduction in safety of passenger transportation and the level of economic efficiency of taxi transportation.

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