



REGULATION AND DEREGULATION IN THE JAPANESE RAIL INDUSTRY*

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Introduction

This paper summarizes regulation in the rail industry in Japan and the current deregulation situation since 1987. One important turning point in Japanese railway regulation policy was the privatization of the Japan National Railway (JNR) and its subdivision into 6 passenger JR companies and 1 nationwide freight JR company (see details in, for example, Mizutani and Nakamura 2004). In 1987, the Railway Business Law was enacted to regulate all kinds of rail organizations, and a decade later, in 1997, the ceiling price regulation was introduced. Although a yardstick competition scheme (or yardstick regulation) had been used for the assessment of 15 large private railways, a more systematic yardstick competition scheme was developed and expanded to apply to 6 JR companies and 10 public subway systems. In 2000, entry into the industry and pricing were largely deregulated. First, as for the entry regulation, the license system for entry was changed to a permission system. Second, whereas the demand-supply balance had been an important criterion in the regulation of entrance into the railway market, that criterion was abandoned. As for price deregulation, it became permissible for a rail operator to change rail fare freely simply by reporting changes to the regulator, as long as the fare change kept the price lower than the ceiling price.

Based on the structure of the regulation scheme mentioned above, I will explain several important points regarding regulation in the Japanese rail in-

dustry. The structure of this paper is as follows. First, I will explain the organization of the Japanese rail industry, focusing on the ownership type and the kind of railways. Second, I will summarize railway regulation, focusing on entry and exit regulation, fare regulation, track fee regulation and so on. Third, I will explain the competition situation, considering the competition for the market and in the market. Last, the yardstick competition scheme, an important characteristic of the Japanese approach to regulation, will be explained.

Organization of the Japanese rail industry

According to the Ministry of Land, Infrastructure and Transport, there were 199 organizations defined as rail operators, as of 1 October 2003 (Ministry of Land, Infrastructure and Transport 2003). Of these operators, heavy and light rail operators account for 163 operators, and the remaining 36 operators are comprised of monorails, automated guideway transit, cable cars and such.

Passenger rails in Japan are still very important and the share of rail transportation was 27 percent in terms of passenger-kilometers in 2000. On the other hand, the share of freight rail transportation was only 3.8 percent in terms of ton-kilometers in 2000. There are 150 passenger rail operations, but freight rail organizations account for only 13.

Based on Mizutani (1999), we can classify passenger rail operators in four ways: their legal classification, ownership, transport type and main service areas. There are three forms of legal classification in Japan: private corporations, special corporations and public organizations. Private corporations refer to organizations legally considered to be private companies. Private corporations are not always identical to fully privately owned organizations. Therefore, these organizations include companies for which part of the shares are held by the public sector. A public organization is usually a department of the government. These often are the departments of transportation of a local government, for example the Bureau of Transportation in the city of Kobe. A special corporation is

* Part of this paper was financially supported by research funds from the Ministry of Education, Culture, Sports, Science and Technology and the twenty-first century COE program (Research, Development and Education Center for Advanced Business Systems).

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an organization which is settled and regulated by special law (Uekusa 1991). For example, JRs which were established by the privatization of the Japan National Railway are considered special corporations because JRs are still controlled by the special JR law.

Second, as for ownership, there are three categories: private, public and private-public joint ownership. Most Japanese rail operators are privately owned. For example, 15 large private railways such as Tokyu and Seibu in Tokyo and Hankyu and Kintetsu in Osaka, which are widely considered the most efficient railway organizations, are all privately owned railway companies. Public ownership is limited to only 11 operators. Of these 11 publicly owned operators, 9 operators are subway systems such as Tokyo, Osaka and Nagoya. Although three JR companies – JR East, JR Central and JR West – have recently been fully privatized, the other four JRs have not been fully privatized, with most of their shares still being held by the government. Private-public jointly owned organizations comprise what is often called the third sector in Japan. These private-public jointly owned organizations are most often found in small communities.

The most common type of transportation in Japan is urban railways in large metropolitan areas, with the major 15 private railways being classified in this category. However, JRs have both urban and intercity rail services. The most famous bullet intercity rail, the Shinkansen system, is operated by JR companies.

Regulation

General regulations

The railway industry is highly regulated, just as other public utility industries, such as electricity, gas and water supply, are highly regulated. The Railway Business Law (Tetsudo Jigyoho) has applied to all rail companies since 1 April 1987, when the privatization of JNR was enacted. Before 1987, regulations for JNR differed from those for other railways: JNR was regulated by the Japan National Railway Law (Nihon Kokuyu Tetsudoho) and other railways, such as private railways and public subway systems, were regulated by the Local Railway Law (Chiho Tetsudoho). In addition to the Railway Business Law, there are over 150 laws directed at the industry and enforced by the Ministry of Land, Infrastructure and Transport.

Entry and exit regulations

With the revision of the Railway Business Law in 2000, it was no longer necessary to acquire a rail license before entering the rail market. According to the Railway Business Law (Article 3), if some organization is deemed qualified by the Ministry of Land, Infrastructure and Transport, then the organization can commence rail services. The regulatory change in 2000, therefore, was from a license system to a permission system.

Although the license system has been out of use since 2000, the rail business in Japan is classified into three categories based on the Railway Business Law (Article 2):

- 1) Class 1: enterprises that provide rail passenger and/or freight services while holding their own rail infrastructure;
- 2) Class 2: enterprises that provide rail passenger and/or freight services using rail infrastructure owned by another organization;
- 3) Class 3: enterprises that build rail infrastructure for sale to a class 1 enterprise, or an enterprise which owns infrastructure and rents it to a class 2 enterprise.

While in the European Union rail industry vertical (operation-infrastructure) separation is a common policy, in Japan vertical integration is the norm, with most railway organizations being class 1 enterprises. For example, JR companies such as JR East and JR West, large private railways such as Tokyu and Kintetsu, public subway systems such as Osaka's and Nagoya's, are all class 1 enterprises.

On the other hand, there are few class 2 and class 3 enterprises in Japan. A typical example of a class 2 enterprise is JR Freight. Since privatization, JR Freight has provided rail services by using the rail tracks owned by the six JR passenger companies. As for a class 3 enterprise, Kobe rapid transit railway (Kobe Kosoku) is an example. Although details regarding this organization can be found in Mizutani and Shoji (2004), this company owns rail track and rents it to four private operators, which are class 2 enterprises.

It is worth noting that it is possible for each rail organization to be classified into more than one category. For example, a private railway might have two kinds of rail classes (class 1 and class 2). Although in the case of its Kobe Kosoku line, the Hankyu railway organization is considered a class 2 enterprise be-

cause this line's tracks are owned by the Kobe Kosoku company, for most of its network Hankyu is a class 1 enterprise because it owns most of the rail tracks on which its trains operate.

Criteria for obtaining permission to operate a rail business are described in the Railway Business Law (Article 5). The Ministry of Land, Infrastructure and Transport gives a rail operator permission to provide rail services, if the following four criteria are met:

- 1) The plan is sound from a business point of view;
- 2) The plan is adequate from a safety point of view;
- 3) There are adequate operational plans in addition to the whole plan;
- 4) A potential entrant takes on financial and technological liability.

There are two main new points introduced by the entry regulation of 2000. First, as mentioned before, the license system became the permission system. Although these two systems seem similar, the basic policy has changed. The philosophy of the license system for the rail business was that entry to the market should be prohibited or limited to a very few companies. In contrast, the permission system theoretically grants potential entrance to any organization.

Second, controlling the balance between supply and demand was abolished as an entry criterion in 2000. Before 2000, two criteria related to this item were written in the old Railway Business Law:

- 1) It must be determined that demand for railway service is sufficient;
- 2) There should be no imbalance between supply and demand for rail service when a potential entrant enters the market.

Since the old Railway Business Law was enacted in 1987, there has been some criticism of the criteria, particularly of the supply-demand controlling regulation, which provided no description of the specific conditions necessary to obtain a rail license, such as the minimum demand level and the degree of demand-supply imbalance. The vague and unclear criteria often overprotected incumbent operators. These criteria were abolished because of their effect in deterring competition.

There is no limit to the duration of the permission. Once a rail operator is allowed to operate the rail service, then it is fully responsible for providing rail services, except in cases in which permission is cancelled due to negligence and when the operator exits.

Exit regulations were also lightened after deregulation. The new regulation requires only notification to the Ministry of Land, Infrastructure and Transport one year ahead of terminating the rail services based on the Railway Business Law (Article 28.1). The old regulation required approval from the Ministry of Transport in order for an operator to cease supplying service. This law stipulated that the exit of rail service providers would be allowed if such closure did not damage public interest. This vague description seemed to allow an easy exit for railway service providers, but in fact it was very difficult for railways to go out of business (Saito 1993).

Fare regulations

The full cost principle is generally applied in the rail industry in Japan. The current regulatory reform in the railway industry has resulted in the introduction of a ceiling price system and a new yardstick competition scheme following the full cost principle which is applied to passenger rail fare (Okabe 2004).

There are five important points regarding fare regulation based on the Railway Business Law (Article 16). First, the ceiling price of rail fare must be approved by the Ministry of Land, Infrastructure and Transport. Second, as mentioned before, because the Japanese railway industry is based upon the full cost principle, the rail fare should cover rail costs including the operator's profits. Generally rail operators are expected not to receive subsidies. Third, as for changes in rail fare, if the rail fare is within the ceiling price, the operator needs only to report the change to the Ministry. Fourth, operators need only to report to the Ministry, when the operators set up new rail fares, such as for express service. Last, if the rail fare increase can be shown to discriminate against some group and/or the fare causes unfair competition with other railways, the Ministry can order the fare to be revised.

The actual application of the ceiling price of the rail fare began in 1997 but was not introduced as a regulation until 2000. Therefore, since 2000, changes in rail fares within the ceiling have become easier because rail operators need not obtain approval from the Ministry.

Rail track fee regulations

In Japan, there are few rail infrastructure providers (class 3 organizations), so that regulations regarding rail track fees are rather general. For example, the

Rail Business Law (Article 15) rules only that class 1 or class 3 organizations must receive approval of their rail track fees from the Ministry of Land, Infrastructure and Transport. The law does not regulate how much the rail operator pays to the track holding organization, but does require that track fees and conditions of usage be approved by the Ministry.

There are no specific criteria for the assessment of rail track fees. The Enforcement Regulation of the Railway Business Law (Tetsudo Jigyo Shiko Kisoku, Article 30), however, requires the provider to submit documents to be evaluated by the Ministry of Land, Infrastructure and Transport, detailing how the rail track fee is calculated.

There is no single method for establishing rail track fees in Japan. As for JR Freight, the avoidable cost principle is used. But in general, because rail track fees are set up to cover the provider's cost, the Ministry of Land Infrastructure and Transport will consider whether or not the cost is reasonable.

Other regulations

In Japan private railway operators play a vital role. Therefore, service characteristics and non-rail services are important for private rail operators. First, although service characteristics are regulated by the Railway Commercial Law (Tetsudo Eigyoho) and the Regulation for Railway Transport (Tetsudo Unyu Kisoku), the descriptions in these codes are very general. Generally, more concrete rail operation matters such as train schedules can be determined by a railway operator.

Second, Japanese private railways have long been allowed to operate non-rail business as well as rail business. Many private rail companies operate real estate development, retail ventures such as department stores, and other transportation business such as bus and taxi services. However, railway business and non-rail business are strictly separated by Railway Accounting Regulations (Tetsudo Kaikei Kisoku). A railway company is forbidden to allocate rail and non-rail cost at its own discretion, but must follow regulations which describe in detail how to allocate the costs of common facilities and administration. Therefore, it is possible to capture an externality, such as the effect of housing development along rail lines, but an intentional cross-subsidy strategy is avoided, whereby a rail company charges high rail fares and transfers costs from the non-rail service, and vice versa.

Competition for the market and in the market

Although the license system changed to the permission system for the entry regulation in 2000, there seems to be almost no competition for the rail market because the duration of the effective term of the permission is not stipulated. The system seems based on the concept of traditional monopoly regulation. When the authority gives permission, the authority gives monopolistic rail service to a railway operator while regulating rail fare and service standards to protect rail users from the hazards of a real monopoly. Because the Railway Business Law rules that the transportation committee appointed by the Ministry of Land, Infrastructure and Transport should hear the opinions from the related railway companies and persons when the new railway plan is being considered, there is almost no direct competition for the market.

There are advantages and disadvantages to this system. The advantage of this system is that a rail operator can concentrate on providing better services in the long run, because it protects incumbent rail enterprises from potential entrants as long as incumbents' services are not terribly bad. Although there is no direct competition with potential rail entrants, there is always competition with other transportation modes such as the private automobile. Furthermore, as private railway companies develop areas along rail lines and stations by building housing and operating department stores, they have incentives to provide better services to attract potential rail passengers.

On the other hand, the efficiency of incumbent rail operators may suffer due to a less competitive situation. Rail operators in large metropolitan areas might become particularly complacent because commuter services to large central cities from suburbs are dominated by rail transportation. In order to avoid the inefficiency due to a monopolistic situation, a yardstick competition scheme has been introduced which will be discussed later in this article.

There is almost no competition in the market, which would mean several rail operators competing along the same track. As explained earlier, most rail operators are class 1 operators providing rail services along their own tracks. Of course, there are cases in which a rail company runs trains on a different rail company's tracks. However, most of these are due to the cooperation of two organizations whose best interest is to provide more convenient services for rail users, such as direct train services from suburb-to-suburb through central cities.

Yardstick competition

One important point about the Japanese rail industry is that the Ministry of Land, Infrastructure and Transport uses a yardstick competition scheme to increase efficiency among existing railway companies. Yardstick competition is seen as competition among rail operators operating in different markets. In this scheme, a regulator sets up several performance measures such as operating cost and evaluates rail operators' performance.

In Japan this scheme has been applied to fare revision in 15 large private railways since 1970s. For example, if a rail operator is inferior to other operators, then as a penalty the Ministry does not approve the fare level desired by the operator. On the other hand, if an operator's performance is better than that of others, then the fare level is approved without revision. Thus any monopolistic behavior due to the licensing system can be counterbalanced to some degree by this scheme.

However, there are two issues to consider with respect to yardstick competition. The first is the question of how effective the yardstick competition scheme is. Although the scheme does not bring about a situation of perfect competition, some kind of competition seems to exist. In fact, Mizutani's (1997) results, based upon Japanese railways' data set, have shown that yardstick competition among large private railways works to some degree. The second issue is related to the number of rail operators involved. The yardstick competition scheme had not been applied to public railways and small private railways until 1997, when the Ministry of Land, Infrastructure and Transport revised the scheme into a more sophisticated tool, making it possible to apply the scheme to three different groups: 15 large private railways, 6 passenger JRs and 10 public subway systems (Okabe 1997, 2004).

In yardstick competition schemes, five measures related to operating cost are used: 1) track costs, 2) catenary costs, 3) rolling stock costs, 4) train operating costs, 5) station operating costs. The standard costs for these five measures are obtained by the following procedure. First, by using data set of each railway, the unit cost for five costs are obtained. The unit cost is defined as the cost divided by appropriate numbers of facilities (e.g. the track cost per track length, the station costs per station). Second, by using these five unit costs as dependent variables, regression analysis is applied. Several variables related to

each cost such as train-kilometers per route-kilometers and numbers of passengers per station are used as explanatory variables. Third, by substituting each rail company's value of explanatory variable into the regression result, the standard unit cost of each rail company is calculated. Next, by multiplying the standard unit cost by each rail company's number of facilities, the standard cost of each category is obtained. Finally, by comparing the actual cost of each rail company with the standard cost of each rail company, the performance of each rail company is evaluated.

The yardstick competition scheme uses an incentive system for rail operators. For the less efficient rail operator, whose actual costs are higher than the standard costs, the reasonable costs for the fare level are the same as the standard costs. Therefore, in the next period, the rail operator is expected to reduce the actual costs to the level of the standard costs. On the other hand, for the more efficient rail operator, whose actual costs are lower than the standard costs, reasonable costs for the fare level are set at half the sum of the actual costs and the standard costs. Therefore, half of the difference between the actual costs and the standard costs is awarded to the efficient rail operator as a reward.

Concluding remarks

The following are characteristics of the Japanese rail industry:

- 1) Railways are privately owned except for nine public subway systems;
- 2) Operation-infrastructure connection is vertically integrated;
- 3) Entry regulation is based on a permission system;
- 4) Price is calculated by the full cost principle including capital costs;
- 5) Price regulations are based on an approval system for the ceiling price and a reporting system within the ceiling price;
- 6) There is almost no competition for the market;
- 7) There is almost no competition in the market for sharing tracks;
- 8) A yardstick competition scheme is applied for three railway groups (large private, JRs and subway systems).

References

Ministry of Land, Infrastructure and Transport (2003), *Rail Statistics 2003 (Suji de Miru Tetsudo 2003)*, Unyu Seisaku Kenkyu Kiko, Tokyo, Japan.

Mizutani, F. (1997), "Empirical Analysis of Yardstick Competition in the Japanese Rail Industry", *International Journal of Transport Economics* 24(3), 367–92.

Mizutani, F. (1999), "Changing Trains: Japan", in D. M. van de Velde, ed., *Changing Trains: Railway Reform and the Role of Competition: The Experience of Six Countries*, Ashgate, Aldershot.

Mizutani, F. (2004), "Privately Owned Railway' Cost Function, Organization Size and Ownership", *Journal of Regulatory Economics* 25(3), 297–322.

Mizutani, F. and K. Nakamura (2004), "The Japanese Experience with Railway Restructuring", in T. Ito and A. O. Krueger, eds., *Governance, Regulation and Privatization*, University of Chicago Press, Chicago, 305–36.

Mizutani, F. and K. Shoji (2004), "Operation and Infrastructure Separation: The Case of Kobe Rapid Transit Railway", *Transport Policy* 11(3), 251–63.

Okabe, M. (1997), "New Passenger Railway Fare System: Outline and Features (Atarashii Ryokiyaku Tetsudo Unchin Seido: Gaiyo to Tokushoku)", *Transportation and Economy (Unyu to Keizai)* 57(5), 12–23 (in Japanese).

Okabe, M. (2004), "New Passenger Railway Fares", *Japan Railway and Transport Review* 37, 4–15.

Saito, T. (1993), *Private Rail Industry: Development of Japanese Style Railway Management (Shūtetsu Sangyo: Nihongata Tetsudo Keiei no Tenkai)*, Koyo Shobo, Kyoto (in Japanese).

Uekusa, M. (1991), *Economics of Public Regulation (Koteki Kisei no Keizaigaku)*, Chikuma Syobo, Tokyo (in Japanese).