



## S. Yu. Witte – Originator of Railway Tariffs Theory. Part 2



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### ABSTRACT

Exactly 140 years ago, the most famous, in our opinion, work by Sergei Yu. Witte «Principles of railway tariffs for transportation of goods» was first published. It is difficult to overestimate the importance of this book. Our regular author, a well-known scientist, D. Sc. (Engineering), Academician of the Russian Academy of Natural Sciences Dmitry Levin, decided to share his thoughts after a new reading of this work, which has not yet lost its relevance. The encyclopaedic views of S. Yu. Witte may be of interest both to economists and to sociologists, philosophers, scientists, and specialists in the theory of public administration. Many of S. Yu. Witte's judgments have not lost their scientific, theoretical and practical significance to this day and in this sense turned out to be prophetic. They also regard the competition of rail transport with water and land transport (then it was horse-drawn haulage, but now it can be easily substituted in the judgments with road transport), the need for a clear correlation of any economic models with national

interests, the requirements of a particular historical stage, the harmfulness of blind use of schemes borrowed from outside without considering the socio-political and economic context.

The methodology for constructing prices for transportation of goods, set out by S. Yu. Witte is not only of historical interest (especially in conjunction with the reviews and discussions that accompanied the appearance of his book), but remains important for the modern solution of newly arising issues of improving the tariff system under market transition. Not least of all, the methodology is connected with the cardinal question that arose even then: whether railways should be a natural monopoly or a commercial structure – a debate that continues today.

This issue publishes the second, final part of the article, which contains the author's own conclusions and proposals regarding the possible transformation of S. Y. Witte's ideas regarding solution of modern transport and tariff problems.

**Keywords:** S. Yu. Witte, railway, cargo transportation, railway tariffs.

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**The text of the article originally written in Russian is published in the first part of the issue.**  
**Текст статьи на русском языке публикуется в первой части данного выпуска.**

**W**itte divided the current tariff systems into two categories. He called one «historical», providing for different freight charges depending on the distance and weight (or volume) for different types of goods, i.e., less valuable goods are subject to lower freight charges. He called another system «natural», independent of the name of the goods, in which the freight charge is determined depending on the distance and density of the goods.

A deep knowledge of the subject is evidenced by the remark of S. Yu. Witte: «The system of «natural» tariffs turned out to be not only impractical, but also created a type of speculation. Since the mentioned system determines the freight price by piece (from 100 kg), by half-car (from 5000 kg) and by car (from 10000 kg), it makes no difference what kind of goods are loaded, and since the freight price for piece shipments is higher than for half-loaded cars, and for half-loaded cars is higher than carload, then as a result the matter of forwarding a mass of goods passed into the hands of commission agents and forwarders. Commission agents [brokers] collect from manufacturers and cargo owners their shipments, form lots of shipments of goods from these shipments, and then send the collected goods at half-car and carload rates».

The carload tariffs of the «historical» system, ineptly established, also provide some scope for speculation by commission agents, but this field is incomparably narrower, since in these tariffs the loading of goods of only one kind in a car is allowed, precisely designated in the tariff itself, as a result of which commission agents are already deprived of the opportunity to do mixtures of all kinds of items.

Considering the impact of operating costs on freight charges, Witte notes that it is quite significant. Often the railway's own interest is to reduce freight prices. In general, production cannot sell its goods below cost, but, nevertheless, in practice one can see exceptions to this rule. This is done when the loss from the reduction against the cost of production pays off or will undoubtedly pay off in the near future with income from another item of transportation. Such examples with soap, beets, wine and coal were given earlier. Such action by the railway may benefit commerce and industry without any injury to the interests of the railway.

Sergei Witte disagreed that the freight charge should correspond to operating costs and insisted that it should be regulated by supply and demand but should not be lower than production costs.

Moreover, the operating costs caused by transporting goods at this tariff are not known.

Witte, as a spokesman for the ideas of realistic economics, clearly identified three schools that were dominant at that time: classical political economy, the school of realistic economics and socialist economics, giving clear preference to realistic, or national, economics. At the same time, he criticised the one-sidedness or fallacy of other schools.

Highlighting the advantages of the realistic school, S. Yu. Witte expresses four interconnected and complementary considerations.

The first one. He considers the classical school «cosmopolitan» because it directly connects humanity and the individual and gives its laws a physical or «supra-social» character. At the same time, «it loses sight of the fact that between the individual and humanity there is also a special economic unit – the nation. This unit is something organically whole, connected by faith, distinctiveness of the territory, blood, language, literature and folk art, morals and customs, state principles and institutions, the instinct of self-preservation, the desire for independence and progress, etc. These units were not invented by human imagination or whim, but were formed historically, by nature itself and the laws of society. They constitute a necessary condition for universal human development».

The second one. In accordance with this thesis, realistic economics interprets the laws discovered differently than the classical school, including the law of supply and demand. «Realists do not elevate the law of supply and demand into a physical law, but reserve for it the meaning that it actually has, that is, an economic meaning. They point out that this law is not a consequence of the universe, but of the existing organisation of human societies. Therefore, realists recognise the possibility of modifications in the manifestations of the law of supply and demand in accordance with various features of social organisation».

The third one. With this interpretation of economic laws by the realistic school, «its characteristic scientific feature lies in its recognition of the relativity of organisation of the national economy, which must be consistent with time, place and all social conditions of a given society». In other works, Witte clarifies the names of individual historical stages, but clearly establishes their sequential connection. In the development of the economy of modern cultural peoples, «one notices a pattern that all these peoples, starting from the stage of trappers, gradually experienced the

following stages of development; shepherd life; so beautifully depicted in the Bible; agricultural life, always associated with the development of crafts; and industrial and commercial life, characterised by the development of manufactories, factories, plants and a strong expansion of domestic and foreign trade».

The fourth one. As a result, in contrast to the theory of value (cost), which the classical school considers as the basis of all its doctrines, realistic, or national, economics puts the theory of productive forces in the foreground. In accordance with this, expenditures on education, justice and defence are considered here as productive, because, according to Friedrich List, «destruction of values is carried out for the benefit of strengthening productive forces».

The provisions considered provide a reliable key to explaining the actions and decisions taken by Witte and allow us to trace their connection with the foundations of his economic views. To this it is necessary to add another distinctive feature of his views – awareness of the features and methods of state regulation of the economy in general and in Russia in particular. This understanding is largely due to his inherent commitment to an enlightened monarchy and the mechanism for carrying out the tasks facing it.

Sergei Witte, as a supporter of state regulation of the economy, speaking out against the principles of the classical school on complete non-interference of the state in the economic life of citizens, simultaneously speaks out against the enslavement of people preached by the school of state socialism in the name of protecting their rights to a certain material well-being.

In relation to Russia, Sergei Y. Witte adheres to a fairly strict logic related to his previous reflections about the stages of economic development of peoples. What is good in one environment may be dangerous and harmful in another. «History shows», he emphasises, «that the successive transition of nations to the last of these stages of their development is best accomplished through free trade with more cultured nations, but establishment in the country of a more or less perfect manufacturing industry, creation of a significant national fleet and development of worldwide trade nowhere has it been achieved and cannot be achieved except through state assistance. This assistance is expressed by establishment of a protectionist system consisting of customs duties, various bonuses, etc. Without a protectionist system, no country has yet passed from an agricultural state to a state of significant



development of manufacturing industry, national fleet and world-wide trade».

Here the principle described above is implemented (in relation to the law of supply and demand), according to which economic laws operate not in a general, abstract form, but considering specific historical conditions and the characteristics of a country's stage of development. S. Yu. Witte backs up his reasoning with references to the experience of other countries and an analysis of the characteristics of Russia, which, due to the scale of its territory, the multinational and diverse composition of the population, and the predominantly agricultural stage of development, requires clear state regulation of the economy.

Witte considered it impossible to base railway tariffs other than on the law of supply and demand, which governs all economic relations. To confirm this thesis, he analysed the doctrines of the then existing scientific economic schools, as he explained, «to avoid any misunderstandings and to outline as clearly and comprehensively as possible our common point of view on the tariff issue».

Further, he expresses an idea that is still relevant today: «The principles understood by the classical school should receive modifications in each nationality that correspond to its national characteristics. That is why in Germany political economy is called national economics, which is the subject of teaching in higher educational institutions. Until Russian life develops its own national economy, based on the individual characteristics of the Russian soil, we will be in the process of vacillating between fashionable teachings, being carried away alternately by one or the other; until then, we will hear from the same lips and read in the columns of the same editions logically incompatible economic judgments and projects; as long as what was created yesterday will be considered bad tomorrow, and what was destroyed



yesterday will be created today; and it is clear that until then we will not live a correct economic life, but will be towed by foreign trends and all sorts of speculation at the expense of the people's well-being».

Subjecting railway tariffs to the law, S. Yu. Witte did not exclude both manifestation of freedom and state control. State control is necessary to monitor the precise implementation of tariff laws, prevent abuse and eliminate tariffs that do not correspond to the «common good».

The freedom of railway tariffs must be controlled by publicity, which provides the greatest guarantees against possible abuses. To achieve control, tariffs must be easily accessible. Tariffs for Russian railways at that time were scattered in a mass of separate publications, which together would have amounted to dozens of volumes.

Witte proposed printing tariffs before they come into effect, and those that increase freight charges – if possible, in advance, no later than a month before they come into effect. Tariffs must be published in certain editions; where and what tariffs are published must be announced to the public.

To determine the direction of development of railway tariffs «in the interests of the common good during operation of Russian railways by the treasury», S. Yu. Witte first clarifies the question: is the operation of railways by government in Russia useful? First, foreign experience in operating railways is considered.

In America and England all railways are in private hands. In France, attempts were made to operate them by state, but in recent years, after a comprehensive discussion of the issue in parliaments and the press, they settled on the status quo, i. e. private operation, with some, and probably temporary, exceptions. In Italy, private and state operation existed and continues to exist. At one time they decided on a general buyout of the railways, but since this determination caused protests in society and the parliamentary commission, the matter also remains in the same position. In Germany, in recent years, almost all railways have been by government purchased and operated by the treasury. This operation was carried out mainly due to the political goals of unifying the young Empire at a time when, thanks to the French indemnity, the state had got significant financial resources. The timing for redemption was chosen very conveniently when, because of the temporary commercial crisis that followed the Franco-Prussian War, the profitability of private railways had fallen significantly and

when money had become significantly cheaper compared to the time when the railways were built. Many are dissatisfied with operation by government, but many find some benefits in it. The dissatisfied people are predominantly the merchant class, while its supporters are mainly landowners and officials. It is quite difficult to rely on the opinion of the latter: «Everyone, from the lowest agents to Minister Maybach, is convinced that operation by government is unprofitable for the country, but they will say and preach what Bismarck wants». Other German railway specialists spoke favourably about government operation.

In Austria in those years, some private railways were purchased. But many railways are still operated by private companies. The public has little faith in the success of operation by the treasury. Most railway specialists are confident that operation by government cannot have a future for them. In Belgium the railways are operated by the treasury and give satisfactory results. In other countries, railways are operated predominantly by private companies. But sometimes they experiment with operation by government. In this regard, the experience of Romania is curious. It bought out part of the railways, but since the ministers in charge of the railways change almost monthly, and with them some of the senior railway personnel, and since the state administration is under the strong rule of the Austrian bankers, something like a puppet comedy comes out of all the state operation.

Bismarck came up with the idea of buying out the railways in Germany, and the motivation for his idea is the work of state chancelleries, whose specialty lies precisely in the ability to select from a storehouse of arguments those that speak in favour of what is ordered to be proven. «This gave reason for this measure of Prince Bismarck to be classified as a socialist measure. But it would be correct to classify it among the practical acts of state policy of a great man, consistent with the reality and current circumstances of the country he governs».

«From the point of view of Russian reality, the issue of state or private operation at that time was not comprehensively discussed in the press, except for some newspaper articles written on this subject, a significant part of which, through oratorical comparisons and techniques, affects the feeling more than the mind. However, it should be borne in mind that it is impossible to examine such a broad issue in detail in newspaper articles. This is rather a matter for special journals and individual publications».

«The works of the prestigious authors of classical political economy say very little about railways, much less about who should operate them».

«Socialists of all shades do not allow the operation of railways by private societies». «The realistic school teaches that taking certain measures in the field of the national economy should depend on the place, time and the totality of all the circumstances of the case».

«There is no doubt that the state operation of Russian railways is in principle desirable, because the Russian state, in principle, in operation of railways cannot pursue any other goals other than the goals of the Russian common good». «But under the existing conditions of Russian society, the operation of railways by the treasury can hardly be carried out more successfully than by private companies, under the active control of the government. In the presence of these conditions, it is especially impossible to consider it useful, with some exceptions, the immediate establishment of operation by state associated with financial sacrifices».

Sergei Witte considered the problem of railway tariffs against the broad background of economic processes and socio-economic phenomena taking place in the country, and the very theoretical development of tariff issues as the interaction of «elements of the economic, political and even mental life of the people». Tariffs, Witte argues, should be regulated based on freight prices formed under the influence of the law of supply and demand. At the same time, he proceeds from the position widely recognised in the economic science of that time that the price of every item and every service (in this case, the railway tariff) is determined by this law of commodity production, operating on the market in the sphere of commodity exchange. Demand is the need for goods presented on the market, and supply is «a product that is on the market or can be delivered to it» – two main categories of the market, categories of exchange that act as regulators of market prices; in railway transport, the price function is performed by tariffs («payments for services»), which in turn act as one of the elements of the market value of a product and must be «in a rational relationship to the totality of all other elements».

S. Yu. Witte pronounced in press when the capacity of railway transport was just taking shape, since there was still a time nearby when railways did not exist in Russia at all. However, he already understood then that «a monopoly modifies, but

does not destroy the action of the law of supply and demand», that this law also has a regulatory effect under monopoly conditions. On the other hand, without excluding formation of a railway monopoly, Witte emphasised that it is «not limitless, not absolute, does not represent a complete monopoly» since horse-drawn transportation and especially water and sea routes retain their advantages, and in some cases irreplaceability, so that competition between different modes of movement persists. In other words, a certain limit may be put on the monopoly, since horse-drawn and waterways can, under certain circumstances, compete with the railways. In particular, horse-drawn transport then acted as a limiter on the growth of railway tariffs over short distances, especially around large centres (for example, between St. Petersburg and nearby towns and villages, horse-drawn transport «prospered»); «enormous competition» was represented by waterways («with floating shipping», due to its cheapness, railway transportation does not stand up to competition) and especially by «sea navigation» in relation to such a category of goods as «general cargo for both railways and waterways». Hence it is necessary to «study all the conditions for movement of goods along competing routes». However, Witte emphasises, that even at the initial stage of formation of a natural monopoly of railways, there is a limited impact of competition in this area, in contrast to «free industry», «subject, of course, to the full influence of competition among producers».

The complex structure of the transport system, built on mutual competition, needed general regulation by the state; first, it was necessary to develop an economic policy regarding railway transport as a new, extremely promising transport structure. Issues related to operation of railways in Russia began to be addressed only in the first half of the 70s of 19<sup>th</sup> century. Therefore, the «first attempt at a systematic presentation in Russian of the most important principles underlying the railway tariff business» and the theoretical development of tariff issues had such significance. This research by Witte should obviously be considered in the general mainstream of mastering the categories of a market economy and applying them to analyse the economic processes that took place at the end of 19<sup>th</sup> century in Russia and develop appropriate economic policies, so it is natural that in his book he expressed a number of ideas that received subsequently development and practical application in government activities. Hence it is clear why S. Yu. Witte interprets





a seemingly narrow and special question as «a highly interesting subject for study by both a thinker and an economist».

The book examines various economic categories in which the services provided by railways («railway industry») are expressed, which do not produce objects (goods), but only remove «barriers of distance», serve to «move goods from one place to another» – net income (the difference between gross income and operating costs); the possible price of a product which is a price approaching the maximum that consumers can pay, not only without reducing, but, on the contrary, developing consumption; operating costs as the lowest tariff limit; inertia of demand and its impact on the value of the tariff, etc. S. Yu. Witte while considering regulation of tariffs attached particular importance to the difference between the prices of goods in the places from which they are sent, and existing or possible prices in those places where these goods are sent. It is precisely these differences, which create the very economic possibility of moving goods, that tariffs must correspond to. The book analyses various aspects of the impact of changes in tariffs on economic processes, in connection with which the importance of studying «for any kind of product the ability to increase the size of its movement depending on changes in freight prices, the ability to spread the consumption of goods» is emphasised, including an analysis of the economic development of adjacent territories, since «the interest of the railway lies in development of local industries that have a future, because the increase in profitability of the railway depends on development of these industries».

Touching on the issue that was widely discussed at that time in Russia, i.e. in whose jurisdiction, in whose ownership the railways should be, S. Yu. Witte insisted on the need for government intervention, believing that it should expand and in the future lead to the complete transfer of railways to the state. But, in that particular period, he was held back from this step by «the bureaucratic principle as a weakening factor for public administration in comparison with private interests», bureaucratic tradition», fraught with the danger of «unsuccessful experience of government exploitation», because «the bureaucratic machine will pour the entire railway economy into those forms, which are still continuously known to it, completely regardless of how these forms correspond to the railway industry». In this regard, he raises the question of «the limits of the state economy», citing the exceptional importance of the

words of D. I. Mendeleev that «the correct course of business» is to «initiate private initiative and be able to use it in the interests of the treasury and for the benefit of the whole country the fruits of private activity». S. Yu. Witte especially emphasised the colossal danger of the «fatal faith in bureaucracy» that reigns in society.

Having raised the question of the limits of the state economy and broad state intervention in economic life, recognising that state intervention can only limit the scope of economic laws, Witte, following D. I. Mendeleev, believes that «the question is where and when this assistance can go into state-owned economy». It was clear to him that until «the conditions for not only a successful, but at least passable state-run economy have been worked out, one cannot even think about expanding it». For these purposes, he proposed various ways, including carrying out a «comparison of state-owned and private operation», closely linking the interests of the treasury with the benefits of participation in the activities of private enterprises, the development of mixed forms (rental enterprises that subsequently remain with the treasury) and even the establishment of artels [co-operative association] for managing enterprises (this proposal reflected passion for the authentic principles of Russian economic life). He assigned a significant role to the development of «intermediate forms».

As a result, Sergei Witte comes to the conclusion that everything depends on the degree of efficiency, that «the question is not who will operate the railways, but how they will operate them». «He is decisively against such a policy when «for the sake of the actions or words of some luminaries of Western science or public administration, we give the national economy into the hands of private individuals, often without proper guarantees, then, for the sake of the words or actions of others, we are ready to hand over this economy to state management...»

Witte, even in this first major work, constantly emphasised the priority role of development of productive forces. Although he was a supporter of protectionism, he nevertheless argued that «development is more useful than patronage». «Substantially disagreeing» with supporters of free trade, he believed, agreeing with the opinion of D. I. Mendeleev, that «the state cannot look indifferently at the death of folk crafts, at the import of a mass of unnecessary goods from abroad, or at the depletion of the country's productive forces by usurious tricks». Setting the task of bringing the national economy onto the «path of natural growth»

and improving its organic part – financial recovery, he especially drew attention to the impossibility of «counting on improving our finances through financial measures alone» and he strictly put this principle into practice in the future, while in office as Minister of Finance.

«Roads of transportation, blood arteries of the country's body» involve consideration of the problems of railways against the broad background of the national economic development of the country. And on this issue, S. Yu. Witte strongly advocated «that each nation retains all its independence and all its strength...». He rightly believed that economic development cannot be carried out «without consideration of soil conditions», i.e., Russian reality, and «a simple reference to the facts of life abroad cannot have the value of an argument for us». Witte emphasised that «to give our fatherland proper economic growth, it is necessary to achieve the possibility of the easiest distribution of natural wealth throughout the vast extent of the Empire, for which it is necessary to expand sales markets, carry out the widespread development of production, and the existing extremely low tariffs for long distances «must certainly leave beyond established European norms»».

Not accepting the idea of developing the country along the path of mindlessly copying the Western model, according to the adherents of which Russian life does not contain any special conditions, and to think otherwise means to deny, they argued, Western science and civilisation, Witte tries to convince of the need to take into account the specific conditions of a particular country, for «history teaches that each nation has developed in its own way, according to its soil conditions and historical destinies». This position of S. Yu. Witte reflected his deeply thought-out views about «unreasonable imitation» and the fallacy of «not taking into account all the different conditions of life and the nature of the social and state system, in particular, the assessment of historical traditions and features of the economic and social structure of Russia, which, however, did not mean denying the impact of ongoing changes in the world on the social and economic life of the country. But he resolutely opposed the vacillation of Russian economic policy, when «for the sake of some Western teachings we take the path of free exchange, killing some industries, then for the sake of other teachings we strive to revive these industries through increased patronage; for the sake of some Western examples, we kill small-scale

distillery and monopolise it in the hands of capitalists, then, for the sake of other Western examples, we cut off the monopolists to establish small-scale distillery; for the sake of Western theories alone, we spend almost all of our gold on maintaining the exchange rate», etc.

Witte reveals the danger of «economic vacillations in such a large economy as the Russian national economy», which could undermine it and bring it «to the point of slavish dependence». He associated one of the reasons for this situation with «the inert force of imitation that has hitherto embraced Russian thought». Outlining the general lines along which economic policy should develop as a way out of the current situation, S. Yu. Witte in the most general terms formulates measures that can be attributed to social market policy and democratisation of the world community. He characterises his contemporary economic world as a combination of «the struggle against the privileges of capital, freedom of speculation, labour insecurity and the parasitic life of some states at the expense of the productive forces of others». And the state plays a special role in these processes. The fact that classical political economy advocated non-interference in economic life naturally does not affect his position in any way, although he considered the works of these economists to be brilliant.

He associated the views of the classics of political economy with the time when the founders of economic science wrote their outstanding works, since then there were other tasks – the task of fighting against feudal privileges and foundations, guild restrictions. If the great founders of classical political economy lived in the present time, then, undoubtedly, wrote S. Yu. Witte, in their works on the issue of the sphere of state activities, somewhat different considerations would be expressed.

As for the railways, from Witte's point of view, by their nature they are undoubtedly the property of the state, which is associated with «the principles inherent in private operation that are inconsistent with the common good», since «in principle, operation by government can better implement the common good than private operation». But at the present time they have been transferred for temporary operation by private companies on a concession basis and their immediate transfer to the treasury is premature.

Among the goals of state regulation, Sergei Witte identifies a whole range of tasks – ensuring state needs, protecting the interests of the weak, the principle of preserving the country's economic



forces under competitive conditions, in particular, reducing competition and increasing the profitability of railways, etc. Moreover, state profits should go «for the common good», which means, among other things, the patronage of trade and industry, as well as measures taken in relation to the poor. For example, the reduction of railway tariffs for certain goods is expected to be extended to essential items for the mass of the population.

Comparing state-owned and private economy, S. Yu. Witte notes, along with their positive aspects, the «clumsiness» of the former (using D. I. Mendeleev's term), and for «private large-scale economy», «governed without a system», the danger of breaking away from pressing tasks of economic development («in the sense of the need to adhere to the existing ground», understanding by «soil» the connection with reality. It should also be noted that S. Yu. Witte introduced the concept of a system, which in modern literature has already acquired the formula «Witte system»).

The reprint edition of «Principles of Railway Tariffs for Transportation of Goods», undertaken by the St. Petersburg State Transport University (of which S. Yu. Witte was a professor), contains a high assessment of this work by specialists («fundamental», «original scientific work»). In particular, S. Yu. Witte's interpretation of the nature of railway transport as a natural monopolist is confirmed. In the afterword in the book by S. Yu. Witte, it is noted that «technical and economic calculations show that transportation of cheap goods (crushed stone, ore, coal, etc.) over long distances is the sphere of activity only of federal railway transport. The presence and condition of highways, the layout of waterways in Russia and other factors indicate that when transporting bulk cargo over long distances, railways act as a natural monopolist. When transporting expensive goods over short and medium distances, railways act as a commercial structure. This dual status of railway transport must be reflected in the tariff policy».

The task now facing railway science and practices to ensure a tariff system and develop a scientifically based tariff policy involves the revival of everything valuable that was accumulated both in the pre-revolutionary – and here S. Yu. Witte takes a worthy place along with recognised authorities – and in post-revolutionary period.

However, the significance of Witte's book «Principles of Railway Tariffs for Transportation of Goods» is broader than a narrowly specialised one. It touches on many aspects of economic policy and historical and economic science itself,

expresses thoughts about the principles of constructing the concept of economic development, the importance of the need to find solutions in this area, based on a deep penetration into the essence of economic and social processes. This book is not only about railway transport as a phenomenon of economic history, but also about the ways in which economic policy should be built in a country like Russia. This is a book not only by a expert, specialist in theory and practices of railways. It makes clearly perceive the state approach to many issues of the country's economic development, shaping the contours of the future state activities of S. Yu. Witte.

From the point of view of the impact of tariffs on development of the economy and competition in Russia, the history of introduction and abolition of the so-called Chelyabinsk enroute changing tariff [literally «turning point» tariff] is of great interest.

As it is known, at the end of 19<sup>th</sup> and beginning of 20<sup>th</sup> centuries, large railway construction was carried out in Russia. Thus, in 1896 Chelyabinsk–Omsk–Novosibirsk section was put into permanent operation, in 1898 it was followed by Novosibirsk–Krasnoyarsk section, and in 1900 by Krasnoyarsk–Irkutsk section.

Initially, when these lines, as a rule, before they were put into permanent operation, were in temporary operation, freight charges for transportation of Siberian products to the West and East were charged separately for the length of the newly built section and separately for transportation along existing railway lines. Considering that on newly built sections tariffs are higher than the general network tariffs applied on existing lines, Siberian products, especially grain cargo, when exported, could not compete with products produced in the centre of the country and on the world market. With introduction of these Siberian railway lines into permanent operation, when it became possible to charge a common tariff for the entire distance of transportation without enroute changes in the tariff, the most favourable conditions were created for export of Siberian products, and primarily of surplus Siberian bread, to the domestic and international markets. In this case, the price of Siberian bread in the centre of Russia, taking into account transportation by rail, became cheaper than the cost of bread produced in the central black earth [chernozem] region. In this regard, the landowners of this region addressed the Government with a request to limit the export of grain from Siberia to the West through Chelyabinsk by applying tariff measures, and to send Siberian grain abroad by another route.



In 1896, after a discussion at the Tariff Congresses in the Tariff Committee of the request of landowners of that region, by decision of the Tariff Committee, the Chelyabinsk tariff enroute change was introduced, with the help of which the cost of transportation increased compared to the normal tariff by approximately 16 %, which of course limited the competitive capabilities of Siberian grain in domestic (Central Russia) and international markets.

Its essence (the Chelyabinsk enroute changing tariff) was that freight charges began to be charged not for the total continuous distance from Siberia through Chelyabinsk to the destination station (within Russia or to the border), but for two separate distances from Siberia to Chelyabinsk and from Chelyabinsk to the destination station. In this case, the cost of transportation increased, as mentioned earlier, by 16 % due to an additional fee for the start-to-end operation. This is because when determining the fee for one continuous distance, the freight charge includes the cost of only one start-to-end operation; when determining the fee with a «enroute changing tariff», i.e. for two separate distances or for two transportations, the freight charge includes two rates for the initial and final operations.

Simultaneously with this (Chelyabinsk enroute changing tariff), a reduced tariff was introduced for transportation of Siberian grain in the direction of Kotlas and further along the Northern Dvina to Arkhangelsk. The purpose of this tariff was to allow Siberian grain to go abroad so that it did not reduce prices on the internal central market, which had become a monopoly of landowners in the central black earth region. However, these hopes were not justified, since transportation of Siberian grain in this direction, even with a reduced tariff considering two transshipments, turned out to be very expensive.

The long-term application of this tariff regime limited the supply of Siberian grain to the west. All this led to formation of huge grain deposits in Siberia. As a result, a situation arose in which it was necessary to cancel the application of the Chelyabinsk enroute changing tariff. The General Tariff Congress of representatives of Russian railways, held in December 1910, spoke out in favour of cancelling this change. It was abolished gradually between March 1911 and August 1, 1913. Starting from this time, the tariff for transporting bread from Siberia began to be determined for a continuous distance from the point of origin to the point of destination across the territory of Russia. Thus, the path for Siberian bread to the

West, to the domestic and international markets with the greatest favourable conditions was opened.

The problem of prices and setting tariffs on railways has received much attention since the launch of the first railways.

In pre-revolutionary Russia, this problem was dealt with by such prominent scientists and practitioners of railway transport as A. I. Chuprov, D. I. Zhuravsky, N. N. Petrov, Yu. V. Lomonosov and others. The treatise on tariffs was written by the world-famous scientist D. I. Mendeleev. The views of S. Yu. Witte had a great influence on the transport pricing system. Studying the main provisions of his fundamental work will help us take a fresh look at tariffs and modern tariff policy.

The basis for pricing in transport, as in industry, is the law of value. According to this law, the price of products (services) produced by transport, i.e. changes in the location of goods is established in accordance with the amount of socially necessary labour spent on this. However, pricing in transport, due to the characteristics of transport products, has its own specifics, which consists, first, of the fact that prices are differentiated by type of cargo, by type of shipment, and by transportation distance. It is important to emphasise that the presence or absence of tariff differentiation depends on the nature of transport enterprises and the relationship between the owners of vehicles and the owners of transported goods.

In conditions of centralised economic management, tariffs are monopoly prices. They are established by the government body in the form of a strictly fixed value. However, this does not mean that the law of value ceases to apply. The average tariff level cannot increase indefinitely; it is ultimately limited by the law of value. Tariffs are formed according to the «cost of transportation plus profit» scheme. The problem is what cost and what profit are involved. This depends on the methodological approach to determining socially necessary labour costs (SNL) in transport.

Three concepts for formation of SNL have been considered in the scientific literature:

- 1) as averages throughout the entire transport system;
- 2) as industry averages within each mode of transport;
- 3) within each mode of transport as differentiated costs for individual regions and sections of the transport network.

Since there is no national sales market for transport products, and the products of various modes of transport are heterogeneous and,



therefore, economically non-substitutable, the first point of view on SNL is untenable.

The second point of view on SNL was at one time recognised by a large number of economists. It is implemented in railway transport. However, it comes into conflict with market economic conditions.

Factor analysis of the cost of cargo transportation and other pricing parameters allows us to conclude that the third point of view is more justified. In this regard, territorial differentiation of tariffs is necessary, as well as differentiation of tariffs according to other criteria.

For successful operation and development of railways, it is also advisable to revive everything useful that was accumulated in the pre-revolutionary and post-revolutionary periods regarding formation and regulation of tariffs and, on this basis, to create a scientifically based tariff policy. I

In 19<sup>th</sup> century, an important role in formation and centralisation of tariff affairs was played by Tariff congresses, the practices of their organisation can be returned since they could give place to business conversation between railway transport employees and managers and consumers of transport products and representatives of other interested structures.

Since May 1998, Tariff congresses and conferences of service consumers, representatives of railway transport and of other structures have been held in different cities of Russia.

Tariff congresses proclaimed a balance of interests of the railway, cargo owners and of then existed the Federal Service for Regulation of Natural Monopolies in Transport Industry. In this regard, the basic principles of formation of tariffs, set out by S. Yu. Witte, again acquire important theoretical and practical significance. These principles are applicable in a market economy, when railway transport operates as a market segment with developed competition. At the same time, railway transport is considered as a natural monopolist. The effectiveness of common tariff congresses could have been significantly greater if a permanent institution of such tariff congresses had been created, and in the interval between congresses the Bureau of Management of Tariff Congresses had operated, as was the case in the time of S. Yu. Witte.

For railway transport as a monopolist, tariffs regulated by government bodies have been established, based on the following principles:

- the tariff system is based on a two-rate model of tariff schemes for origin-destination and traffic operations;

- the basic (listed) tariff level is calculated based on the cost and required profit;

- tariffs are differentiated according to the following transport characteristics: the type of car, ownership over it, the type of shipment (carload, small, light-tonnage, container), the degree of use of the car's carrying capacity, special conditions of transportation (perishable, dangerous, oversized freight), speed and transportation distance; the basic level of the tariff does not take into account the costs associated with performance of individual works and services (supply of cars for cargo operations, storage of goods, etc.), paid for by additional fees.

State regulation of transport tariffs is carried out by directly influencing their level, system and dynamics, ensuring break-even operation of railway transport, as well as compensation for revenue losses when tariffs are set at a level that does not compensate for the economically justified current and capital costs of railways. When prices for materials consumed by railway transport rise, the base tariff level is periodically indexed.

In the future, to create a scientifically based tariff system, a completely different methodology for constructing tariffs should be adopted.

There are a number of proposals in the literature on this matter. As an option, the following basic principles and methodology for constructing a tariff system for railway transport operating in the status of a natural monopolist are proposed.

The transport tariff, as a transformed form of economically feasible expenditure of resources necessary for implementation of the transportation process, primarily depends on the extent to which society is able to allocate resources from social production to the field of transport. This means that in the structure of the fixed capital of the national economy, past labour involved in the transport sector may constitute a very certain share. The use of resources in the field of transport to ensure transportation of passengers and goods is ultimately manifested in the share of the gross national product that is created by transport. Thus, the value of the tariff should, to one degree or another, be related to the transport share in the gross national product. Let's say, if this share represents 3–5 % of the gross national product, then the total average freight charge is within these limits and can be considered as a starting point for establishing the tariff for the subsequent period.

The tariff value should ensure a certain profitability of transport enterprises. Otherwise, the number of closing (going bankrupt, liquidated, bankrupt) transport enterprises will increase and,

as a result, the supply of transport services will decrease and their share in the gross national product will decrease. Therefore, the total transport tariff cannot be less than the sum of resources spent on transportation plus a certain profit. The average rate of profitability should not exceed 35 % of the cost of transport services, which should be considered in determining the limits of transport tariffs for the coming period. Otherwise, economic ties within the transportation system will be disrupted and urgent interventions will be required to restore them.

An important tariff-forming factor is the share of transport costs in the price of transported products. This indicator shows the formed structure of the location of production units and the economically established system of economic relations in the national economy. If this indicator fluctuates between 7–10 %, this shows that it is significantly higher than the share of the transport component in the gross national product. Obviously, this parameter should be considered in the process of tariff setting in the future, because otherwise it is possible to disrupt economic ties between consignors, which will be very difficult to restore. Therefore, first it is necessary to make a decision which of the economic relations are considered economically inexpedient in the national economy, and then set the value of the transport tariff, knowingly assuming the shutdown of some production links.

In another form, the considered factor influences the value of the tariff in the form of the ratio of the total freight charge to the total price of the transported cargo. If this coefficient fluctuates, say, within 15–20 %, then this means that an increase in prices for transported products cannot leave the tariff unchanged. For if the sum of prices of transported goods increases by 20 %, and tariffs only by 10 %, then, willy-nilly, it should be stated that the processing industries are absorbing more profits than the transport system. Ultimately, if this trend continues, the reproduction process of the complex of transportation routes will be disrupted and difficulties will arise with the transportation process. Therefore, the tariff value should be influenced by this ratio and should be adjusted.

Besides the factors that directly affect the value of the tariff as a result of its free establishment, there are also factors that indirectly affect its value through government influence or the regulatory influence of the state. The latter may consider the transport system as a «natural monopoly» and introduce a fixed rent payment. If the amount of

this payment actually reflects the real degree of monopoly of a given transport unit, then this kind of regulation creates a competitive market for transport services. If this value is greater than the real state of affairs, then such state regulation will lead to curtailment of this type of transport services, because a flow of capital will follow. A small amount of rent payment will not affect the «natural monopoly» of an economic entity and will be perceived as an irritating element in functioning of the transport system.

The government's influence on tariff setting can be felt through credit and tax policies. Depending on the percentage at which loans are given to transport enterprises, it is possible to predict accurately what changes will occur in tariffs. Even more noticeable changes in tariff setting will be felt under one or another tax policy. Thus, in general, the tariff value depends on direct and indirect factors, and a change in the share of their influence will bring tariff formation closer or further away from free tariffs. This means that free tariffs «in their pure form» can only be achieved by establishing equal conditions for all economic units and with a quick payback period for fixed capital. Obviously, it is hardly reasonable to expect an economic miracle with such settings. The inclusion of indirect factors in tariff setting or a differentiated approach to taxation and lending means, to one degree or another, regulation of this process.

The share of each of the noted factors influencing the value of transport tariffs should change under the influence of changing conditions in the national economy. Moreover, at each stage of development of the latter, one or another factor may be more influential, but it should not become dominant. Because in this case, the corresponding concept in tariff setting will win, which for a certain time will meet the requirements of the national economy, and then turn into a brake. Only a balanced combination of the influence of each factor, considering trends in the national economy, will make it possible to pursue a targeted tariff policy based on considering the strength of the influence of one or another factor on the value of the tariff corresponding to a given stage of development of the national economy.

An important issue is managing operating costs. To solve it, it is necessary to remember the well-forgotten past and return to normalising operating costs. Without a norm or standard, it is impossible to create an operating cost management system.

The level of operating costs does not have a direct impact on the tariff. However, reducing the cost of transportation creates favourable economic



conditions for reducing the tariff. This was convincingly proven by S. Yu. Witte.

He noted that capital investments in construction of the railway are not related to the size of the tariff. This is true, but the costs of updating technical equipment must be included in tariffs, otherwise the railway cannot satisfy the actual effective demand within the existing supply – one of the main postulates of a market economy.

The tariff policy must include a condition for indexation of regulated tariffs.

It would be advisable to liberalise tariffs in local traffic more. At the same time, regional representatives of Federal antimonopoly service should be invited to participate in regulation of tariffs in local traffic to better maintain the balance of interests between various modes of transport and consignors, as well as consider economic development in a given region.

The issue of discounts deserves the most serious attention. It is necessary to clearly indicate under what conditions and for what period of time discounts on tariffs are provided. In pricing policy, discounts are considered as a powerful lever for managing the economics of the transportation process. If the conditions for providing discounts are not met, then the latter results in a direct loss of income for the railway.

Russia's tariff policy has not had a system associated with territorial differentiation of tariffs (TDT). In market conditions, the problem of more accurate and objective reflection of the actual cost of transportation across the country in the price of transportation (tariff) is particularly acute. Meanwhile, characteristic of JSC Russian Railways are significant differences in cost between the railways of the network and the directions of traffic.

Moreover, the introduction of TDT creates conditions for a more realistic reflection of the costs of living labour for production of transport products throughout the country. These costs could be reflected as new added value created by Russian Railways employees, in the form of a certain share of the cost of the full tariff.

The introduction of TDT and the deduction of living labour costs as a share of the full tariff will

to a certain extent complicate the system of tariffs and mutual settlements but will create conditions for products produced and extracted in Siberia and the Far East to be delivered at a lower price to points of consumption. Calculations showed that the cost of transportation, which is the basis for constructing freight tariffs, turns out to be more than 1/3 lower in the Asian part of Russia than in the European part of Russia. This is explained by the fact that in the Asian part of the country, more than 80 % of freight turnover is operated with electric traction, and in the European part – only 63 %. Under these conditions, the uniform railway freight tariff across Russia leads to higher prices for products exported from the regions of Siberia and the Far East.

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To conclude, it is worth highlighting once again the enduring importance of S. Y. Witte's works for the development of railway transport, the transport system, particularly, in such interrelated areas as tariff policy, the mutual influence of the state's customs policy and trade, the balance of the rates of development of transport, industry and agriculture.

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