Through-Train Services: A Comparison between Japan and Europe

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Introduction

Railways running through the world's urban areas play an important role in promoting convenient transport because passengers enjoy direct or express services. Rapid through-train services in metropolitan areas are expected especially to promote passenger services in combination with conventional regional transport. However, interestingly, through-train operations are quite different between Japan and European countries. In Japan, through trains have been promoted with clear separation of operational responsibilities between integrated railway companies. In principle, European railways operate using a vertically separated structure, and the public sector invests in railway infrastructure as public projects. This article outlines the characteristics of through-train services in Japan and Europe based on this striking difference.

Through-Train Operations in Japan

Railway Operations in Japan

Based on the advantageous markets in cities with very high passenger traffic density, most Japanese passenger railways retain ownership of their infrastructure and are responsible for maintenance costs. This means that, in addition to train operations, Japanese operators also manage track maintenance, signalling, and train control, without government subsidy. In other words, railway operation and infrastructure management is integrated in Japan. This characterizes Japanese railways from European railways. Such operation is also applied to through-train operations when trains from one railway company's tracks run on the tracks of another.

Through-Train Services between Different Railways

Through-train services without changing trains benefit passengers by offering convenience and reduced travel time; operators also benefit from reduced passenger and train congestion in terminals without requiring heavy investment in infrastructure. The end result has been an increase in the number of lines in Japan providing through-train services, and since Japanese metropolitan areas are usually served by several railway companies, urban through-train operations have been promoted as a result.

Figure 1 shows an image of through-train operations where trains cross the border between their own company's tracks to run on the tracks of other companies.

Unlike recent European railway operations, in Japan, fares for through-train services are paid to the company running trains on its infrastructure. The operational responsibilities are clearly separated at the border station and each company takes responsibility for operations on its own track. In general, drivers change at the border station and each driver only drives trains on his or her company's track. This helps secure operational safety and clear separation of operational responsibilities at the border station has been a fundamental policy in Japan. In summary, train operations and ownership of infrastructure are integrated by each railway company for through-train services as well.

Railway Operations in Europe

Rail policy and through-train services

European railway operations have a distinctive characteristic unlike many other countries, including Japan. Since Sweden first introduced vertical separation to its state railways in 1988, vertical separation has been introduced widely in European countries. Although gradually used to promote competition between operators, it is worth noting that Sweden originally introduced vertical separation to put rail infrastructure on a comparable basis with road infrastructure. The background to vertical separation in the European railway sector is that the market has inadequate demand to sustain an integrated railway structure without subsidies.

Figure 2 shows an image of through-train operations between European nationwide networks. In general, the network infrastructure is owned by the public sector, and operators pay access charges to operate train services. This type of so-called open-access operation is already common in the European freight sector, and some inter-city passenger services operate on this model too. Despite the advantage of creating on-track competition, this model faces coordination problems between infrastructure and

Figure 1 Through-train Services in Japan

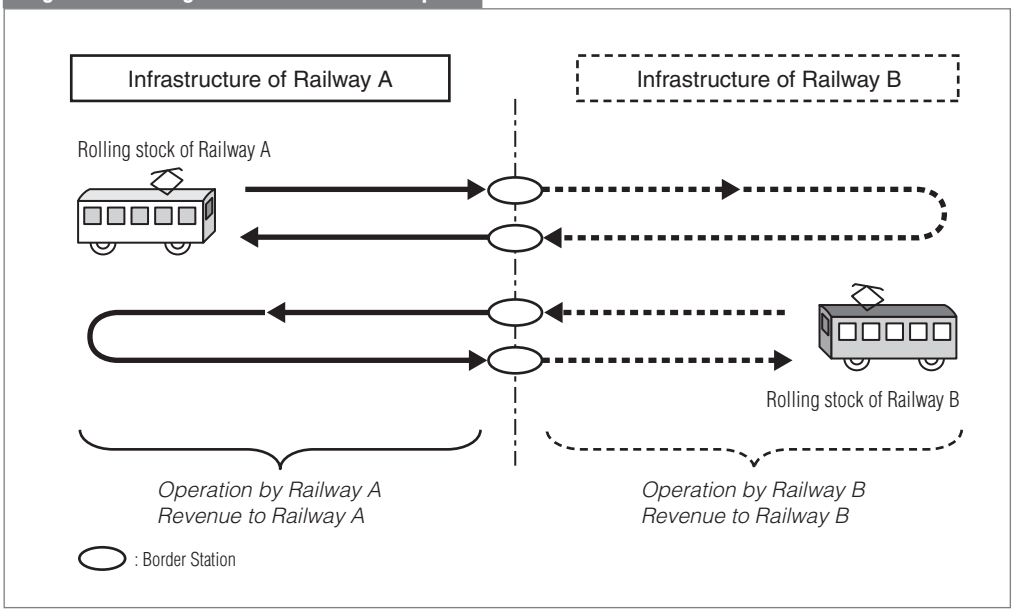
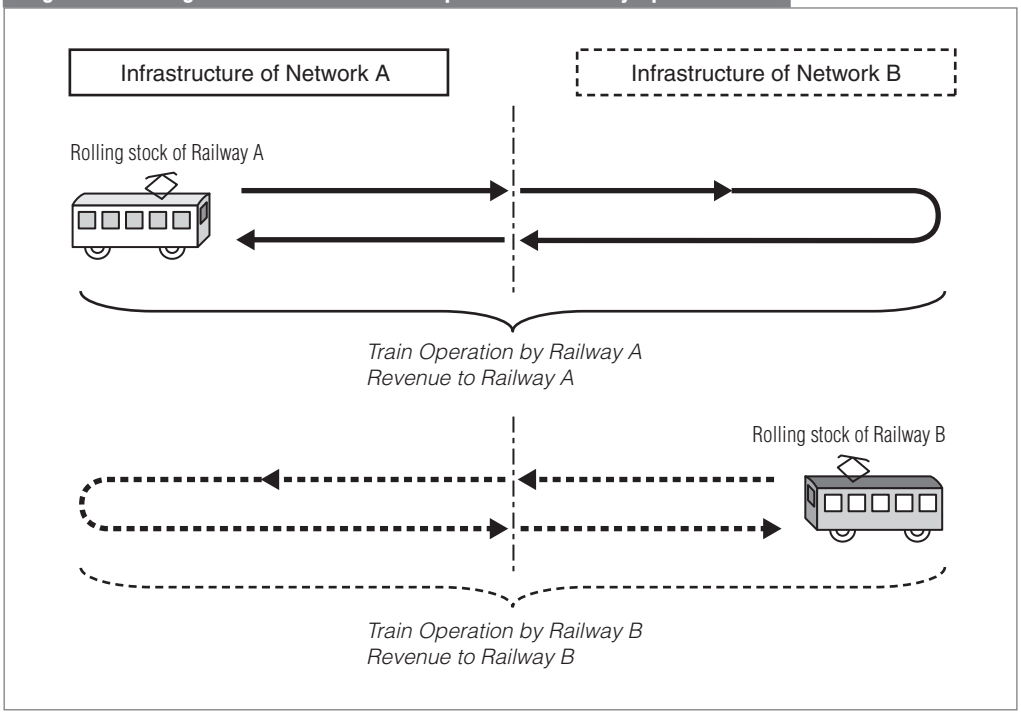


Figure 2 Through-train Services in European countries by open access



operation because responsibility for train operations is separated into independent entities within the railway sector. This characteristic distinguishes European railway operation from the integrated railway operation in Japan.

Regional Passenger Rail Services in Europe

Regional passenger services are provided in different ways even within the European market where the need to open up domestic rail passenger transport is presently under discussion for a Fourth Railway Package. For example, the Swedish County Public Transport Authority (CPTAs) has been responsible since 1988 for unprofitable regional railway services, and has been using competitive tendering for services since 1991.

In Germany, although negotiated contracts were permitted until 2011, new contracts must now be made by competitive biddings. In France, only the state-owned SNCF runs the regional railway services using contracts with each Region. As these examples show, most European regional passenger services are currently provided by contract rather than open access.

Blackfriars Station was improved for Thameslink opening (Author)

London Bridge Station was improved for Thameslink opening (Author)

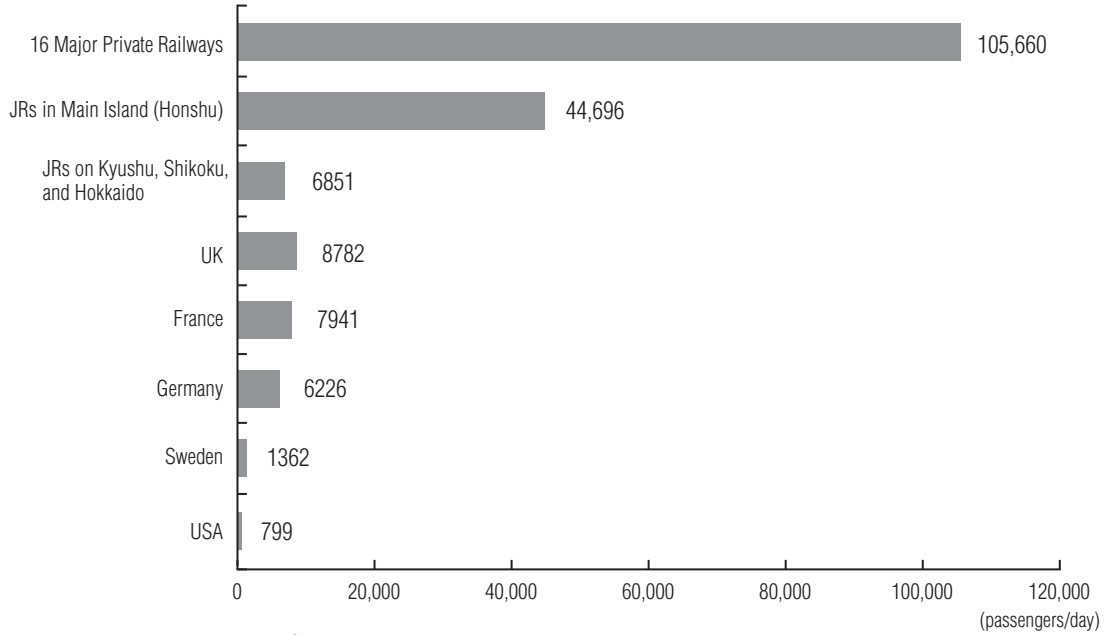
In the UK, passenger services operate under a franchise system. Although some routes are duplicated by more than one franchised network, in principle, one operator runs train operations only on one franchised network. At the railway reforms in 1994, the train services were franchised to 25 private train operating companies (TOCs), but they are now franchised to 19 TOCs. The franchising licence required to operate passenger trains is obtained by competitive bidding.

Through-Train Projects in Japan and Europe

As discussed above, train operations are quite different between Japan and Europe. In Japanese metropolitan areas, because the railway networks are already well developed and operated by several companies, through-train services can be promoted by connections between these integrated railway companies. Since establishing new through connections on some lines requires financial resources, the Japanese government established the Act on Enhancement of Convenience of Urban Railways, which permits the public sector to finance two-third of the costs. Examples are the Sotetsu–Tokyu and Sotetsu–JR direct-connection lines now under construction in Kanagawa. Nevertheless, the operator still has to bear one-third of the cost, which is a heavy financial burden for any railway operator.

On the other hand, there are large-scale construction projects to promote rapid train services running through metropolitan areas in Europe. Two examples are Thameslink, a 50-station main-line route running 225 km north to south through London from Bedford to Brighton, serving both London Gatwick Airport and London Luton Airport; and Crossrail, a capacity-enhancement rail project centred on London, involving laying 118 km of new tracks from Maidenhead and Heathrow in the west to Shefield and Abbey Wood in the east. The project will allow an additional 1.5 million people to travel between London's key business districts in just 45 minutes. Although Crossrail project is funded by the business sector as well, many of the large railway projects in European countries are led by the public sector with its financial resources.

Figure 3 Traffic Densities



Traffic Density = Passenger-kilometres / Operating Line Length

Conclusion

The different transport policies and characteristics between Japan and Europe have led to the development of different passenger railway operations. Each has pros and cons that are worth learning from. For example, several European countries have succeeded in increasing rail transport volume by way of active public financial contribution to the sector. Statistically, the average rail transport of Sweden, the UK, Germany and France has increased 48.6% in 17 years since 1993. On the other hand, the passenger volume of operators in the JR group of companies has been falling gradually and decreased by 2.2% during the same period. The stark contrast in the results between the European countries and Japan shows Japan can learn some lessons from European experiences, especially about revitalizing regional lines.

On the other hand, Japan has successfully promoted through-train services without degrading service levels and safety standards. Although the Japanese through-train system does not facilitate on-track competition via open access as in Europe, there are no reasonable grounds for Japan to adopt a similar competition policy, because recent studies (CER, 2012 and McNulty, 2011), suggest vertically separated operations increase costs on lines with high traffic densities, and many lines in Japan have dense traffic.

Through-train services can develop the service levels of passenger transport especially in metropolitan areas. As discussed, investment and through-train railway operations differ between Japan and Europe. At introduction of through-train services in other countries, it is crucial to choose the appropriate style of railway operation. ■

Further Reading

CER (2012) EVES-Rail Economic effects of Vertical Separation in the railway sector: Full technical report, Community of European Railway and Infrastructure Companies

Depart for Transport (2012) Reforming our Railways: Putting the Customer First, Secretary of State for Transport

Kurosaki, F. (2008) An Analysis of Vertical Separation of Railways, Ph.D. Thesis, The University of Leeds

McNulty, R. (2011) Realizing the potential of GB Rail: final independent report of the Rail Value for Money study, Department for Transport and Office of Rail Regulation

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