Competition vs. Regulation:
A PROPOSAL FOR RAILROAD RESTRUCTURING IN RUSSIA
IN 2006-2010

S. Guriev*, R. Pittman†, E. Shevyakhova‡

2003

---

1 This report is prepared as a part of the project “Railroad restructuring in transition economies” supported by the Think Tank Partnership Program (www.ttpp.info) and sponsored by US AID. We would like to express our gratitude to our project partners from the Stockholm Institute for Transition Economics (SITE) and the Institute for Social and Economic Reforms (INEKO) as well as to the program organizers from Bearing Point and IRIS (University of Maryland)

2 CEFIR, Senior economist; e-mail: sguriev@cefir.ru

3 U.S. Department of Justice, Director of Economic Research, Antitrust Division; e-mail: Russell.Pittman@usdoj.gov. The views expressed are those of the author, and do not necessarily reflect the views of the U.S. government or the U.S. Department of Justice.

4 CEFIR, economist; e-mail: eshevyakhova@cefir.ru
Contents

Executive summary..............................................................................................................3

1  Russian railroads..............................................................................................................5
   1.1  Role of Russian railroads in the economy .................................................................5
   1.2  Russian railroads: necessity of reform ........................................................................6

2  Railroad restructuring: international experience ........................................................7
   2.1. Vertical separation.......................................................................................................8
       2.1.1 United Kingdom...................................................................................................8
       2.1.2 Sweden.................................................................................................................9
   2.2  Vertical integration..................................................................................................11
       2.2.1 USA and Canada ...............................................................................................11
       2.2.2 Mexico................................................................................................................13
   2.3  International experience of railroad restructuring and the Russian case..............15

3  A proposal for railroad restructuring in Russia.............................................................16

4  Vertically integrated railroads in Russia: questions and answers ...............................19

Appendix: Tables...............................................................................................................22
Executive summary

Railroads play an extremely significant role in the Russian economy. The share of railroad traffic exceeds 80% of all freight transportation (excluding pipelines). Railroads are especially important in long-haul traffic. Railroads are the only economic mode of transportation for most shippers of bulk freight (such as coal, ores, timber, and construction materials), and these constitute the major share of railroad freight.

Though in many respects (such as freight volumes and intensity of traffic) the performance of the Russian railroads is as good as or even better than the performance of railroads in other countries, they still need reforms. The Russian railroad system suffers from a variety of problems: inefficient regulation, lack of competition, depreciated infrastructure and rolling stock, and lack of investment, as well as a heavy burden of social spending.

The Russian Government’s Program for the structural reform of the railroads is similar to the plan adopted by the European Union: the Program suggests separation of infrastructure and operations and state ownership of infrastructure. However, the problems and the structure of Russian and European railroads are very different. In Europe, competition in the railroad sector is aimed primarily at the reduction of budget subsidies, the creation of equal conditions for companies from different EU countries, and development of the all-European railroad transportation market. While in Europe serious competition between roads and railroads in Europe has destroyed any railroad monopoly, Russia barely has intermodal competition. According to the Program of structural reform, competition will emerge only in operations and related industries. As a result, the reform will not eliminate the railroad monopoly (the share of infrastructure costs in total costs is about 80%). 100% state ownership of OAO “RZhD” appears likely to be a serious impediment to private investment in railroads.

We suggest consideration of a plan for the creation of vertically integrated railroad companies which would compete with each other. This model has been successful in several countries in North and Latin America. Long-term concessions to vertically integrated railroads may help to achieve three goals simultaneously: to promote competition, to increase investments, and to keep state ownership of infrastructure. Competition between concessions will be possible if there are enough “parallel” (going in the same direction and of ap-
approximately equal length) tracks. Though in the Eastern part of Russia the geographic structure of railroads makes such scheme impossible, the Western part of the railroad network is dense enough to organize “parallel” competition.

To make the plan work, it is necessary to make several provisions in concession contracts and in the rules of their operation. In particular, it is necessary to oblige concessionaires to post tariffs and allow shippers to use their own cars, as well as to create a joint dispatching service. Also, it is necessary to control the ownership structure of concessions to diminish the risk of collusion between concessions.
1 Russian railroads

1.1 Role of Russian railroads in the economy

Railroads are the most important transportation mode in the Russian economy. The share of railroads in overall freight traffic (excluding pipelines) is 86%. The second most important mode is transportation by road, which has a share of only 10%. Railroads are extremely important in interregional transportation, where there is almost no competition with other modes of transportation. The average distance of transportation by railroads exceeds 1300 km, while for transportation by road this indicator is only 26 km (see Table 1).

The Russian state railway is the biggest state-owned monopoly in Russia. Its assets amount to (by different estimates) 4-15% of all assets in Russian economy (see Table 2), and it has 1.2 million employees. The railway is profitable overall (its profit in the past year was about $1.7 billion) though passenger (and especially commuter) transportation is loss-making (see Table 3). The revenues of the freight operations are used to cover the losses from passenger traffic.

The railroads are used mostly for transportation of bulk commodities (coal, construction materials, ferrous and non-ferrous metals, etc.; see Table 4). Demand of bulk commodities producers for railroad services is not elastic, and the average haul distance for these commodities is so large (see Table 4) that, eventually, the shippers have no alternative: transportation by road is very expensive for long-haul transportation, while river transportation can compete with railroads only along a very limited number of routes and only during navigation periods.

Russia has one of the largest railroad networks in the world (the second after the US), though its density is rather low (see Table 5). Moreover, the Russian railroads are run very intensively: they have the highest traffic intensity in the world.

Lately the railroad sector has lacked needed investments. Though during the last several years investment volumes achieved approximately $3.3 billion per year (see Table 2), the deterioration and depreciation of rolling stock and infrastructure continue to increase (see Ta-

---

5 Source: “Transport and Communication 2002”, Goskomstat
Rolling stock is not only depreciated but also outdated. The railway needs not only to renew its fixed assets but also to acquire modern rolling stock and equipment.

1.2 Russian railroads: necessity of reform

Although in many respects (traffic volumes, intensity of traffic, safety, etc.) Russian railroads outperform most railroad systems in the world and are profitable, there are a number of problems. To solve them, a reform of railroads and their regulation is necessary. Problems of regulation and management distort incentives and lead to deterioration of service quality, an inadequate investment structure, and tariff increases.

By the beginning of the 2000s, the industry has had three major problems. First, the quality of railroad services is relatively low, while the depreciation and obsolescence of rolling stock have been increasing. Second, the railroads were both run and regulated by one state agency, the Ministry of Railroads. Third, the revenues of railroads were used to finance loss-making activities which were deemed as socially important.

Since the Soviet period, internal performance indicators of the Russian railroads have been related to the quantity of operations and not to their quality. At the same time, the quality of services (which is characterized by percentage of fulfilled orders, shipment safety, etc.) remains low. The punctuality of shipments has been declining: the number of freight trains arriving late increased by 11% in 2002 (comparing with 2001). Railroads cannot cope with the increase of demand concomitant to the industrial production growth in recent years. Another fact supporting this view is that there is congestion on railroads. Many orders are not fulfilled; traffic is often suspended along certain routes. It should be noted that traffic volumes in the early 2000s (measured in tkm) are approximately half those in the late 1980s (see Table 1). This suggests strongly that the capacity of the Russian railroads has declined and that significant investment is necessary.

The existing railroad system is not able to solve problems of low quality of services and high depreciation and obsolescence of rolling stock. This system (its management structure, etc.)
legislation regulating its interaction with consumers and other agents, etc) has been almost unchanged during the entire decade of the 1990s. One of the consequences of this inertia is the low quality of services while volume indicators remained high (taking into account demand decrease) throughout the 1990s.

Incentives of both regulators and managers are distorted in a system where the same agency runs railroads and regulates them. Even after implementation of the Program of structural reform, the largest part of the sector will remain a state-owned monopoly. The size of this part of the sector can be characterized by the following indicator: the infrastructure fee comprises more than 80% of the railroad tariff. The current system of regulation does not provide efficient control over the costs of railroads. One of the reasons is that up to now the accounting is not sufficiently detailed and transparent. Another reason is that future year’s tariffs are calculated using a forecast of the year’s costs, which, in turn, are simply the current year’s costs adjusted for inflation and for the next year’s demand forecast. Such a practice does not create incentives to diminish costs.

Until now, freight operation revenues have been used to finance many enterprises of the so-called “social sphere” (social expenditures were equal to 16 billion rubles in 2001), which are a part of the Ministry of Railroads, and to cover losses from passenger operations (see Table 3). Generally speaking, it is not efficient for the losses of unprofitable but socially desirable operations to be covered at the expense of freight shippers that use railroads.

2 Railroad restructuring: experience of other countries

Historically, railroads in most countries were built by private companies. But by the middle of the 20th century railroads had been united into national networks and become state-owned almost everywhere in the world. Until the 1980s, most railroad systems remained state-owned monopolies. Only US and Canadian railroads remained private corporations (except

---


9 Source: the project of Preiskurant 10-01.

10 Source: Arthur Andersen audit report for 2000 and 2001
for one company in Canada) though they had undergone a series of mergers and consolidations.

The last two decades have witnessed railroad reforms in dozens of countries: the European Union, Mexico, Brazil, Argentina, Australia, New Zealand, Japan, and some Central European and African countries (mostly in earlier stages of reform). The main causes of these reforms were very similar across countries: state-owned railroads were too a heavy burden for the exchequers. After the Second World War development of transportation by road was accompanied by a rapid decrease of railroad’s share of transportation markets. One of the reasons for this loss was the inability of public monopolies to provide high quality services and to react to market signals. In addition, railroads often had to sustain operations over light density lines at the direction of state authorities. Also, management of railroads was bureaucratic and unable to withstand trade unions pressure. As a result, employment, wage bills and retirement plans were all excessively large. At the end of the day, railroads became loss-making and governments attempted to restructure them.

Although the main problems and goals (to raise service quality and to reduce losses) have been very similar across different countries, different railroad restructuring strategies have been employed. There are many scenarios of reform; however, one can identify two alternative approaches: 1) the separation of infrastructure and operations and 2) the creation of vertically integrated companies.

The first approach has been chosen by EU and implemented to the fullest extent in the UK and Sweden. Japan and the countries of Latin America and Africa have chosen the second approach.

2.1. Vertical separation

2.1.1 United Kingdom

The United Kingdom has implemented a full-fledged vertical separation plan in accordance with the principles adopted by EU. In essence, EU claimed that competition should be introduced to railroads by separating infrastructure from operations and opening free access to infrastructure. The British government started the railroad reform for the same reasons as other countries: to diminish costs and to improve the quality of services. Before the start of the reform in Great Britain, railroads had been steadily losing their share of the market (over
40 years railroad’s share fell from 40% to 7% in freight transportation and from 17% to 5% in passenger transportation). These losses of traffic while the network stayed almost intact made the public corporation “British Railways” a loss-making enterprise.

In 1994-1997 the industry was privatized. More than one hundred private firms replaced one state-owned company. One firm (Railtrack) was endowed with railroad infrastructure. Infrastructure maintenance services were rendered by 14 companies. Three regional companies owning rolling stock were authorized to perform freight transportation. Passenger transportation was organized as follows: 3 leasing companies provided rolling stock to 25 operating companies.

Industry performance was encouraging during several years after the reform. Starting from 1995, for the first time for decades, the share of the railroads in overall transportation was increasing. This was mainly due to improved quality of services provided to passengers. Nevertheless, even during that period there were alarming facts: investment in rolling stock decreased and regional freight companies were involved in conflicts over access to infrastructure.

After a number of accidents in the late 1990s and early 2000s, the technical condition of the entire network was checked. Gauge corner cracking in rails all over the system which could have caused new tragedies was found. Consequently, strict speed restrictions were imposed, which reduced the reliability of service. The railroads were hit by a severe crisis. In spite of large budget subsidies, the infrastructure company Railtrack went bankrupt in 2000. In 2002, a new infrastructure company Network Rail Infrastructure Ltd was created. But it continues to run losses (approximately £0.3 billion per year).

2.1.2 Sweden

After the Second World War and continuing into the 1960s, the financial position of the Swedish railroads steadily deteriorated due to the need to subsidize loss-making passenger

---


operations. In 1963 profitable and loss-making operations were identified. Losses in the latter areas came to be covered by special government budget subsidies.

In 1985, a new attempt to restructure the Swedish railroads was made. First, infrastructure, passenger and freight divisions were created within Swedish railroads as well as a system of internal payments for infrastructure services. Costs of infrastructure not covered by payments from freight and passenger divisions would be compensated by state subsidies. Second, all non-core businesses would be sold. These decisions were implemented very slowly and in 1988 more fundamental changes were approved.

The Swedish railroads were divided into two companies: the National Railroad Administration (Banverket), whose functions comprised investments in and maintenance of the infrastructure, and Swedish Railroads (SJ), responsible for operations and dispatching. In addition, the network was divided into main lines and county lines. Rolling stock for county operations as well as a right to procure services for county railroad transportation were transferred to County Public Transport Authorities (CPTAs). Three companies participated in the first tender for the right to run passenger operations in one of the counties. SJ lost the tender and thus lost its monopoly in local passenger railroad transportation, and there is tough competition in this market. After one of the tenders SJ was accused in abuse of its dominant market position against its competitors.13

SJ was granted an exclusive right to run national freight and passenger operations. Unprofitable operations of SJ were explicitly contracted with the government and subsidized by the state. The state continued to finance infrastructure ($350 out of 450 million of Banverket expenditures are covered by budget subsidies).14 SJ and other operators compensate only the marginal cost of infrastructure usage (which includes a fee for track depreciation which depends on the type of locomotive and the quantity and type of wagons).

In 1995, despite SJ’s counteraction, the mining company LKAB was granted the right to carry its ore by its own trains. Also in that year, dispatching functions were transferred to the

---


infrastructure company, Banverket. SJ’s monopoly for interregional passenger operations was kept in place, but free access into the freight operations market was opened. Nevertheless, SJ was given a right of precedence to the timetable positions that it had used before.

SJ was profitable only for several years. In 2001, it went into the red. Its freight division was in especially poor financial position. In 2001, SJ was divided into several specialized companies: passenger, freight, maintenance, etc. Though since 1995 access to freight operations has been opened to any qualified candidate, SJ has retained its dominant position, with an 88% market share. (LKAB carrying its own ore has an 11% share). The market share of other operators does not exceed 1%. In contrast to the freight transportation market, SJ’s share in the market of county passenger operations is only 14%.\textsuperscript{15}

Railroad restructuring in Sweden resulted in rather tough competition “for the market” but not “in the market”. The Swedish experience suggests that newcomers cannot successfully compete with the incumbent in the market as 1) there are strong economies of scale that work in favor of the incumbent, and 2) the incumbent can use various strategies to prevent entry of competitors. The incumbent and newcomers are on closer to equal grounds competing for the market, as the winner in this competition gets the entire market.

2.2 Vertical integration

Many countries of Latin America (Brazil, Argentina, Mexico) have chosen the strategy of railroad restructuring alternative to vertical separation: they have created vertically integrated railroad concessions, similar to the privately owned vertically integrated railroad companies in the US and Canada.

2.2.1 USA and Canada

Both the US and Canada have vertically integrated regional railroad companies. There are 7 large freight railroads (class I) in the US and 2 large freight railroads in Canada. Also, both countries have dozens of small railroads operating on short lines. The railroad structure of both countries fosters “parallel competition”: most important areas are connected by at least two, and sometimes more, tracks of approximately equal length but owned by different

\textsuperscript{15} Alexandersson, G. (2002), ibid.
companies. In addition there are trackage rights that make competition tougher. Railroads are very important for both countries (the share of railroads in freight transportation is about 40% including pipelines) though not as important as for Russia (see Table 7).

**Scheme 1. US, I class railroads**

![Map of US railroads](image)

**Scheme 2. Canadian railroads**

![Map of Canadian railroads](image)

Though the railroads in the US were nationalized only once (during World War I), they were heavily regulated (including tariffs) for decades. But in the early 1980s the industry was largely deregulated. Nevertheless, this did not lead to an increase in tariffs. On the contrary, railroad tariff growth rates were lower than in other transport industries for about 20 years
after deregulation. This can be considered as an indicator of the efficiency of parallel competition (as well as competition from road and water carriers).

2.2.2 Mexico

By the early 1980s, most of the Mexican railroad system was state-owned. The financial position and quality of railroad services steadily deteriorated. During the 1980s and early 1990s the Mexican government attempted several times to restructure the railroads in order to make them profitable. In particular, employment was reduced by 40% (mainly through programs of voluntary retirement), but this did not solve the problem.

A new stage of the restructuring process started in 1995. Until then the Constitution prohibited private participation in the railroad sector. An amendment to the Constitution allowed private companies to render railroad services. At the same time, new legislation provided for most of the state railroad network to be divided into three concessions and one joint switching area (the rest of the network consisted of short lines sold separately). Concessionaires were given right to perform operations for 50 years with an extra 50 year option.

At the design stage, special efforts were made to guarantee that no single concession got exclusive access to important areas: large cities (Mexico, Monterrey, Guadalajara), industrial regions (the north and center of the country), and ports (Tampico and Veracruz). Boundaries of concessions were outlined in accordance with this principle. Moreover, each concession was granted a right of access to the networks of the other concessions for some fee. Mexico City became a joint “switching area”. Each of the concessions owned 25% of the shares of the “switching area”. The last quarter of the stock was owned by the state. Obligatory approval of tariffs by a special regulating agency which was also an arbiter in tariff conflicts between shippers and concessionaires was one more condition of the concessions. In the first five years after the first concession was sold, there were no such conflicts.

Three concessions were auctioned in 1997, 1998, and 1999 consecutively. The number of participants in the bidding varied from one to three (all bidders were consortia of compa-
nies). To reduce the risk of collusion between concessions, no company was allowed to have more than 5% of the shares of more than one consortium participating in the auctions.\textsuperscript{16}

**Scheme 3. Mexican railroads after the creation of concessions**

Though too short a period of time has elapsed since the reform to provide for a comprehensive assessment, what data are available suggest that restructuring improved the performance of the industry. The financial positions of all three railroads got much better, and traffic volumes of one of the concessions increased drastically (see Table 8). Up to now, there have been no serious conflicts between market participants. This suggests that precautions taken at the design stage of the reform were successful.

\textsuperscript{16} Campos, J. (2001) Competition issues in network industries: the Latin American railways experience, mimeo, University of Las Palmas
2.3 International experience of railroad restructuring and the Russian case

The Program of the structural reform adopted by the Russian Government follows the principles of the European model of railroad restructuring and, in particular, chooses the reform policy of the separation of infrastructure and operations. However, the structure of industry and purposes of restructuring are very different in Russia and in Europe. First, there is no tough competition between railroad and road carriers in Russia, while the desire for an increase of railroad’s share in transportation markets is one of the most important goals of the reform in Europe. Second, in contrast to European railroads, Russian railroads are profitable. That is why decrease or elimination of subsidies, which is one of the main European problems, is not relevant for Russia. Third, freight operations are much more important than passenger operations in Russia (in Europe the share of passenger operations is about 50%) and the average distance of haul is much larger than in Europe. Fourth, there are no problems of tariff harmonization (important in Europe) in Russia.

The results of vertical separation in the UK and Sweden suggest that implementation of the vertical separation plan will not help to achieve the main goals of railroad reform in Russia: the creation of competitive market and incentives for investments.

Thus, the experience of vertically integrated railroad companies of Latin and North America seems more relevant for Russia. The ratio of freight and passenger traffic, the length of haul, and the structure of the freight of railroads in the US, Canada, Mexico, and Argentina are similar to those in Russia (see Table 5).

The performance of vertically integrated railroads suggests that a network of 5-10 thousand km is sufficient for profitable operations of a vertically integrated railway. Thus, the size of the network in the European part of Russia would allow policy makers to create several vertically integrated companies while still maintaining economies of scale.

---

3 A proposal for railroad restructuring in Russia

The Program of structural reform of railroads suggests the development of competition only in operations and industries which render services to railroads and now are a part of the railroad system. But implementation of the Program does not guarantee that such competition will emerge. There are economies of scale in railroad operations: the larger the company, the more efficiently it can use rolling stock. That is why the largest company can force its competitors out of the market. If the infrastructure company has its own operations unit, this problem will be even more acute. On the one hand, such a company will have incentives to disadvantage non-integrated train companies (by setting the infrastructure component of the tariff too high, for example). On the other hand, it is a very difficult regulatory problem to guarantee non-discriminatory access to infrastructure for all operators because the tariff structure is very complicated -- there is a large fixed cost component, and average cost depends on the type of freight, the length of haul, intensity of traffic, etc.

According to the Program of structural reform, the decision as to whether to separate infrastructure and operations will be made only at the third stage of the reform (2006-2010). At that stage it would be decided whether regional vertically integrated railway companies might be created. It can be expected that by that moment it will be clear what problems arise in the interaction of the state-owned railroad company and private operators. Also, it is probable that there still will be a lack of outside investment, so freight revenues will be the main source of investments. Tariffs for railroad transportation are regulated, and their growth rate is only a few percent higher than inflation due to the higher growth rate of prices for electric energy.

Selling long-term (30 or 50 years) vertically integrated railroad concessions may help to increase investments. Infrastructure will remain state-owned. Concession contracts may stipulate conditions important for social or military reasons. Also, concession contracts may include minimal investment programs. All of these have been aspects of the railroad concessions in Latin America.

Besides stimulating investment, concessions may help to promote competition on rails. To achieve it, the geographic structure of concessions should satisfy the following conditions:

a) there should be “parallel” tracks;
b) concessions should be approximately of the same size with respect to their traffic volumes and network size.

The second condition is necessary to guarantee that no concession has too much advantage in the ratio of its operation volumes to the cost of infrastructure.

The geographic structure of the Russian railroads does not allow us to satisfy the first condition in the Eastern part of the country. Nevertheless, the network in the Western part is dense enough to support parallel competition. Scheme 4 shows one of the possible plans of concessions. To make a final plan of the railroad reorganization in the Western part of Russia, one needs to carry out a detailed analysis of volumes and routes of freight traffic. We have not carried out such analysis due to the lack of necessary data. However, as only a few types of goods constitute the major share of traffic, it is possible to consider the geographic structure of their production and consumption (including exports). The analysis that we have carried out for several good categories (coal, ferrous ore, coke, fertilizers, cement and partially for lumber) which account for more than a half of all freight suggests that the railroad split that we propose (see Scheme 4) will result in the creation of viable concessions.18

A common dispatching service is necessary to coordinate the operations of concessions. This service should be a state agency and have a technology of automatic coordination of traffic, and its services should be paid by concessions depending on volumes of traffic.

Concession contracts should stipulate that concessions are obliged to post their tariffs (with infrastructure and wagon components). Tariff discrimination by type of freight should be allowed, in contrast to discrimination by shipper. Discrimination by type of freight is desirable for concessions to be able to cover infrastructure costs.19 Public posting of tariffs will foster competition between concessions and ease settling of conflicts over abuse of market power if there is any. Concession contracts should allow any company to use its own rolling stock paying only the infrastructure component of the tariff.

---

18 At the same time, this analysis suggests that creation of 5-6 vertically integrated companies in European part of Russia may be impossible, at least given the current geographic structure of railroad transportation.

Companies than run commuter and long-distance passenger operations that are not profitable should pay only for the marginal cost of infrastructure to concessions. (These companies will be separated out of the OAO “RZhD” at the second stage of the reform.)

When selling concessions, it is necessary to control the ownership structure of the buyers to prevent cross-ownership. Moreover, it is necessary to work out rules of participation in concessions for important railroad shippers to prevent discrimination against other shippers.

If “parallel competition” appears to be efficient, regulation of railroads will require much less cost than regulation of a monopoly. Nevertheless, it is necessary to create an effective mechanism for the settlement of conflicts between shippers and concessions to prevent the abuse of what market power remains following reorganization.

Scheme 4. A proposal of railroads split into two concessions in the Western part of Russia
4 Vertical integration in Russia: questions and answers

Why will setting up vertically integrated railroads create incentives for investment?

In contrast to the model of vertical separation, the owner of infrastructure does not sell its services at regulated price, but, also owning rolling stock, operates in competitive market selling services to final consumers (shippers). As vertically integrated companies will be sufficiently large and asset-rich private corporations that operate in competitive markets with large demand, they will be able to find their own sources of investment or borrow to invest.

In this respect the vertical integration plan has many advantages over the vertical separation plan which (a) does not create proper incentives for investment, and (b) requires regulation of tariffs for infrastructure usage which have a very complicated structure. Great Britain, which has an efficient judicial system and a long history of complicated contracts enforcement, failed to create such a system of tariffs and their regulation.

Our proposal suggests creating concessions each of which will have a 20-25 thousand km network. This size significantly exceeds the minimal size of network which is generally necessary for an integrated railway to be profitable. The experience of Mexico shows that vertically integrated companies have both resources and incentives to invest.

How will implementation of the vertical integration plan promote competition?

We propose a geographic structure of concessions such that shippers will be able to buy the services of any of two concessions at the relatively low cost of transportation to the alternative track by road or by river (for most shippers this extra length of haul will not exceed 200 km). Thus, the market power of concessions will be limited. This type of “transloading” of freight to reach a competing carrier offering a better deal is a common feature of countries with competing vertically integrated railway companies.

What should be done if a shipper can use the infrastructure of only one concession due to the specificity of freight terminals?

In this case the concession lacking necessary terminals can invest in building new terminals – perhaps jointly with the shipper. As their cost is low comparing to the cost of new track, a threat to use the services of another concession (even at higher prices which would cover cost of new terminals) will limit tariff levels. Again, this kind of actual or potential competi-
tion from the building of new shipping facilities is a common feature in countries where two vertically integrated railway companies are competing for the business of an important shipper.

**How should tariffs be set?**

Tariffs will be posted by each concession in the form of price menu. Discrimination by type of good, length of haul and intensity of traffic should be allowed. In future, tariffs may be determined in two-party contracts, as in the US, but at the first stage public posting is preferable to foster competition.

**How should concessions be regulated?**

As in the case of any other oligopoly, interference of a regulator will be necessary only if there is abuse of market power.

**How should switching areas be organized?**

As in Mexico, the stations where tracks of competing concessions intersect can be managed by enterprises jointly owned by the concessionaires.

**Who will run vertically integrated railroads?**

The right to run concessions will be sold at auctions or tenders. In Mexico the price for 50-years concession was $50-280 million for 1000 km of network. Thus, the price of each 30-years concession in Russia could be equal to $0.6-4 billion (of course, only part of this sum would be paid in cash). Hence, it is reasonable to plan to attract large financial resources to railroads.

**How can collusion between concessionaires be prevented?**

Rules of the auction should forbid any company to participate in both concessions. After the auction, mergers and transactions with the stock of companies-concessionaires, as well as possible collusive activity between concessionaires, should be controlled as provided for by Russian antitrust legislation.

**What should be done with the railroads in the Eastern part of Russia (which constitute approximately one third of the Russian network)?**

The Trans-Siberian railroad should remain state-owned and be regulated as a natural monopoly.
How will operators (owners of rolling stock) be provided with access to the infrastructure?

Competition between concessions will make them to set fair access prices. But, due to economies of scale, it is highly probable that most independent owners of rolling stock will leave the market and sell their cars to the vertically integrated companies (perhaps except for the owners of highly specialized wagons).

Will it not be too late to implement a vertical integration plan in 2006 when (as stipulated by the Program of the structural reform) ОАО «РZhD» will own only 50% of rolling stock?

Given the current tariff structure (project of Preiskurant 10-01) it is not probable that the rolling stock of independent operators will grow rapidly. The infrastructure component of tariffs is so high that investment in rolling stock will be difficult to pay back. If tariffs for access to infrastructure decrease significantly (e.g., in case of complete vertical separation), then a shortage of investment in infrastructure will be so acute that the necessity to look for alternative solutions will be evident by 2006.

What should be done with the light density lines?

Concession contracts can stipulate an obligation not to close certain lines. It is necessary to determine what operations are predominant in the case of each light density line. If a line is used mainly for passenger transportation, the concession contract may stipulate budget subsidies to sustain the line. The same can be done in the case of lines used for military purposes. Anyway, even a clause in the concession contract forbidding the closing certain lines can be sufficient: the price of the concession will be adjusted accordingly at the auction.

What should be done with the passenger traffic and social functions of railroads?

According to the Program of structural reform, the Federal Passenger Company will be created. Its losses will be covered by subsidies from the budget (federal or regional). Other social expenditures will be covered either in accordance with a concession contract, or by budget subsidies. Licenses for commuter traffic may be sold at special tenders (e.g., given prices and volumes of traffic bidders will submit their subsidy requirements – the lowest subsidy bid wins).
### Table 1. Volumes of traffic and average haul distance by mode of transportation in Russia

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>railroad</td>
<td>2140 1058</td>
<td>11% 14%</td>
<td>2523 1434</td>
<td>59% 58%</td>
<td>1179 1355</td>
</tr>
<tr>
<td>road</td>
<td>15347 6125</td>
<td>82% 80%</td>
<td>299 160</td>
<td>7% 6%</td>
<td>19 26</td>
</tr>
<tr>
<td>pipelines (oil and oil products)</td>
<td>558 345</td>
<td>3% 5%</td>
<td>1240 797</td>
<td>29% 32%</td>
<td>2222 2310</td>
</tr>
<tr>
<td>rivers</td>
<td>562 113</td>
<td>3% 1%</td>
<td>214 76</td>
<td>5% 3%</td>
<td>381 673</td>
</tr>
<tr>
<td>air</td>
<td>2.5 0.9</td>
<td>0% 0%</td>
<td>2.6 2.6</td>
<td>0% 0%</td>
<td>1040 2889</td>
</tr>
</tbody>
</table>

Source: «Transport and communication 2002», Goskomstat

### Table 2. Russian railroads

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>Russia, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (in core business), mln.</td>
<td>1.2</td>
<td>2%</td>
</tr>
<tr>
<td>Output, bln. rubles</td>
<td>320.9</td>
<td></td>
</tr>
<tr>
<td>Profit, bln. rubles</td>
<td>49.5</td>
<td>4%</td>
</tr>
<tr>
<td>Investment, bln. rubles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goskomstat data</td>
<td>94.8</td>
<td></td>
</tr>
<tr>
<td>Arthur Andersen audit report data</td>
<td>123.9</td>
<td></td>
</tr>
<tr>
<td>Assets, trln. rubles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goskomstat data</td>
<td>2.9</td>
<td>15%</td>
</tr>
<tr>
<td>Arthur Andersen audit report data</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Assets of OAO “RZhD”, trln. rubles</td>
<td>1.5</td>
<td>8%</td>
</tr>
</tbody>
</table>

### Table 3. Cross-subsidization in the railroad sector, bln. rubles, 2001

<table>
<thead>
<tr>
<th></th>
<th>Revenue</th>
<th>Cost</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>320.9</td>
<td>271.4</td>
<td>49.5</td>
</tr>
<tr>
<td>Freight operations</td>
<td>285.0</td>
<td>200.9</td>
<td>84.1</td>
</tr>
<tr>
<td>Passenger operations</td>
<td>35.8</td>
<td>70.4</td>
<td>-34.6</td>
</tr>
</tbody>
</table>

Source: «Transport and communication 2002», Goskomstat

### Table 4. Structure of freight traffic and average haul distance, 2001

<table>
<thead>
<tr>
<th></th>
<th>share of ton mileage, %</th>
<th>average haul distance, km</th>
</tr>
</thead>
<tbody>
<tr>
<td>black coal</td>
<td>29.1%</td>
<td>1451</td>
</tr>
<tr>
<td>coke</td>
<td>1.4%</td>
<td>1711</td>
</tr>
<tr>
<td>oil products</td>
<td>16.1%</td>
<td>1320</td>
</tr>
<tr>
<td>ores</td>
<td>7.5%</td>
<td>874</td>
</tr>
<tr>
<td>ferrous metal</td>
<td>10.1%</td>
<td>1989</td>
</tr>
<tr>
<td>scrap-iron</td>
<td>0.9%</td>
<td>761</td>
</tr>
<tr>
<td>chemical and mineral fertilizers</td>
<td>3.9%</td>
<td>1506</td>
</tr>
<tr>
<td>cement</td>
<td>0.9%</td>
<td>532</td>
</tr>
<tr>
<td>lumber</td>
<td>4.3%</td>
<td>1217</td>
</tr>
<tr>
<td>grain</td>
<td>2.5%</td>
<td>1441</td>
</tr>
</tbody>
</table>

Source: «Transport and communication 2002», Goskomstat
Table 5. Length and density of railroad network in Russia and other countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Network size, th. km</th>
<th>Density, km/th. sq. km</th>
<th>Traffic volumes, billions passenger-km</th>
<th>Freight volumes, billions tkm</th>
<th>Intensity of freight traffic, mln. tkm/km</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA, I class railroads</td>
<td>232</td>
<td>24.8</td>
<td>20</td>
<td>2008</td>
<td>8.7</td>
</tr>
<tr>
<td>Russia</td>
<td>86</td>
<td>5</td>
<td>167</td>
<td>1262</td>
<td>14.7</td>
</tr>
<tr>
<td>China</td>
<td>57.9</td>
<td>6</td>
<td>414</td>
<td>1284</td>
<td>22.2</td>
</tr>
<tr>
<td>Canada</td>
<td>56.7</td>
<td>5.7</td>
<td>1.3</td>
<td>25.7</td>
<td>0.5</td>
</tr>
<tr>
<td>France</td>
<td>31.6</td>
<td>57.2</td>
<td>62</td>
<td>108</td>
<td>3.4</td>
</tr>
<tr>
<td>Mexico</td>
<td>26.6</td>
<td>13.5</td>
<td>1.8</td>
<td>42.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Brazil</td>
<td>25.6</td>
<td>3.0</td>
<td>0.1</td>
<td>34.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Japan</td>
<td>20.1</td>
<td>53.2</td>
<td>398</td>
<td>24</td>
<td>1.2</td>
</tr>
<tr>
<td>UK</td>
<td>17.2</td>
<td>70.1</td>
<td>34</td>
<td>17</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 6. Age of locomotives

<table>
<thead>
<tr>
<th>Age, years</th>
<th>Electric locomotives, %</th>
<th>Diesel locomotives, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 10</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>&lt; 15</td>
<td>36</td>
<td>18</td>
</tr>
<tr>
<td>&lt; 20</td>
<td>51</td>
<td>41</td>
</tr>
<tr>
<td>&lt; 25</td>
<td>67</td>
<td>60</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>79</td>
<td>78</td>
</tr>
</tbody>
</table>

Source: «Transport and communication 2002», Goskomstat

Table 7. Structure of freight operations in the USA, Canada and Russia, %

<table>
<thead>
<tr>
<th>Mode of transportation</th>
<th>Railroads</th>
<th>car</th>
<th>rivers and lakes</th>
<th>air</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>48.4</td>
<td>35.3</td>
<td>…</td>
<td>0.5</td>
</tr>
<tr>
<td>Canada</td>
<td>68.5</td>
<td>22.1</td>
<td>9.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Russia</td>
<td>93.9</td>
<td>1.6</td>
<td>4.4</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Source: «Transport and communication 2001», Goskomstat

Table 8. Freight traffic in Mexico

<table>
<thead>
<tr>
<th>Concession</th>
<th>Freight traffic, bln. tkm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1996</td>
</tr>
<tr>
<td>TFM</td>
<td>15.5</td>
</tr>
<tr>
<td>Ferromex</td>
<td>19.1</td>
</tr>
<tr>
<td>Ferrosur</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Source: Latin America railroads data base provided by the World Bank, www.worldbank.org