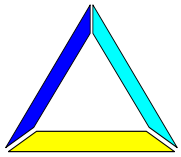
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Restructuring and Tariff Regulation in the Railways Sector – Conclusions for Ukraine from International Experiences

Executive summary

Recently the State Administration of Railways Transportation of Ukraine (SARTU) initiated raising railways transportation tariffs by 20.8% to compensate for the year 2000 increase in prices railways inputs. After long debates the Ministry of Economy has approved 14.8% increase in freight transportation tariffs. According to the SARTU there is an obvious outmoding in the industry due to slower growth of railways tariffs in comparison with prices of inputs, especially energy and steel inputs. This resulted in a decrease of the number of cars and in lacking funds for railways rolling stock maintenance and development. However, the lack of funds for maintenance and development is also due to the redistribution of funds in favor of the passengers transportation.[1] The SARTU reported a deficit of about UAH 1 bn in 2000 generated in passengers transportation, where UAH 500 mln was the deficit generated only by privileged passengers transportation, which was not compensated by the state. Nevertheless, at the same time a total profit of the railways of about UAH 500 mln was reported.

From the debate presented above we suppose that in fact Ukrainian railways revenues do not cover total costs. There are several reasons for these distortions. Since the disintegration of the USSR the railways transportation volume substantially declined but the railways infrastructure volume remained virtually the same. Thus, the **lower intensity of rail lines utilization led to substantial increases of the fixed costs of railways transportation.**

Signs of overcapacity are present also in rolling stock utilization. Average freight car productivity has been declining together with the number of cars, although the relationship had to be inverse. Thus, **railways infrastructure and especially rails infrastructure is an increasing burden for the railways industry**. The cost of idle infrastructure would have to be included into tariffs and railways users would have to pay for the railways nobody uses.

Besides the problem of the increasing infrastructure burden there is also a problem of correct railways costs accounting. I**t is necessary to carefully assess investment**

[1] According to Ukrainian laws subsidies for privileged passengers have to be financed from central and local budgets, but in fact it is not done so and the railways have to cover the difference by itself.

needs together with the revision of needs for railways infrastructure. Tariffs should also cover the infrastructure depreciation.

The problem of infrastructure fixed cost coverage and pricing of major services as freight and passengers transportation can be solved in different ways. The best solution for Ukrainian railways would be to **apply modified fully distributed cost approach**, where every user would cover the fixed cost of only a part of infrastructure used. The fixed cost would be distributed by the public infrastructure operator, while minimum transportation tariff would be fixed.

An increase of freight transportation tariffs in 1998 did not translate into better railways transportation conditions because of the prevailing cross subsidization of passengers transportation by freight transportation. Thus, **one of the purposes of the state policy should be the elimination of cross subsidization** through complete compensation of passenger transportation costs by tariffs and budget payments.

Required changes of the tariff policy need to be embedded into a strategy of reorganization of the whole railways industry. These **necessary reforms need a careful sequencing of measures**. There should be a differentiation between short-term, medium-term and long-term measures.

Short-term measures should start with **optimization of capacities**, **revision of privileged passengers categories**, **separation of accounting** of fixed cost of the infrastructure and of variable costs of freight and passengers transportation, and follow with separation of these services. Costs and revenue should be accounted separately for every transportation service to determine loss and profit makers. Even if the structure of the railways could remain vertically integrated on this first stage, ancillary businesses as construction, maintenance, and inputs supply should be separated, corporatized and further divested. Social infrastructure should be transferred to the balance of local budgets.

The medium-term goal is to establish **separated**, publicly owned, publicly managed, efficient **operators of transportation services and rail infrastructure**. The separation of transportation services into freight and passengers services should be followed by their corporatization. The question of ownership is not urgent nowadays, there can be different arrangements from public property to private property. An **independent state regulatory body** should be established to develop tariffs, as well as quality and safety standards. Privileged passengers transportation should be compensated in full, while cross- subsidization of passengers transportation with freight transportation should be eliminated.

In the long run the Ukrainian railways industry **infrastructure and transportation services should be institutionally separated**. Long-term cost covering tariffs should be introduced and access, quality and safety should be regulated. Passenger and freight transportation operation, operation of the infrastructure should be provided by private companies.

1. Introduction

A close look at the Ukrainian railways industry reveals a number of controversial and sometimes puzzling issues. Restructuring of natural monopolies, including the railways, is part of quite an extensive package of reforms in Ukraine. The issue is very complex and requires substantial coordination effort on the government highest level.

At present there is a hot debate on railways tariffs between the SARTU, which is a provider of railways transportation services, the main users of the service – the steel industry - and the government.

The aim of this paper is to analyze efficiency and sustainability of the current policy concerning the regulation of railways services which is carried out by the Ukrainian government and to provide international experiences in regulation of railways services in order to draw some conclusions for assisting the Ukrainian authorities involved in railways industry restructuring and regulation.

2. Debate: problems, facts

The railways industry still is the slowest reformer in Ukraine. Ukrainian railways are state owned since they are considered to be a natural monopoly. The industry is organized as a single, highly integrated company managed by the railways administration, which is a part of the government. For example, tariffs on freight and passengers transportation, excluding local passengers transportation, are determined on the basis of the state budget in accordance with the procedure determined by the Cabinet of Ministers[2], that set by the Ministry of Transportation with the consent of the Ministry of Economy[3].

Recently an initiative was started by the State Administration of Railways Transportation of Ukraine (SARTU) in order to raise tariffs by 20.8% to compensate for the year 2000 increase in prices for railways inputs. After long debates the Ministry of Economy has approved 14.8% increase in freight transportation tariffs on February 16. According to the SARTU there is an obvious outmoding in the industry due to slower growth of railways tariffs in comparison with prices of inputs, especially energy and steel inputs. This resulted in a decrease of the number of cars and in lacking funds for railways rolling stock maintenance and development. However, the lack of funds for maintenance and development is also due to the redistribution of funds in favor of the passengers transportation.[4] The SARTU reported a deficit of about UAH 1 bn in 2000 generated in passengers transportation, where UAH 500 mln was the deficit generated only by privileged passengers transportation, which was not compensated by the state. Nevertheless, at the same time a total profit of the railways of about UAH 500 mln was reported.

[2] Law "On Railways Transportion", (04.02.1996), #0237, article 9.
[3] Decree of the Cabinet of Ministers "On Authority to Regulate Prices (Tariffs)", (25.12.1996), #1548, addendum, article 2.
[4] According to Ukrainian laws subsidies for privileged passengers have to be financed from central and local budgets, but in fact it is not done so and the railways have to cover the difference by itself.

The same issue was raised by major users of the freight services – steel industry enterprises. They stated that the freight transportation, in general, was considered "profitable", while passengers transportation was "loss generating". Moreover, former increases of tariffs did not translate into improvement of the quality of freight services. After a 25% tariff increase in 1999 no substantial improvement of rail lines quality followed; investments into rail lines composed only 3,4% of total railways investments.

From the debate presented above we suppose that in fact Ukrainian railways revenues do not cover total costs which is supported with the fact of absence of funds for rolling stock and rail lines maintenance. Also, from the nature of the arguments presented above it can be concluded that the SARTU believes that it is the industry as a whole, which is not cost covering, while freight users believe that the tariffs they pay are cost covering and the major problem is passengers transportation which does not cover costs. These are the major issues to be cleared out in the following in order to conduct equitable tariffs policy.

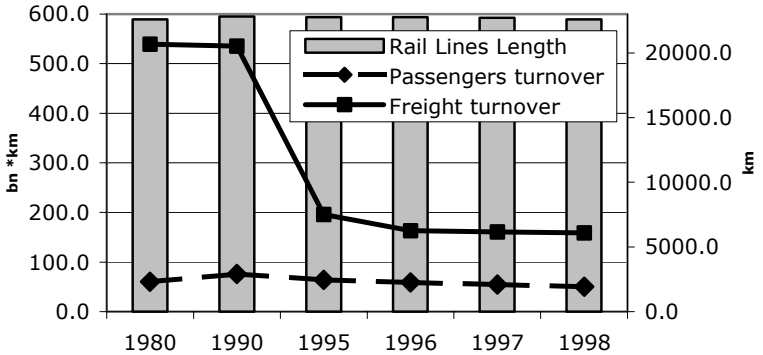
2. 1. Cost coverage of transportation tariffs

The disintegration of the USSR has substantially altered the Ukrainian transportation structure. Economic decline in the region, trade barriers raised after the disintegration of the USSR, and the policy of foreign trade diversification reduced the amount of trade with Ukraine's major trading partners on land like Russia and other CIS countries. This factor as well as the reduction of trade distances of Ukrainian enterprises could be expected both to reduce load on railways transportation and stimulate its substitution for automobile transportation, especially in passengers transportation.

2.1.1. **Increase of costs due to recent development**

Indeed, the railways transportation volume has substantially declined during the last years but the railways infrastructure volume has remained virtually the same. The length of the rail lines in 1998 was exactly the same as in 1980 – 22600 km, while freight turnover was 29% of the 1980 volume and passengers turnover volume was 83 % of 1980 volume (see Graph 1.). Thus, the **lower intensity of rail lines utilization has led to substantial increases of the fixed costs of railways transportation.**

Graph 1. Railways Utilization

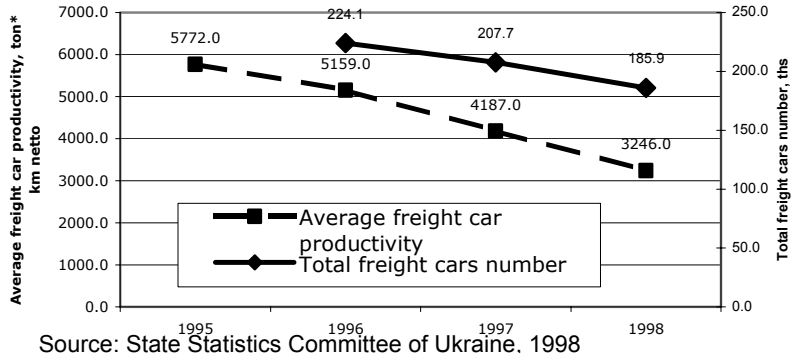


Source: State Statistics Committee of Ukraine, 1998

Signs of overcapacity are present also in rolling stock utilization. Graph 2 shows that average freight car productivity has been declining together with the number of cars, although the relationship had to be inverse. This observation is supported by the fact that average demurrage of cars in 1995 and 1999 has risen from 5 to 9 days. This means that there are too many cars in the industry compared to the transportation

volume decline. It should be noted that for the locomotives utilization the relationship is inverse, which means that their number is scarce and that most probably they are utilized optimally.

Graph 2. Rolling stock productivity



Source: State Statistics Committee of Ukraine, 1998

The statistical facts presented lead to the important conclusion that **railways infrastructure and especially rails infrastructure is an increasing burden for the railways industry**. The cost of idle infrastructure has to be included into tariffs and railways users have to pay for the railways nobody uses. Quite surprisingly, in practice, there was no substantial increase in real freight transportation tariffs in 1990-1995, as it could be expected when the relative fixed cost has been constantly growing. This means that due to the rising costs the railways was loss making. Railways capacities need to be optimized in order to reduce maintenance costs and overall costs of railways transportation. Some rail lines, which cannot pay for themselves, should be financed from the state and the local budgets in full or they will have to be conserved.

Another important issue is railways infrastructure and rolling stock pricing. Currently payments for cars usage in Ukraine also include compensation for infrastructure utilization and depend on the period of usage calculated in hours, the type of car and the ownership of the car. The payment is provisioned to be progressive (UAH 16 for the first day to UAH 136 for every day after the 15th), although no penalty is provisioned for holdouts. Therefore, the rolling stock pricing needs to be separated from the infrastructure pricing and prices need to be raised to the level where they would reflect an opportunity cost of cars usage. This would change the behavior of users to motivate them not to hold out cars. In turn this would increase the efficiency of their utilization.

2.1.2. **How to measure the costs?**

The other side of the increasing infrastructure burden and correct infrastructure pricing is a problem of correct railways costs accounting. It was reported that 49% of the railways assets were outmoded in 1998 in comparison to 39% in 1992[5]. But, while its assets continued to depreciate the railways reported "profitability" in 2000. An opportunity to operate depreciating assets profitably without reinvestment means that it will never last for a long time. For future efficient operation reinvestment would be needed and would be part of the true costs. Therefore, **it is necessary to carefully assess investment needs together with the revision of needs for railways infrastructure.**

Correct cost accounting and attribution of costs to the services provided is probably one of the major problems of railways regulation. Costs of a transportation service do not only consist of variable costs as wages and depreciation of locomotives and cars, but

[5] State Statistics Committee of Ukraine (1999): Transportation and Telecommunications in Ukraine, p. 13.

also of such fixed costs as depreciation of the rail lines, the communication lines and the station's equipment. In the long run a company or a whole industry in a market economy can sustain only when at least it covers its costs[6]. Thus, established **tariffs should also cover the cost of the infrastructure depreciation.**

In order to solve the problem of cost covering tariffs information about demand of railways transportation services and of willingness to pay for it is needed and should be part of the calculation of tariffs.

2.2. Cross-subsidization

The problem of cross-subsidization is quite common in infrastructure industries. A natural monopoly as a rule provides several different products, which do not have close substitutes. Prices for those products sometimes are imposed arbitrary, not at profit maximizing or cost minimizing levels. Some products are priced low and are generating losses for the monopoly, while other products are priced higher to cover losses and generate profits. This is especially the case when pricing decisions are made by publicly owned monopolies on the grounds of "social justice". However, when this way of social welfare redistribution is studied closer it can be found that it generates welfare losses and is not optimal for the society. Thus, elimination of cross-subsidization improves the total welfare.

The fact of reallocation of funds between passengers transportation and freight transportation was raised in the debate. As the industry reported a UAH 500 mln profit while the deficit generated in passengers transportation was about UAH 1 bn subsidization of the passengers transportation can be concluded. Due to the lack of detailed data it is actually difficult to find out, what part of freight tariff went into compensation for infrastructure utilization and which part of the freight payment was used for subsidization of passengers transportation. The net result for the railways seems to be that the fixed costs of infrastructure usage were not covered because tariffs of passenger transportation did not cover the respective costs. Also, an increase of freight transportation tariffs in 1998 did not translate into better railways transportation conditions because of the prevailing cross subsidization. Thus, **one of the purposes of the state policy should be the elimination of cross subsidization** through complete compensation of passenger transportation costs by tariffs and budget payments.

2. 3. Why laws are not executed?

A significant part of the deficit generated in passengers transportation is attributed to failure of the government to compensate for transportation of privileged passengers. According to Ukrainian laws, for the reason of social protection of some categories of passengers, including local passengers transportation, privileged tariff rates can be set. The respective losses of the Ukrainian Railways have to be compensated by the state and the local budgets depending on the authority, which made the decision on the privileges[7]. Currently there are 16 categories of privileged passengers.

[6] We should differentiate between a short and a long run. In the short run a company can operate without covering its fixed costs, since they are sunk. However, to operate in the long run and make a normal profit the company should recover also its fixed costs. If it is not done, it means that the company has lost its investment and will have to leave the market after fixed assets are depreciated.

[7] Law "On Railways Transportion", (04.02.1996), #0237, article 9.

In 2000 about UAH 500 were not compensated to the railways. Complete compensation to the railways for privileged passengers transportation could be a first step towards reducing both cross-subsidization and fixed cost coverage problems. The fact that the legislation is not executed should be treated objectively and considered as a sign of an unrealistic volume of privileges provided. This means that there is a **need to revise and optimize the structure of privileged categories of passengers**. Together with the revision of the volumes of privileges the compensation procedure should be carefully considered. If the compensation goes to transportation service provider then it does not alter the demand for transportation services. If the compensation goes to the respective passengers directly as an increase in his or her income while the passenger pays for the service in full, it would reduce the demand for transportation services and in the end would reduce the total volume of compensations out of the government budget due to excessive demand.

Slow changes in the government policy, the persistent nature of problems mentioned above, very complicated mechanism of tariffs adjustment and clumsy management of the industry raise the need for restructuring. Major directions of reform are the development of built-in mechanisms of tariffs adjustment, the insulation of the industry from political influence and from pressures of other industries, a higher degree of independence of the management in decision-making, a performance of the industry in accordance with commercial objectives, an appropriate level of accountability of the management and sufficient control on tariffs and quality of services from the state.

3. International experience of regulation

3.1. Railways privatization and regulation experiences

Until the 1970s railways services in most economies were regarded as a public good and, therefore, they were provided by the state. With the development of new information and transport technologies conditions have substantially changed. Single, state-owned railway companies, managed as government departments started incurring operating deficits, were unable to adjust to quickly changing demand, to perform social obligations to their staff and to introduce commercially oriented tariffs and investment policies. Especially strong was pressure from the automobile transportation, which substituted many of the services traditionally offered by the railways. In the trade-off between production efficiency and flexibility of logistics the flexibility issue became more important which gave certain advantages to the automobile transportation.

In the 1980s a general movement started towards introduction of the private sector into the railways industry. In different countries this was achieved by different ways depending on objectives of the governments. Today there are experiences available, which in the following will be summarized and analyzed [8].

A large share of fixed costs in railway transportation industry traditionally led economists to assume the presence of substantial economies of scale and to regard rail transport services as a natural monopoly. For the recent decades this notion has been heavily challenged and eventually revised. Now the consensus is that rail infrastructure only can

[8] For detailed discussion of the reform experience and lessons see Estache, Antonio and de Rus, Gines (eds.) (2000): Privatization and regulation of transport infrastructure: guidelines for policymakers and regulator. The World Bank Institute for Development Studies.

be regarded as a natural monopoly. Once the network has been deployed more than one company can efficiently use it either as actual or potential competitors and cover the cost of operation rail transport network and rolling stock[9].

Lessons from restructuring of the railways industry in different countries were:
- separation of the natural monopoly infrastructure and train operations should be achieved and
- open access to the railways infrastructure should be promoted as widely as possible.

The introduction of competition into railways industry in reforming countries went through the following stages: at the first step the vertically integrated railways monopoly organized as a government department was transformed into a public enterprise with high managerial autonomy, contracting out its ancillary activities to the private sector; then this enterprise was commercialized, later on concluding service contracts, management contracts, leasing agreements or concessions for fixed assets (both rolling stock and infrastructure); this followed with sale of assets and establishing of joint ventures with high degree of private participation or full private ownership in transport services provision and, sometimes, in railways infrastructure.

The railways services can be provided by multiple private competing operators or by a single firm under concession or license agreements. The railways infrastructure can be managed by a public operator as it was the case in most countries which restructured the industry. It could also be concessioned or leased or privatized as in the UK and the USA, or spread among private railways transportation service companies as in Japan and Chile.

Involvement of private interests is supported due to the evidence that it increases productive efficiency of companies of in industry. The **role of the state remains** in the following:
- support of competition in the sectors of railways transportation and provision of equivalent terms of access of operators to the railways infrastructure;
- ensuring railways services pricing at levels covering both infrastructure fixed costs and variable costs;
- provision of financing for the rails infrastructure, which has high social value, and compensations for passengers transportation;
- guarantee quality and safety of railways services, control of the technical characteristics of railways transportation.

[9] Estache, Antonio and de Rus, Gines (eds.) (2000), p. 173-174.

3.2. Regulations principles

3.2.1. Tariffs regulation

Ideal regulation of tariffs

Due to the natural monopoly nature of the railways infrastructure it should be regulated to ensure production and allocation efficiency. In general, efficiency can be achieved when marginal cost pricing is applied. If a natural monopoly marginal cost pricing is below average cost pricing, the natural monopoly would incur losses when following the former. There is a trade off - average cost pricing is not optimal since it leads to welfare losses of the society and marginal cost pricing is difficult to achieve due to information problems.

Actually there are several ideal alternatives of marginal cost pricing. The first is nonlinear pricing or setting of a two-part tariff, the second is Ramsey pricing[10] and the third is the Loeb-Magat proposal of franchise bidding[11].

A **two-part tariff** to railways infrastructure usage pricing means that railways users are charged a fixed amount for the right to use the railways and the second part should reflect marginal costs of use the infrastructure. In this way it can be possible to replicate marginal cost pricing.

A rail lines owner can use his monopoly power to discriminate between users to take the consumer surplus. It is possible with third-degree price discrimination according to the **Ramsey rule**, e.g. to separate the markets for freight and passenger transportation and to fix tariffs in accordance with elasticities of demand (the higher the elasticity of demand the lower the tariff).

In the **Loeb-Magat proposal** the monopolist is allowed to discriminate users and take the whole surplus. But this right is auctioned and the received amount of money is used to compensate the difference in demand price and marginal cost, so that the consumer is not worse off. However, the subsidy is not completely recovered, there remains a net subsidy of the amount equal to the fixed cost.

All the described ideal pricing proposals have prohibiting drawbacks, because, in practice, it is difficult to estimate marginal costs and demand elasticities in order to use this information for regulation of the tariffs. Therefore, an alternative pricing efficiency criterion was agreed: pricing of each unit of service has to be equal to the exact costs of its provision. In practice much less information intensive tariff approaches are used.

Practical regulation of tariffs

As was already mentioned practical regulation of tariffs is based on the idea of costs coverage when substituting for the marginal cost pricing mechanism. As provision of

[10] For a more detailed discussion see von Hirschhausen, Cristian (2000): Introduction to regulation of monopolistic infrastructure sectors: study materials for research associates of the IERPC. German Advisory Group on Economic Reforms.
[11] Viscusi, W. Kip. (2000): Economics of regulation and antitrust. Cambridge: MIT Press, p. 353-355.

railways services is a multiproduct production there are three problems arising in allocation of the rail infrastructure costs: cross-subsidization, cost-coverage, inefficient prices.

The issue of **cross-subsidization** is how to allocate common costs among customers and services. A natural monopoly in railways transportation is an example of a multiproduct natural monopoly where cost sub-additivity of joint production is observed. Cross-subsidization occurs when the price of one product is set to generate additional revenues that are used to subsidize the sales of a second product offered by the regulated company. The first critique of cross subsidization is that it is socially inefficient way of pricing, since it sends the wrong signals to consumers. The second critique is that in the case of partial deregulation there is a strong incentive for potential entrants to enter the market of the overpriced product. The analysis of the problem and recommendations significantly depend on the availability of alternative mechanisms to finance unremunerative services and should be made on a case-by-case basis. The major danger to be minded is cream skimming of potential entrants into profit generating markets.

Infrastructure provision and management are characterized by a high ratio of fixed to marginal (variable) costs. As was mentioned above, the **cost coverage** principle is agreed to be central in infrastructure pricing. Public companies usually advocate marginal cost pricing with the simultaneous use of government subsidies to cover fixed costs. Economists patronize the use of full cost recovery prices, including price discrimination, two-part tariffs and cross-subsidization if needed (see above). The problem of balancing the cost recovery issue and efficient pricing rules remains unsolved and depends on the preferences of particular countries. Where revenues from operations and compensations from the government are insufficient to provide a surplus for depreciation and investment, railways will be dependent on the state in order to fund investments.

Regulatory practices are dominated by very simple approaches, which only partially take into account the theoretical conditions of optimality. According to the **fully distributed costs approach** the fixed cost is distributed proportionally to the production of different services based on some objective criteria (e.g. amount, distance, time). This approach is quite simple, but it is quite far from optimal, since it does not take into account demand elasticity. The **prime user approach** provisions a ranking of major service users and redistribution of all the fixed costs to the major users. This is an extreme case where cross subsidizing is not allowed directly - one group of users carries all the fixed costs and its marginal costs, the other group carries only its marginal costs. This approach can approach the optimum if the prime user has lower elasticity of demand.

> In Japan after the deregulation of the 1990-s regional passenger companies were defined as prime users and freight companies could access the railways network only at marginal prices. In the USA it was done the other way around, there freight companies are defined as prime users and a private passenger transportation company Amtrak accessed the network at marginal costs. However, the Amtrak is also supposed to negotiate the compensation above the marginal costs. The regulation in Japan can be judged to be closer to optimal, since according to a number of studies elasticity of demand for passenger service is lower than that of the freight service.

Extension of the prime user approach has led to development of the **approach of the sole user**. According to this approach the user carries only the part of fixed costs, which is required for his own production. This approach forces a user to optimize his usage of the network and restrain himself only to the necessary assets, the other parts can be

financed according to mutual agreements. The sole user can also negotiate on mutual financing of his or her fixed assets with other users.

> Example of sole user approach application is the UK. There regional companies obtained concessions on passenger services and are sole users, they can negotiate with freight companies and independent passenger companies on financing of the network.

3.2.2. Tariffs control

With the introduction of the private sector into the railways industry the pricing principles should be agreed upon and included into the contracts. Concession contracts provision tariffs level to be decided on by concessionaires, which are subjects to regulations and control. When price control mechanisms are designed the following key factors should be taken into account: a) the degree of monopoly power effectively conferred to the operator; b) the extent of government noncommercial objectives; c) the possible existence of limiting factors, such as intermodal competition[12].

The most common alternatives for administrative price control are price caps, profit caps or their combination. These mechanisms of control are widely applied in many countries with a long experience of price regulation. The **profit cap** (or rate of return) regulation in railways industry is used in Canada, Japan and the USA, which have already used the same regulation in other industries. This type of regulation is to constraint prices so that the regulated rail transport operator earns only a fair rate of return on capital. The **price cap** in railways industry is applied in the UK, which also has the same regulation experience in other industries. Both mechanisms have their advantages and disadvantages. The profit cap guarantees a fair rate of return for the company, but does not stimulate cost reduction. The price cap stimulates cost reduction, but introduces uncertainty to the regulated company's profits. Under condition of availability of all the necessary information the two regulation mechanisms are equivalent, however price cap regulation is preferable in the situation if the transaction costs of monitoring are high[13]. The price cap is adjusted in accordance with the retail price index, so that inflation is taken into account automatically, however the adjustment is always several percent less than the inflation rate to compensate for the railways cost reduction due to increasing efficiency.

3.2.3. Access regulation

Procedures and payments of accessing railways infrastructure vary significantly across different countries in accordance to the stage of their railways restructuring. In fact the problem of access fees is related to the problem of infrastructure pricing and different arrangements are possible. The major requirement is that these price regulations should not impede access to the network and should not to create a market structure problem.

In some countries there are designed exact rules of access pricing, in other countries the charges are set by infrastructure operating companies. In all cases access terms vary from those fixed in long-term contracts to those allowing substantial discretion. There are two principles of setting access charges. The first one is based on **long run marginal costs**, which are computed with economic depreciation and future usage forecasts. The second method consists of developing **usage-related charges**[14].

[12] Estache, Antonio and de Rus, Gines (eds.) (2000), p. 202.
[13] Cullis, J. and Jones, P. (1998): Public finance and public choice. Oxford University Press.
[14] Estache, Antonio and de Rus, Gines (eds.) (2000), p. 210.

The British private infrastructure provider implemented usage-related charges made up of multiple-part tariffs for concessioned passenger services that have four elements: short-term maintenance, electric current, long-run marginal costs and other common costs. The first two elements compose 9 percent of access charges and these are the only elements, which vary depending on the amount of service provided. In the case of freight services the access price should reflect the value of the users access to the network and enable the Railtrack to recover its total cost, but the prices must not be lower only than the variable cost.

Setting of access prices in the European Union has not developed yet. Notwithstanding the Directives, 91/440, 95/18, 95/19, which regulate licensing and fee charging principles, fees in France and Germany are based on a wider set of criteria and result in a number of different fee combinations.

3.2.4. Quality and safety regulation

Problems of safety and quality could be eliminated by market forces, if perfect information would be available. However, due to information deficits and disparities market failures take place. In the situation of competition as well as in the situation of a monopoly an optimal level of quality and safety may not coincide with quality standards, since these imply additional costs and reduce profits. Therefore, price and access regulations are not enough in order to achieve optimal operation of the regulated markets from the point of view of the society.

There are several aspects of quality regulation: service standards (e.g. train punctuality, reliability of aboard services, the waiting time at stations, etc.), schedule flexibility (introduction of new services in response to changing demand), intermodal coordination between road, railways, and airports. The major problem is to define adequate independent quality measures, as it happened in Argentina, where the level of integration between the train service providers and the maintenance firms has distorted the incentive to provide the optimal price-quality ratio in services[15].

4. Conclusions

The problems, which Ukraine is facing now are very similar to those in other countries during the 1970s: cost coverage, cross-subsidization and price efficiency are inherited problems of the allocation of rail infrastructure costs. International experience persuasively shows that there is no other way out, also for Ukraine, except the introduction of private sector into the industry and, thus, raising its operating efficiency. The important differences between Ukraine and the countries described above are that in Ukraine there are much more severe constraints of public finance and almost no experience in regulation. An advantage of Ukraine is the possibility to learn from experiences of other countries.

Necessary reforms need a careful sequencing of measures. There should be a differentiation between short-term, medium-term and long-term measures.

4.1. Short-term measures

- Railways capacities need to be optimized in order to reduce maintenance costs and overall costs of railways transportation. Some rail lines, which cannot pay for

[15] Estache, Antonio and de Rus, Gines (eds.) (2000), p. 213.

themselves, should be financed from the state and the local budgets in full or they will have to be conserved.

- Privileged passengers subsidies should be revisioned and the number of privileged passengers categories should be abolished or revised and significantly reduced. The major criteria in decision making should be the ability of the state and local budgets to compensate for passengers transportation and railways maintenance in full.
- Railways operation should be distanced from the government through organisational and functional separation of the State Administration of Railways Transportation of Ukraine from the Ministry of Transport into a state body performing both regulation and operation of the railways industry; later on departments of the SARTU should develop and separate into a public operator and a state regulatory body.
- Decisions on tariffs should be initiated and proved by the SARTU (later a public operator) and approved by the Ministry of Economy, the State Antimonopoly Committee, and, later, the state railways regulatory body.
- The structure of the railways should remain vertically integrated with regional railways replicating the functional structure of the Ukrainian railways, although authority and functions should be clearly defined. International experience shows efficiency of regional division of railways, however this division of Ukrainian railways may be needed to be revised due to redirection of transportation flown in recent years.
- Ancillary businesses as construction, maintenance, and inputs supply should be separated, corporatized and further divested, social infrastructure should be transferred to the balance of local budgets.
- Accounting of fixed cost of the infrastructure and variable costs of freight and passengers transportation should be separated. This would be a precondition of further separation of these services. Costs and revenue should be accounted separately for every transportation service to determine loss and profit makers
- Since payments for cars usage in Ukraine also include compensation for infrastructure utilization the rolling stock pricing needs to be separated from the infrastructure pricing and prices need to be raised to the level where they would reflect an opportunity cost of cars usage. This would change the behavior of users in order to motivate them not to hold out cars. In turn this would increase the efficiency of their utilization. However, this would solve only the problem of rolling stock pricing.
- The tariffs should be adjusted to cover both fixed costs of railways infrastructure, including investments in development, and variable costs of transportation. Moreover, the tariff should reflect the value of railways services. Modified fully distributed costs approach is proposed to determine tariffs. Tariffs should automatically adjust to the inflation rate. Now the adjustment process provisioned is discretionary and the procedure is very complicated, that makes the process even more discretionary. In case tariffs growth rate would be higher than the inflation rate detailed calculations need to be provided.

4.2. Medium-term measures

- The medium-term goal is to establish separated, publicly owned, publicly managed, efficient operators of transportation services and rail infrastructure. The separation of transportation services into freight and passengers services should be followed by their corporatization. The management of corporatized publicly owned companies should be separated from the government; business plans and commercial objectives

should be introduced. The question of ownership is not urgent nowadays, there can be different arrangements from public property to private property.

- An independent state regulatory body should be established to develop tariffs, as well as quality and safety standards. Corporatized companies and independent state regulatory body should be insulated from influence of interest groups. Higher level of independence in decision-making on local freight and passengers transportation tariffs as well as capacity broadening investments should be granted to regional railways.
- Privileged passengers transportation should be compensated in full, while cross-subsidization of passengers transportation with freight transportation should be eliminated. The state and local budgets should provision subsidies for corporatized passengers transportation companies and, thereby, control their business plans execution.
- Ancillary services as construction, maintenance, and inputs supply are to be contracted out to private companies and procured in open tenders.

4.3. Long-term perspectives

- On the long run the Ukrainian railways industry infrastructure and transportation services should be institutionally separated. Long-term cost covering tariffs should be introduced and access, quality and safety should be regulated. Passenger and freight transportation operation, operation of the infrastructure should be provided by private companies.
- Railways infrastructure can be separated into that, which can pay for itself, and that, which cannot pay for itself, but has very large social value. The later type of infrastructure can be supported by government subsidies.

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