规制与竞争研究丛书

丛书主编　张昕竹　安东尼奥·易斯塔什

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序

中国铁路是国家重要的基础设施，也是国民经济持续、稳定、健康发展的支撑行业，对促进国民经济和社会发展具有重要作用。改革开放以来，中国铁路的基本建设、运输生产、技术装备和管理水平都取得了重要进展，在改变资源分布、工业布局及地区间社会经济发展的非均衡性中发挥了巨大的作用。在新的世纪里，随着中国社会的不断进步、人民生活水平的日益提高，以及可持续发展战略的实施，铁路以其自身的优势，即节约资源、减轻污染、适应中国能源结构的特点，运量大、密度高、连续性强、规模集约、安全可靠的技术经济优势，必将在未来的运输市场占有重要地位，中国铁路还将具有很大的发展潜力。

在中国经济体制改革不断深入的大背景、大环境中，中国铁路的改革也在不断推进，在向市场经济体制的转轨过程中，进行了一系列探索，市场机制正在不断深入到铁路系统的各个领域中，这些工作都对铁路的发展产生了深远的影响。尽管如此，从总体上讲，我国铁路改革的推进明显落后于全球铁路改革的基本趋势，同时也滞后于我国电信、电力、民航等其他垄断行业，这种状况固然与铁路行业自身的一些特征有关，但与理论、政策方面的研究对管制改革的支持不够有着密切关系。

本书运用现代规制与竞争理论，针对中国铁路改革实践中面临和即将面临的一系列问题，从多个角度进行了比较全面、系统的探索性研究，其中许多观点是作者对铁路改革过程中某些问题的

思考与探索，这些思路与建议无论对于理论研究，还是未来铁路改革的实践，都具有非常积极的借鉴意义。

书中各章的作者分别来自中国社会科学院、铁道部、铁道部经济规划研究院以及北方交通大学等单位，这些作者熟悉现代规制与竞争理论，深刻了解中国铁路的改革实践，并对相关领域的研究有着深厚的积累。尽管如此，由于中国铁路的规制与竞争设计涉及的问题非常复杂，加之时间紧迫，书中必然存在很多不足之处，我们希望借此抛砖引玉，进一步推动我国铁路改革的研究和实践。

最后，我们要感谢 PPIAF 提供的资助和 P. Russell 先生的鼓励，他们的帮助使这本书的出版成为可能。我们还要感谢 J. J. Laffont 教授，书中很多问题的讨论得力于与他的讨论，此外感谢 J. Tirole 教授提供的一些重要文献以及 J. Hausman 教授对一些问题的评论；还要感谢世界银行 A. Estache 先生对该项目自始至终的指导，以及 G. Chenet - Smith 女士的一贯热情帮助。

张昕竹

2003 年 10 月

Summary Report

The railway industry is so important an infrastructure sector that it is often regarded as the "backbone of China". Indeed, the rapid development of the Chinese railways has, until recently, tremendously helped promote the social and economic development of China. Ever since the economic reform, significant achievements have been made in the basic construction, installation, operation, and management of the Chinese railway system. By 1999, the total route length of railways in operation reached 66,400 kilometers (including both local and joint venture railways), ranking first in Asia and fourth in the world; the total volume of passenger traffic (person – km) was ranked second in the world, and the total volume of freight traffic (ton – km) was ranked just next to the US. Today, all Chinese provinces but Tibet have been connected by a nationwide railway system.

As one of the modern transport modes, the Chinese railway network plays an important role in the comprehensive national transport system, particularly in medium-to long-haul passenger and bulk transport. Indeed, for a long time, the railway system had the comparative advantage of having a large load capacity, high speed, high standard of safety, low pollution, etc., and thus, was quite competitive in the transport market. However, it recently started to face sluggish demand and increasingly fierce competition from other transport modes. To

meet the challenge, the Chinese government and the Ministry of Railways (MOR) are working hard to deepen railway reform, open up new markets, and improve the quality of service.

As a pillar industry in the national economy and a crucial link connecting urban and rural areas, the Chinese railway system has played a significant role in changing the distribution of resources and the layout of industries and improving the balance of social and economic development among regions. With characteristics such as low consumption of resources, being more environment-friendly, more compatible with China's energy structure and having various types of scale economies, the Chinese railway industry is far away from being a sunset industry and still has great potential to develop.

I. Regulation and Competition in China's Railways: A Brief Review of Reforms

1. The governance of China's railways

The railway industry is regarded by the Chinese government as a typical network industry characterized by natural monopoly. Before 1979, the governance of China's railways was arranged as combination of regulation with operation under highly centralized management, as is typical for a planned economy. In other words, the government both operated and regulated the railway system directly through administrative control.

Beginning in early 1980s, reforms along the line of decentralization and provision of incentives were implemented. These reforms have largely transformed the traditional governance of the railway system to one with pure administrative control; the relationship between the state and the railway enterprises was therefore to be governed more and more by a system of economic responsibility. The railway enterprises

then started facing more and more discipline from the market. However, these reforms hardly changed the management system of a combination of regulation and operation.

Enacted on May 1, 1991, the Railways Law clarifies from a legal point of view the nature of the management system of the railway industry in China. It stipulates that the Chinese railway network should be administered by the Ministry of the State Council in charge of the railway system, i. e. the Ministry of Railways (MOR). MOR is authorized to regulate and operate the state railway network in a highly centralized and command way, and help to guide, coordinate, and supervise the local and specialized railways .. In other words, MOR is defined in the Railways Law not only to be the regulator but also the operator of the Chinese railways.

Besides MOR, the railway industry is also controlled in some important aspects by a few other ministries and agencies of the State Council in the complicated governance system of China's railways :

· The State Planning and Development Commission (SPDC) is a comprehensive department of the State Council whose main responsibility is to make a long run development plan for the national economy, and in the framework of this plan, to specify the development plan for the railway sector. One of SPDC's major control rights is to approve investment projects that will be financed by state tax revenues. Since the railway tariffs are closely related to the financial condition of the state railway system and, as a consequence, to its development, SPDC also plays a pivotal role in the determination and supervision of railway tariffs.

· Ministry of Finance (MOF) is the budgeting arm of the central government, which determines the annual budget for the state railway

enterprises and sets the accounting standard, including costing and depreciation rules, etc.

· State Price Bureau (SPB) is the general price control administration of the government. Together with SPDC, it approves MOR's plan to adjust railway tariffs and supervises their implementation.

According to the Railways Law, the state railway enterprises are endowed with the functions specified by associated legal and administrative documents. One can therefore summarize the main features of the governance in China's railway system as follows:

First, the state railway enterprises still dominate or nearly monopolize the Chinese railway industry. The state railway system consist of two corporate tiers: railway administration and railway sub-administration .

Second, it has the typical organizational structure of multiprincipal. More specifically, MOR, MOF, SDPC, and SPB share the major control rights of the Chinese railway system. SDPC and MOF have the most control rights and their control obviously results from state ownership . In contrast, MOR, the main regulator of China's railways, has less regulatory power than it should, to avoid a conflict of interests.

And third, MOR combines regulatory function with operation: it is not only regulator of the Chinese railways, but also operator of the dominant state railway network. Additionally, it represents the state by managing and supervising state assets in state railway enterprises and is responsible for the unified command of the railway network and management of the car fleet.

The governmental reform undertaken in 1998 was a major step toward separation of regulation from operation. But this reform is, at most, transitory because MOR needs to further transform its functions

and organizational structure to separate its regulatory function completely from operation.

2. Regulation of Railway Tariffs

Since the railway network is characterized to some extent by natural monopoly, the Chinese government has given exclusive operation rights to the state railway operator, i. e. MOR. Meanwhile, the government directly controlled the railway tariffs and uniform pricing of railway services was implemented. To put it simply, no matter where the traffic takes place, the prices depend solely on distance. The average level of prices was too low to recover total costs and the price structure was too simple to reflect economic conditions such as elasticities of demand and externalities. After the economic reform and under the background of the general price reform in the Chinese economy, railway tariffs have changed dramatically.

Adjustment of railway tariffs

To recover the total cost of railway construction and provision of railway services, railway tariffs have been adjusted several times since 1983. Thanks to these tariff rebalancing efforts, the average level of railway tariffs has gone up and the price structure has been rationalized. For example, the basic price of freight transport was raised 0. 3 cents ton – km in 1983; various surcharges were imposed on the prices of short haul passenger and freight traffic in 1985; the price of passenger transport was increased by a margin of 112% in 1989; the basic price of freight transport was increased again by 0. 5 cents ton – km in 1990, etc. However, the basic prices of railway services (for both passenger and freight traffic) are retained under uniform pricing.

Reform of price formation mechanisms

The focus of the price reforms in the 1990s was to establish a pri-

cing system under which the railway enterprises could have some flexibility to adjust prices to better reflect the market conditions. Indeed, several reform policies have been implemented for this purpose. For instance, the so called "new railway lines, new tariffs" policy was implemented on the Zhenwu and Daqin electrified lines; the prices for high quality services such as trains with air conditioning were raised 50% in 1992, or more generally, the "high quality, high tariffs" policy was introduced; during the holidays of the Spring Festival in 1993, seasonal pricing was put in place for the first time on some popular routes; and the joint venture railways were allowed to charge special tariffs .. In 1984 when the Guangshen Railway Company was established, the tariffs charged for passenger and freight traffic were allowed to float 50% around the base prices determined by the government. After it was restructured to a stock company in 1996, it was allowed to adjust its tariffs 50% more around the national price levels and the tariffs of high speed passenger trains were allowed to be adjusted to the market conditions, but the tariff adjustment plan had to be reported to SPB and so on.

After these price reforms, railway tariffs began to move closer to the cost of investments and operation. Both capacity and demand were better managed by prices. These reforms thus laid the foundation for further market-oriented reform in the Chinese railways.

3. Income distribution between the state and the railways

Reforms were also undertaken to change the distribution of income between the state and the state railway sector. The objective was to establish a proper governance structure and to provide railway enterprises with incentives to improve their performance. The following is a brief chronological review of reforms along this line.

First, after the Communist Party took power in 1949, the Chinese railway system had long been regulated and operated directly by the central government; the state railway industry had no separate budget and, having no autonomy, did whatever the government planned for them to do: investment funds were allocated through the fiscal system and tariffs were totally determined by the government; basic construction and technological upgrade projects had to be approved; staffing decisions and wage plans were determined by the government; revenues and expenses were separated in the budgeting process ; and 85% of the profits were submitted to MOF, etc. Indeed, the relationship between the state and the railway sector was more administrative than economic.

Second, in the reform period (1978 – 1985) characterized by decentralization and provision of incentives, there were some changes to the income distribution between the state and the railway industry. The enterprise fund system, full profit retaining, an incremental contract system of after-tax profits, etc. have been consecutively implemented, with the intention of increasing the profit retention of the state railway enterprises and providing more incentives and autonomy. But such reforms did not change the accounting practice of separating revenues from expenses. The railway enterprises were still required to turn over almost all profits to the state, while investment funds were allocated by the government from the fiscal system. In other words, the railway enterprises had no independent budget and their performance had no direct link to their development.

Third, in the Seventh Five Year Plan period, the so called "comprehensive contract system" was implemented . Since then, the relationship between the state and the railway enterprise changed sub-

stantially. The main contents of the contracting system include: the railway enterprise can keep corporate tax revenue and all after-tax profits, which are used as the railway development funds; the railway system needs to only turn over sales taxes, urban development taxes and revenue from a surcharge for education, with a total effective tax rate of only 3.0%. However, the capital requirement for the basic construction specified in the state development plan has to be financed by the railway enterprises' retained earnings with the rest funded by bank loans. The new arrangement abolished the traditional accounting rule of separation of revenues from expenses at the industry level. So the railway industry began to be subject to a separate budget constraint. The contract system solved the lack of a close link between performance and development under which the railway industry didn't have sufficient incentive to invest in railway network expansion. After revenues were separated from expenses, the railway industry had to meet its end by its revenues.

And fourth, in the Eighth Five Year Plan period, the relationship between the state and the railways was kept basically the same as in the framework of the contract system implemented in the Seventh Five Year Plan. However, the government in this period enacted some new policies to improve the external environment of the railway industry. Approval of collecting the railway development funds was regarded as a particularly important policy . Managed as intra-budgetary revenue, the railway development funds were used solely for the basic construction investments of railways. By establishing the railway development funds, the railway industry can have a stable source of funds. As a consequence, the railways achieved rapid development in the Eighth and Ninth Five Year Plan periods. But since the railway development

funds came essentially from a surcharge on the basic price of freight traffic, the de facto high railway tariffs made it very hard for the railways to compete with other transport modes .

4. Competition of the railway system

There are two facets regarding to the competition nature of the railway system: one is competition with other transport modes, and the other is competition in the railway system.

Competition with other transport modes

After 50 years of development, China has built a comprehensive nationwide transport system comprising of railways, road, waterway, air aviation, and pipeline. By the end of 1998, the total route length of all transport modes reached 2,983,500 km, in which railways had 66,400 km, air aviation 15,060 km, road 127,800, internal waterway 110,000 km, and pipeline 23,100 km. In 1998, the total volume of passenger traffic of all transport modes were 13.77 billion persons or equivalently 10,559 person - km with railways comprising 6.8% and 35%, road 91.3% and 56.3%, air aviation 0.4% and 7.6%, and waterway 1.5% and 1,1%, respectively; the volume of freight traffic was 12.64 billion tons or 3784.07 billion ton - km, in which the railway industry's market shares were 12.7% and 32.5%, road 77.2% and 14.5%, waterway 8.7% and 51.3%, and pipeline 1.4% and 1.6%, respectively.

Even though the railway system is characterized to some extent by natural monopoly, competition among different transport modes become more and more intensified in China, thanks to the rapid development of road, air aviation, waterway, and pipeline transport. Indeed, in some markets the railway system has even lost its comparative advantage. Despite the total volume of passenger and freight traffic of the

railway system kept rising in the past decade, their market shares continued to decrease. It is particularly the case with the passenger traffic. For instance, the ratios of the passenger and freight traffic carried by the railway system to the total volume of transport traffic have decreased from 15.1% and 14.8% in 1988 to 6.8% and 12.7% in 1998, respectively.

Competition in the railway system

While the railway system faces very fierce competition from other transport modes, the Chinese government also undertook various measures to introduce competition in the railway system.

· The setting up of joint venture railways was de facto to open, to a limited extent, the railway development and operation to local governments and other economic entities. So monopolization of railway construction and operation by the state began to be abolished.

· Interconnection between the state railway network and the joint venture and local railways was actually to allow competition on the same route between the state railway system and other economic entities.

· Allow private firms to rent locomotives and cars from the state enterprises to operate package trains.

· There was also competition among administrations in the sense that the railway administrations have through-administration traffic associated with both passenger and freight services. This form of competition was made possible by the fact that profit incentive has been provided to each administration so that it should be dealt with in this sense as an independent entity. However, the effectiveness of such type of competition depends critically on the accounting rule concerning the pricing of access services .

Introducing competition as such has helped to promote the devel-

opment of the Chinese railways and enhance its performance. But overall, competition in the railway system is still far away from having been established since the state railways still dominate the railway system in China.

5. Distribution of income in the railway system

Before the economic reform, the railway system as a whole was an organization that combined regulation with operation. Since revenues were separated from expenses, the revenues and their distribution among different administrations were not very important in that they did not have a great effect on incentives. But after the economic reform, various incentive schemes were introduced so that the behavior of the railway enterprises were driven more and more by profit incentives. Thus, distribution of revenues among different administrations was affected significantly by the issue of combination of regulation with operation . From 1978 to 1999, many reforms associated with the adjustment of MOR's dual roles and various revenue distribution rules were implemented in the railway system. However, due to the network nature of the railway system and the shortage of capacity, such adjustments were done only along the line of decentralization and provision of incentives. No major breakthroughs have been made so far to abolish the management system. Thus, the revenue distribution rules in the railway system can only be changed to an extent that is consistent with the existing institutions; it is not a surprise that these rules are becoming more and more complicated.

The period of "settlement price" (1978 – 1986)

In 1979, the government began to experiment with various forms of economic responsibility systems such as profit sharing, contracting on profits or losses, substitution of taxes for profits, etc. To imple-

ment theses types of responsibility systems, the railway industry first introduced the profit sharing scheme. To implement such an incentive scheme, it is necessary to have a proper profit measure that precisely reflects an enterprise's performance in the first place. Only then can it be possible to determine the enterprise's retained earnings. Since profits are calculated from revenue and expenses, one needs to have a precise accounting of revenue for each administration. Therefore, rationalizing the revenue distribution system in the railways was part of the government's reform agenda .

On January 1, 1980, the railways began to implement the so called "settlement price" method to distribute revenues among different administrations. Simply put, there are two essential elements in this method: First, the traffic for each administration is determined, which is equal to the actual traffic taking place in the administration, including the in-administration traffic and the part of through-administration traffic within the administration; second, a settlement price is determined by MOR for each administration, which is essentially cost-based and includes an allowed profit margin based on the average profit of the whole railways . Therefore, the final price is the product of the uniform price and the settlement price. In fact, this also turns out to be the de facto access price charged to the other administrations. More specifically, the total revenue of each administration is determined as follows:

· Revenue for passenger and freight traffic is based on the volume of traffic completed and the "settlement price" determined by MOR.

· Revenue from loading, unloading, and sending pass-through cars is based the actual output.