

National Railway Reform in Japan and the EU: Evaluation of Institutional Changes

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The Japanese railway privatization of 1987 split Japan National Railways (JNR) into six private regional passenger companies (the JRs), a nationwide freight carrier (JR Freight) and several other related businesses in telecommunications, etc., to become a model for railway reforms in other countries. However, different reform targets led to major differences in institutional changes of (former) national railway companies in Japan and the contemporary fifteen EU Member States. Therefore, this article examines the differences in these institutional changes to the structure of the national railway companies and investigates the effect of the reforms on the companies' potential to become more efficient.

The first part of the article provides an overview of the similarities and differences in railway reform targets and related measures. To measure the direct impact on (formerly) state-owned railways, the level of privatization—represented by the present status of the legal independence—and separation methods are examined. Furthermore, opening of the network to third parties and fees for use of infrastructure are analyzed as examples of measures with a direct impact on market entry by third-party railway operators. Third-party railway operators means any railway operator in the market or entering the market, excluding former national railway companies. The last part of the article examines the institutional changes resulting from these four measures with regard to how far these changes can lead to an increase in the efficiency potential of railway companies.

Objectives and Effects of Reform Measures

Before the reforms, almost all national railways were considered to be political instruments subject to state protection

and interventions. Politically directed decision-making was a major factor in the negative economic performance of national railways.¹ In such an environment, national railways in Japan and the EU suffered from similar economic problems like low productivity and efficiency, high labour costs, low shares of passenger and/or freight transport markets, high liabilities, and massive long-term debts. Consequently, similar railway reform measures were proposed for organizational and economic restructuring of national railways in Japan and the EU. The main objectives were to increase efficiency, reconstruct finances, strengthen competitiveness, and decrease liabilities and long-term debts.² Some Member States took individual measures to restructure the organization and economics of their national railways before implementation of the EU Directive 91/440/EEC on development of the community's railways. However, in addition to restructuring national railways, the other objectives of the EU reforms included restructuring of national transport markets and opening of the network to third parties in order to create a single transport market for all 15 Member States. Therefore, EU Directive 91/440/EEC includes market-oriented measures like ensuring access for international groupings consisting of EU railway companies to the Member States' railway network.³ The aim was to achieve free competition between all railway companies because the European Court of Justice ruled in 1985 that free competition laws also apply to the transport market.^{4,5} The directive does not mention improving competitiveness as a direct objective but measures like vertical separation do support competition between railway companies.⁶

On the other hand, in Japan, there was neither a plan for a general opening of the railway network to third parties nor

for a liberalization of the transport market with intramodal competition. The six new vertically integrated regional passenger JRs dominate the long-distance passenger railway market. Strengthening competitiveness between private railways is only a target for the short-distance transport market due to the existence of private parallel tracks in urban areas. The relevant legislation was changed to put the new JRs on a more level playing field with the private railways and create more opportunities for the JRs.⁷ However, direct competition between the six JRs is still excluded, and only yardstick competition is allowed as indirect competition because ruinous competition has to be avoided.⁸

As a result, the differences in the Japanese and European reform targets are clearly evident in the market-oriented reform targets. However, fee setting and network opening is also being introduced in Japan to some extent.

Evaluation of Reforms of Former National Railways

Legal independence

Privatization and introduction of market competition are commonly seen as good ways to achieve higher efficiency in railway transport. The degree of privatization actually shows how far a state is willing to reduce its influence on a (former) national railway.⁹ As shown in Figure 1, there are several stages of privatization connected to several levels of legal independence of railway companies. In formal privatization, the public enterprise changes its legal form to private but all shares are held by the state. By contrast, real privatization changes the ownership from public to private with 100% of the shares held privately.⁹

In Japan, the 1986 Japan National Railways Reform Law (*Nihon kokuyu tetsudo kaikaku ho*) provided the basic

framework for JNR privatization, while the 1986 Passenger Railway Companies and Japan Freight Railway Company Law (*Ryokuyaku tetsudo kabushikikaisha oyobi nihon kamotsu tetsudo kabushikikaisha ni kansuru ho*) regulated the establishment of the six passenger JRs and JR Freight. Although these companies now face much less state intervention than the former JNR, the Ministry of Land, Infrastructure and Transport (MLIT) must still approve the appointment of company directors and corporate plans.¹⁰

Article 4 of EU Directive 91/440/EEC and also its amended version in Directive 2001/12/EC stipulates that, 'Member States shall take the measures necessary to ensure that as regards management, administration and internal control over administrative, economic and accounting matters railway undertakings have independent status in accordance with which they will hold...assets, budgets and accounts which are separate from those of the State.'²⁶ Interestingly, this directive does not direct Member States to privatize their national railway companies. However, Article 5 stipulates that, 'Railway undertakings (have to) adjust their activities to the market and...manage those activities under the responsibility of their management bodies, in the interests of providing efficient and appropriate services at the lowest possible cost for the quality of service required.' is easier to achieve if railways are privatized.¹¹ Table 1 lists the legal independence of railway companies where 1 is the lowest level and 5 is the highest. The UK's Train Operating Companies (TOCs) reach the highest level because they are private railway companies. They are followed by JR East, JR Central, and JR West as the JRs that are most privatized. The other JRs are still 100% state owned, showing that the target of full privatization has not been achieved yet. In the EU, most national railways remain state-owned

companies and even most of those railways that *have* been transformed into joint-stock companies are state owned.¹² The relatively low level of legal independence of most national railways in the EU is explained by the fact that privatization is an optional reform measure.¹³ Therefore, fully privatized railway companies are the exception in the EU, whereas in Japan, although the privatization is delayed by recession, three out of six passenger companies are now in private hands. However, it is also a fact, that privatization of national

railways alone does not necessarily lead to more efficient railways. Introduction of market competition is at least as important, especially when the national railway is a monopolist. In this sense, the introduction of competition is even more important to increase efficiency than privatization.¹⁴

Separation methods

Vertical separation is an indispensable precondition for allowing third-party railways non-discriminative entry to the market. Therefore, the scope and kind

Figure 1 Stages of Privatization⁹

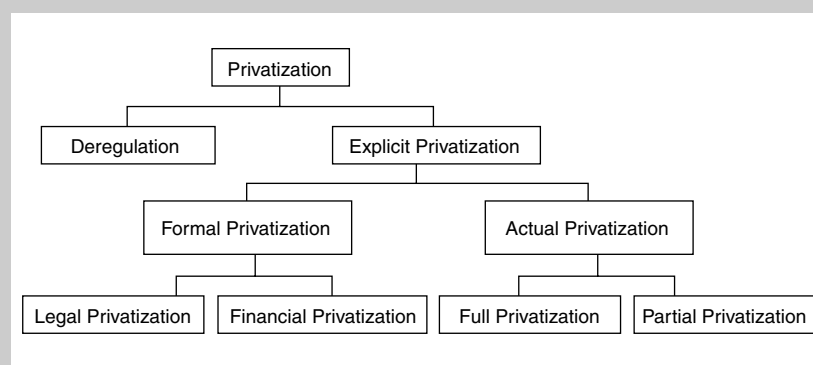


Table 1 Classification of Railway Companies based on Levels of Legal Independence^{7, 8, 12, 19}

Levels	Railway Companies
Level-1: State-owned companies without commercial statutes	None
Level-2: State-owned companies with commercial statutes	CFL, CIE, CP, DSB, ÖBB, OSE, RENFE, SNCB, SNCF
Level-3: Joint-stock companies, majority state owned	JR Freight, JR Hokkaido, JR Shikoku, JR Kyushu, DB AG, FS, NS, SJ, VR
Level-4: Joint-stock companies, majority privately owned	JR East, JR Central, JR West
Level-5: Fully privately owned joint-stock companies	TOCs

CFL = Luxembourg Railways, CIE = Irish Railways, CP = Portuguese Railways, DB AG = German Railways, DSB = Danish State Railways, FS = Italian Railways, NS = Netherlands Railways, ÖBB = Austrian Federal Railways, OSE = Hellenic Railways Organisation, RENFE = Spanish National Railways, SJ = Swedish State Railways, SNCB = Belgian Railways, SNCF = French National Railways, TOC = Train Operating Companies, VR = Finnish Railways

of separation (or integration) is a good indicator of market competition. In Japan and the EU, we can distinguish between vertical separation and vertical integration. Vertically separated railways overcome the problems generated by the fact that infrastructure costs are large sunk costs and by natural monopoly.¹³ Conditions for operators allow both potential and actual competition. This type of organization promotes efficiency and meets market needs, but makes timetabling, slot allocation and planning difficult. On the other hand, vertically integrated railways are production-oriented and offer the possibility of horizontal separation into regional monopolies.¹³ However, since they are unresponsive to market demands for services, vertical integration is also a substantial barrier to competition.¹³ As a result, the specific advantages of one type of organization type are equal to the disadvantages of the other.

Passenger transport on the JRs was divided regionally on the basis of the two previously mentioned laws; the regions are defined on the basis of the different regional transport needs and are determined so that 95% of all passenger journeys start and end within a region. In the case of freight transport, JNR's weakness in intermodal competition and nearly non-existent intramodal competition was taken into account in separating freight from passenger transport and creating the single nationwide JR Freight Company that pays track fees to the passenger companies. JR Freight is the only JR company with vertical separation, whereas the passenger companies are vertically integrated corporations.¹⁰ The intention was to free JR Freight from the heavy financial burden of infrastructure rather than to increase competition.¹⁵ If there was any concept of competition in the decision to separate JR Freight vertically, it is found in the intermodal competition

with trucks. However, since JR Freight is restricted to using free time slots on JR passenger tracks especially in busy metropolitan areas, it is at a severe competitive disadvantage compared to truck transport. The 1986 Railway Business Law (*Tetsudo jigyo ho*) distinguishes three categories of railway business—category-1 companies providing passenger and/or freight transport using own infrastructure (six passenger JRs); category-2 companies providing passenger and/or freight transport on infrastructure of another company (implying that vertically separated companies such as JR Freight can enter transport market);¹⁶ and category-3 companies building and selling infrastructure to category-1 companies, or leasing infrastructure to category-2 companies.

In the EU, the minimum requirement of EU Directive 91/440/EEC is separation of accounts of operations and infrastructure by organizing separate divisions within a single undertaking or 'the infrastructure shall be managed by a separate entity.'¹⁷ Cross subsidy between operations and infrastructure is forbidden. The target of separation had its origins in the desire to enhance competitiveness of international rail freight compared to road freight rather than passenger operations.¹⁸ As a consequence, even international

cooperation is still the exception in passenger transport.

The different methods of separation chosen by Japan and the EU cannot be assessed by direct comparison, because the choice of one or other method depends greatly on the state's political intent and target for market development. Clearly the regional separation and vertical integration of the JR passenger companies has helped them compete with private railways.

In the EU, the vertical separation seems to be a viable way to offer third-party railway operators discrimination-free access to the established network in order to create a single market. Therefore, full vertical integration (3a) and full vertical separation (3b), are classified at the same level. Further separation stages can be shown only for EU railways in level-1b and -2b (Table 2).

All JR passenger companies are level-3a, whereas JR Freight reaches level-3b as a fully vertically separated entity. In the EU, six out of 15 (former) national railways just satisfy the minimum requirements because they are under no obligation to separate operations and infrastructure completely. Furthermore, although Deutsche Bahn AG (DB AG), Nederlands Spoorwegen (NS), and Italian Railways (FS) have separated operations and infrastructure, they remain under the

Table 2 Classification of Railway Companies based on Levels of Separation Methods^{7, 11, 12, 19}

Levels	Railway Companies
Level-1b: Integrated companies with accounting separation	CFL, CIE, ÖBB, OSE, RENFE, SNCB
Level-2b: Vertical separation of infrastructure and operation under public shareholder holding company	DB AG, FS, NS
Level-3a: Integrated companies with regional separation	JR East, JR Central, JR West, JR Hokkaido, JR Shikoku, JR Kyushu
Level-3b: Fully vertically separated entities	JR Freight, CP, TOCs, DSB, SJ, VR, SNCF

umbrella of publicly owned holding companies, so they are classified as level-2b.¹⁹ The railway companies have been vertically separated completely in Denmark, Finland, France, Portugal, Sweden and the UK. The French National Railways (SNCF) is also in this group with the infrastructure held by Réseau Ferré de France (RFF), a supposedly separate company but with almost no real freedom from SNCF. RFF has taken over SNCF's debts, but has no function to allocate track usage between SNCF and third-party railways.²⁰ Therefore, SNCF is defined as level-1 in evaluation of efficiency potential.

Evaluation of Third-party Access Reforms

Network opening

Measures like opening up the network and setting usage fee are more closely evaluated because of their direct impact on the market entry and development of third-party railways. In the EU, it was necessary to open the market for third parties to build a single market. In Japan, there was no such aim but there exists a basic option to open the network to third parties, as shown in the legal definition of types of licenses given to railway companies. At least in short-distance passenger transport, there are other private passenger railway companies, which, besides owning their own network, also lease JR passenger companies' tracks.

In the EU, Article 10 of EU Directive 91/440/EEC in its amended version in Directive 2001/12/EC of 26 February 2001 still covers international groupings for freight and passenger transport, combined transport, and access between Member States on equitable conditions and states, 'International groupings shall be granted access and transit rights in the Member States of establishment of their constituent railway undertakings, as well

as transit rights in other Member States for international service between the Member States where the undertakings constituting the said groupings are established.' Furthermore, railway undertakings established in a Member State, with exception of undertakings limited to solely urban or regional services, 'shall be granted access on equitable conditions to the infrastructure in the other Member States for the purpose of operating international combined transport goods services.'²⁶ However, although the amendments in Directive 2001/12/EC give more precise description concerning conditions of access to the Trans-European Rail Freight Network, the directive remains very general for accessibility of national markets for domestic and passenger transport. This leaves too much room for different interpretations by each Member State concerning the decision on access modalities, and permits the establishment of unequal opportunities and discrimination towards railway companies of other Member States to an excessive extent.²¹

Three levels of network opening can be distinguished. Level-1 represents the lowest category with no access opportunity for third parties. Level-2 regulates third-party access. Level-3

provides access to third-party railways licensed in the said country or in other Member States.¹² For EU railways, the analysis focuses on the infrastructure entity if such entity exists after full separation (Table 3). Austrian Federal Railways (ÖBB), Deutsche Bahn Netz (DB Netz AG) and Luxembourg National Railways (CFL) are in level-3 because they have opened their networks to licensed railway operators in their countries. Swedish National Rail Administration (BV), Railtrack (for UK freight transport), Danish National Railway Agency (BS), and Railned are level-2 because they have opened their networks to licensed railway operators in other Member States. All other EU railways with limited access are in level-2.

Opening of the rail network to third parties remains an exception in Japan, because it was feared that any further increase in existing competition between the JR passenger companies and private railways would threaten business stability.¹⁰ However, since some private railway companies like Noto Railway, Tokai Transport, Sagano Scenic Railway and Ibara Railway use the JR's network, the JR's are classified as level-3. There is no completely closed railway network in Japan or the EU.

Regarding the minimum levels of network

Table 3 Classification of Railway Companies based on Levels of Network Opening^{7, 11, 12}

Levels	Railway Companies
Level-1: No network opening	None
Level-2: Restricted network opening (by EU Directive 91/440/EEC or others)	CIE, OSE, Railtrack (Passenger), REFER ⁽¹⁾ , RENFE, RFF, RHK ⁽²⁾ , SNCB
Level-3: Access for railways with/without license in this country	JR East, JR Hokkaido, JR Shikoku, JR Kyushu, JR Central, JR West With license in this country: CFL, DB Netz AG, FS, ÖBB, Railned Also with license of another country: Banestyrelsen, Banverket, Railtrack (Freight)

(1) REFER= Portuguese National Rail Administration, (2) RHK= Finnish Rail Administration

opening stipulated by the EU directives, there is only open access for international groupings for long-distance passenger transport like *Eurostar*, *Thalys* or *Talgo*. Furthermore, high rolling-stock investment costs, short license periods and other economic reasons make market entrance difficult for newcomer railways.²² On the other hand, protectionist measures for national railways in some Member States lead to the result only the UK, Sweden and Germany allow genuine competition between third-party railways and former national railways in the short- and long-distance passenger markets.²¹ Moreover, some Member States, such as France, support cooperation between EU railway companies. Even if open access rights are granted to national markets in EU Member States, cooperation might still become more common than competition.

Setting infrastructure usage fees

A consequence of opening networks to third parties is the necessity to set infrastructure usage fees in the EU and to some extent in Japan.

The procedures for setting infrastructure usage fees in Japan stipulated in Article 15 of the 1986 Railway Business Law determine that category-1 and -3 companies owning infrastructure open their networks to category-2 railway businesses with usage fees negotiated between the track owner and the category-2 businesses. The fees are not regulated but must be approved by the MLIT. The infrastructure fees paid by JR Freight are calculated on the basis of avoidable costs, meaning the costs that the JR passenger companies would avoid if there were no freight operations on their tracks. The calculation actually reflects the variable costs of track and signal maintenance due to wear and tear caused by freight operations, power usage, etc., but excludes fixed costs for track

maintenance and variable costs for maintenance of other structures like tunnels and bridges. As a result, the usage fees vary with the freight volume.⁸ However, since opening of the network was not the main objective, the fee-setting method remains vague and the World Bank reports that payments by JR Freight remain far below the real costs, suggesting hidden cross-subsidy of JR Freight by the JR passenger companies.¹⁴ Articles 7 and 8 of EU Directive 95/19/EC set out the general rules for determining non-discriminatory infrastructure usage fees as follows, 'There shall be no discrimination in the charging for services of an equivalent nature in the same market' and 'Fees charged by the infrastructure manager shall be fixed according to the nature of the service, the time of the service, the market situation and the type and degree of wear and tear of the infrastructure.'¹⁷ However, even in this case, the fee-setting methods differ between each Member State because the details are not transparent and each state is responsible for incorporating the rules into national law. Clearly neither Japan nor the EU has detailed regulations governing usage fees and the methods vary between infrastructure. Therefore, this comparison focuses on the body that

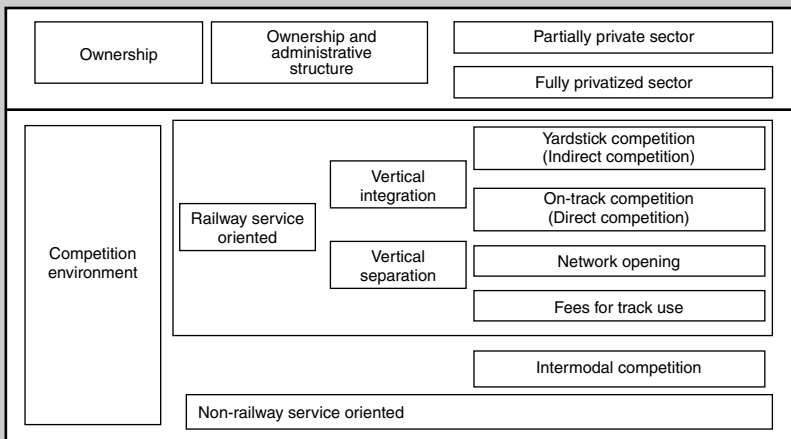
sets the fee to demonstrate how much control the state exerts over market competition. From the privatization and independence viewpoint, the highest level of freedom is when a company can freely set the fees for using its infrastructure. However, since the fees must be non-discriminatory, an anti-trust authority is required to regulate the fees because the former monopolist has a natural interest in keeping competitors out of the market and out of its network and might be tempted to set high fees. However, if non-discriminatory fees can be assured, in a completely free market, the best body for setting fees should be the infrastructure owner. Table 4 shows the categories of fee-setting bodies with the latter type classified as level-4 (highest) and the former type as level-1 (lowest). No regulations have been implemented so far for railways in Greece, Ireland and Luxembourg, so their railway companies are in level-1. In most EU Member States, a state regulator sets the fees; only Railtrack and DB AG set the fees themselves and then receive approval by the state. German law leaves it to the negotiating parties to agree on the fees and if agreement cannot be reached, the Federal Railway Office (EBA) is called upon to arbitrate. The EBA may also be

Table 4 Classification based on Levels of Fee-setting Bodies^{7, 11, 15}

Levels	Railway Companies
Level-1: No regulation for setting fees	Not implemented for OSE, CIE, CFL
Level-2: Fees laid down in law or through government (under investigation/ in use)	Ministries of Transport in Denmark and Spain, governments of Sweden and Portugal, Ministry of Transport/RIB ⁽¹⁾ in Netherlands, Ministry of Transport/RHK in Switzerland
Level-3: Fees set by infrastructure body (authority) and decided by government	SCHIG ⁽²⁾ /ÖBB in Austria, FS Infra/ Ministry of Transport SNCB, RFF
Level-4: Fees set by (private) infrastructure companies and approved by ministries	DB Netz AG, Railtrack, JR East, JR Central, JR West, JR Hokkaido, JR Shikoku, JR Kyushu

(1) RIB=Railinfra-beheer, (2) SCHIG= Federal Ministry of Transport, Innovation and Technology

Figure 2 Ownership and Competition Factors¹⁰



asked to arbitrate when a track users find the fees to be discriminatory.²³ In the UK, Railtrack proposes charging rules and the Office of the Rail Regulator (ORR) approves them. Railtrack's income is derived by charging TOCs track usage fees.²⁴ In Japan, fees are approved by the MLIT after negotiations between the JR company owning the infrastructure and the track user. Companies using these advanced and liberal methods in the EU and Japan are classified as level-4.

Evaluation of Results of Changes

Based on previous studies,¹⁰ ownership and competition are the most important aspects influencing the efficiency of railway companies and full privatization is indispensable to increase efficiency.⁹ Figure 2 shows the framework of the evaluation of the efficiency potential of railway companies in Japan and the EU. In the case of partial privatization, there is still a high chance of strong political interference, while in the case of complete privatization, the company targets are only profit and efficiency oriented. Since the pressure from shareholders for good results is much higher than the effect of

political interference on increased efficiency, it is true that higher levels of privatization offer higher chances of increased efficiency.

Competition can be divided into railway business and non-railway business competition. Although non-railway businesses like department stores and real estate are important also for internal cross

subsidy, this article focuses on competition in the railway business.

The different methods of separation in Japan and the EU have some impact on the competition environment. For example, as mentioned earlier, vertical integration can restrict competition. However, the negative effects of vertical integration on competition are neutralized and compensated for in the JRs by direct competition with private railway companies on parallel tracks and by indirect competition with other JRs through yardstick competition.^{9, 10} On-track competition based on network-opening measures, or the existence of parallel private lines and fee setting have a direct impact on intramodal competition. Intermodal competition is also a known factor but is not described here.

The fee-setting environment can create discrimination between competitors for market entry. Discrimination occurs when a company's vertical separation is incomplete or the separation is only financial and the company has a market monopoly. Furthermore, fee setting can

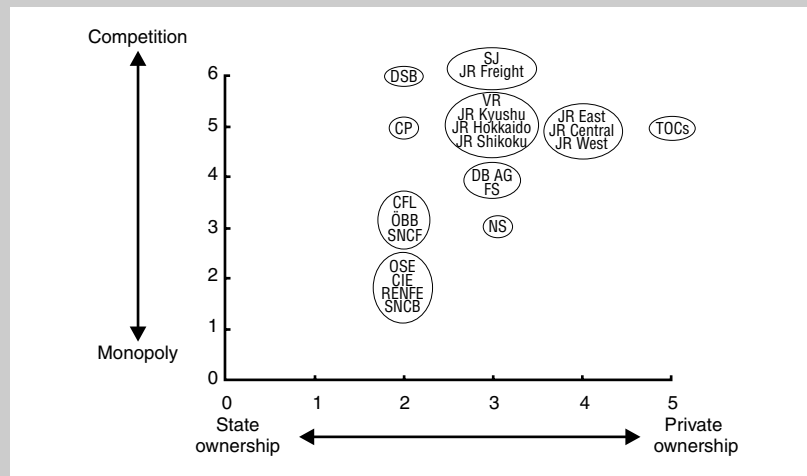


The Keihin Tohoku Line is a JR East suburban service in competition with the private Keihin Electric Express Railway and Tokyu Corporation between Tokyo and Yokohama. (JR East)

Table 5 Definition of Relevant Competition Factors

Ownership	Levels
Vertical integration and vertical separation	Categories of separation methods, levels 1–3
Network opening, open access	Network opening, levels 1–3
Impact of fee setting on competition, considering factors with discrimination potential	Incomplete or only financial vertical separation: - 1 Railway companies with public holding company or no/only organizational vertical separation: - 1 No fee-setting methods: - 1 Evaluation of others: 0

Figure 3 Efficiency Potential of Railway Companies in Japan and the EU



be discriminatory if railway companies remain under a public holding company, or are only vertically separated, or if there is no fee-setting method. In each of these three cases, the company is classified as -1 for use of incomplete fee setting rules that may be discriminatory. All other cases are valued as null.¹⁷ These and the other evaluation criteria including the point system for evaluating the results of each railway company are shown in Table 5.

Ownership is evaluated by the five categories of legal independence. The

competition environment is evaluated according to the three categories of separation and of network opening.

The results in Figure 3 consider the impact of the separation method, network opening and fee setting on the market competition as well as the impact of privatization on the railway's potential efficiency. It is assumed that efficiency increases as company ownership moves from public towards private and as market structure moves from monopolistic towards competitive.¹⁰ The higher the result, the higher the efficiency

potential of the railway company. The railway companies are evaluated by their level of legal independence to define their position on the x-line and by the results of calculations based on definition of the point system given in Table 5. In the EU, the UK TOCs have reached the highest level in private ownership and the competition environment, followed by Swedish Railways (Sweden), VR (Finland), DB AG, FS and NS.

They share these positive results with the JR that have reached a high level of private ownership as well as a high level of competition thanks to the competitive situation with private railways and the yardstick competition. However, although the results are very homogenous for the JRs, Figure 3 shows some differences in development for EU railways. A high potential for efficiency based on a high level of legal independence and introduction of a competitive environment has been achieved in only half the EU Member States so far.

Conclusions and Remaining Problems

The investigation of four measures with direct impact on former national railways or third-party railways has shown a lot of varying results—not only between Japan and the EU—but also inside the EU, despite common-policy targets focused on creating a single transport market and support for railway transport. Although EU directives establish the minimum requirements for reaching the main targets, each Member State has its own implementation scope. Only a few Member States go beyond the minimum requirements for vertical separation of infrastructure and operations. Restrictions on network opening and difficulties in introducing non-discriminatory methods for setting fees by the former monopolist (the national

railway company) are some of the main problems for new market entrants and full liberalization of the EU market. Therefore, it will be very difficult to achieve the target of creating a common market with equal chances for all railway companies.

In Japan, private ownership of railways is well developed but only four out of seven JR railway companies are formally privatized and the other three companies are still waiting to fully complete the ownership change. Although liberalization of the transport market was not planned and increased competition was not deliberately supported by vertical separation, the JRs competitiveness with private railways in the urban transport market has improved. The problem of non-discriminatory network opening has not yet been resolved either in the EU or Japan.

In terms of efficiency potentials, since the JNR reforms did not focus on market opening measures due to the existing competition, it was sufficient to focus on internal restructuring to create larger efficiency potentials. Instead, in the EU, despite the market-oriented measures, only half of EU national railways could reach a level of efficiency potential equivalent to the JRs. However, fee setting and network opening might become more important in Japan, because the smaller-island JRs (JR Hokkaido, JR Kyushu, and JR Shikoku) are still fully state-owned joint-stock companies with financial problems. Vertical separation might be a way to free them from the burden of infrastructure costs. These smaller JRs could function as operators with another company or the state managing the infrastructure. In intermodal competition, more state regulation will be needed because the market structure does not provide equal opportunity to all transport modes. In this respect, improvements to regulation might be necessary both in the EU and in Japan. ■

References

1. G. Aberle, *Transportwirtschaft. Einzelwirtschaftliche und Gesamtwirtschaftliche Grundlagen* (Transport economy—Single economic and national economic elements), München, Wien, R. Oldenbourg Verlag, 1997.
2. S. Schwede, *Die Privatisierung der Japanese National Railways (JNR). Eine Analyse auf der Grundlage der ökonomischen Theorie der Politik* (Privatization of Japanese National Railways (JNR). An analysis on the basis of the economic theory of policy), *Beiträge aus dem Institut für Verkehrswissenschaft an der Universität Münster* (Essays of the Institute for Transport Science at the University of Münster), Heft 141, Göttingen, Vandenhoeck & Ruprecht, 1996.
3. J. Preston, On the Ground, Overground and All at Sea: A Review of Organizational Reforms of the European Transport Industry, in H. Meersman, E. Van de Voorde, and W. Winkelmann (eds.), *World Transport Research* (selected proceedings from the 8th World Conference on Transport Research in Antwerp, Belgium), Vol. 4: Transport Policy, Amsterdam, Pergamon, pp. 541–554, 1998.
4. Prognos, Examination of the Implementation and Impact of Directive 91/440/EEC on the Development of the Community's Railways, Final Report, Part A: Executive Summary, Basel, 1998.
5. T. Heinemann, *Rechtliche Vorgaben für die 2. Stufe der Bahnreform. Europarecht und Wettbewerbsrecht* (A review of European Union laws and competition rules as a basis for the second stage of the railway system's reform programme), *Internationales Verkehrswesen*, 51. Jg., 5/1999, pp. 174–179, 1999.
6. B. Bjelacic, *Zukunft des europäischen Eisenbahnverkehrs* (The future of European railway transport), *Internationales Verkehrswesen*, Vol. 52, 6/2000, pp. 247–251, 2000.
7. M. Imashiro, *Nichio no tetsudo kaikaku* (Railway reforms in Japan and Europe), *Tetsudo Kaikaku no Kokusai Hikaku*, Tokyo, Nihon Keizai Hyoronsha, pp. 17–42, 1999.
8. K. Köster, *Privatisierung von Staatsunternehmen in Japan. Entwicklung, Dynamik und Perspektiven der privatisierten Staatsbahn* (Privatization of state corporation in Japan—Development, dynamics and perspectives of the privatized national railways), Baden-Baden, Nomos Verlagsgesellschaft, 1998.
9. H. Rodi, *Effizienz im Schienenverkehr. Eine mikroökonomische Analyse unter besonderer Berücksichtigung der institutionellen Ausgestaltung des Trassenmarktes* (Efficiency in railway transport—A micro-economic analysis with special regard to the institutional arrangement of the track market), Göttingen, Vandenhoeck & Ruprecht, 1996.
10. F. Mizutani, Japan, in D. van de Velde (ed.), *Changing Trains—Railway reform and the role of competition: The experience of six countries*, Aldershot, Ashgate, pp. 255–306, 2000.
11. European Conference of Ministers of Transport (ECMT), *Rail Restructuring in Europe*, Paris, Organization for Economic Cooperation and Development (OECD), 1998.
12. Community of European Railways (CER), Aspects of the Implementation of EU-Directive 91/440, Final, http://www.cer.be/docs/docs/Studies/2000.05.16_Implem_91-440.doc, 2000.
13. OECD, Railways: Structure, Regulation and Competition Policy, <http://www.oecd.org/daf/ccp>, Paris, 1998.
14. K. Nakamura, Privatization and Beyond: The JR Case, *JRTR*, No. 8, September 1996, pp. 4–9, 1996.
15. R. Imahashi, Regulatory Reform and the Railway Industry, *JRTR*, No. 24, July 2000, pp. 4–9, 2000.
16. T. Ishikawa and M. Imashiro, *The Privatization of Japanese National Railways*, London, New Brunswick, Athlone Press, 1998.
17. ECMT, *User Charges for Railway Infrastructure*, Round Table 107, Paris, OECD, 1998.
18. D. van de Velde, Dutch and Japanese Railway Reform and Exchanges, *JRTR*, No. 24, July 2000, pp. 10–16, 2000.
19. A. Obermaier, *Nihon to EU ni okeru kokuyu tetsudo kaikaku no keizaiteki kozoteki koka* (Economic and structural effects of the railway reform in Japan and the EU), *Transport Policy Studies' Review*, Vol. 3, No. 4, 2001 Winter, pp. 69–70, 2001.
20. Prognos, *Netzzugang und Trassenpreisbildung im westeuropäischen Schienenverkehr* (Network access and route pricing in western European railway transport), Basel, 2000.
21. R. Latter, *Jahrbuch Europäische Eisenbahnen 2000* (Yearbook of European Railways 2000), Stuttgart, Transpress Verlag, 1999.
22. P. Bovy and A. Schaafsma, NL: Bahninfrastruktur und Betrieb radikal getrennt (NL: Railway infrastructure and operation radically operated), *Internationales Verkehrswesen*, Vol. 50, No. 12, pp. 607–611, 1998.
23. C. Lehmann, Germany, in D. van de Velde (ed.), *Changing Trains—Railway reform and the role of competition: The experience of six countries*, Aldershot, Ashgate, pp. 143–190, 2000.
24. J. Preston and A. Root, Great Britain, in D. van de Velde (ed.), *Changing Trains—Railway reform and the role of competition: The experience of six countries*, Aldershot, Ashgate, pp. 5–78, 2000.
25. CER, Aspects of the Implementation of EU-Directive 95/19. Final, http://www.cer.be/docs/docs/Studies/2000.05.16_Implem_95-19.doc, 2000.
26. Directive 2001/12/EC of the European Parliament and of the Council of 26 February 2001 amending Council Directive 91/440/EEC on the Development of the Community's Railways, http://europa.eu.int/eur-lex/en/lif/dat/2001/en_30/L00/2.html, 2001.



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