



SELECTED PROCEEDINGS

A STUDY ON RAIL TRACK ACCESS CHARGES

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This is an abridged version of the paper presented at the conference. The full version is being submitted elsewhere.
Details on the full paper can be obtained from the author.

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ABSTRACT

The European Union (EU) sets marginal cost pricing as the principle of track access charge. But many EU countries set the charge with adjusted average cost pricing, trying to contrive ways to achieve compatibility between the efficient use of rail track and balanced budgets for infrastructure organization. On the other hand, there is inappropriate two-part tariff and it would provide entry barrier for track access. If the pricing which inhibits the efficiency continues, it is concerned that the ideal railway for which the EU seeks will not be realized enough. Thus it is necessary to pay attention to the consistency between the principle and actual track access charge, and to regard the charge pricing standardization as a new policy issue.

Keywords: Track access charge, Marginal cost pricing, adjusted cost pricing, efficiency of rail track use, balanced budget for infrastructure organization

BACKGROUND AND OBJECTIVES OF THIS PAPER

Since the 1990s, different operators have accessed the same rail tracks in the European Union (EU), with progress of the vertical separation policy and open access policy. One point to note in the use of rail tracks is how to make operators use the tracks efficiently. The Track Access Charges (TAC) has an important role in achieving efficiency. Although the EU has set marginal cost pricing as the principle of TAC pricing, many EU countries do not respect this principle.

There are two objectives in the paper. First, given actual TAC, this paper investigates the factors which account for the difference between pricing principle in the EU and actual TAC,

and summarizes TAC decision process systematically (see Germany, France, Great Britain and Sweden as major cases). The second objective is to consider the consistency between actual TAC and the goal of EU transport (railway) policy.

In the existing major literature of TAC pricing (for example Nash (2005) and ECMT (2005)), the main focus is break TAC down into a number of categories and to compare it with the TAC of different countries. The estimation (calculation) ways for the costs occurred are also main issue in the study. This paper attempts to analyze the issue with actual data and compare actual pricing with the goals of EU transport policy. Finally, this paper suggests the problems with TAC and proposes the solutions to deal with these problems.

PRICING PRINCIPLE AND ACTUAL TAC

Pricing principle of TAC is defined in Directive 95/19/EC and Directive 2001/14/EC. In those Directives, marginal social cost pricing is indicated clearly as the pricing principle. On the other hand, if government cannot finance the budget deficits associated with infrastructure organization which are incurred by marginal social cost pricing, different pricings from marginal social cost pricing are allowed. In this case, ECMT (2005) suggests average cost pricing, marginal cost + markup, and two-part tariff as the alternative pricings.

Setting marginal social cost pricing is inextricably linked with the basic philosophy of EU transport policy, where efficient use of infrastructure is pursued. As seen above, while efficient use of rail track is the highest priority in TAC pricing, it can be seen that policymakers feel the anguish involved in achieving compatibility between the efficiency and balanced budgets for infrastructure organization.

Each EU country sets TAC separately. The major difference in those countries is the pricing framework, that is, seeking marginal cost pricing (for efficient use of rail tracks) or average cost pricing (to achieve balanced budget for infrastructure organization). In fact, Nash (2005) and ECMT (2005) divide TAC in EU countries into a number of categories¹ and the grouping criteria is marginal cost pricing or average cost pricing.

While pricing based on marginal cost has been introduced in Sweden, adjusted average cost pricing (AACP: pricing which is set at not less than marginal cost but not more than average cost) is introduced in Germany, France and Great Britain).

TAC differs depending on the train, and there are four train types (suburban (regional), high-speed, intercity, freight) in many cases². Among these types, the TAC of high-speed trains is

¹ TAC are divided into "SMC", "MC+" and "FC-" in ECMT(2005) and Nash(2005) , and into "Scandinavian approach" and "adjusted average cost approach" in NERA(1998) and Holder(1999). In those grouping, SMC and Scandinavian approach can be regarded as marginal cost pricing, and MC+, FC- and adjusted average cost approach as average cost pricing.

² Substances which use infrastructure are homogeneous (e.g. traffic) in telecommunication and electric power. Then it can be suggested that price discrimination with amount used don't provide inefficient resource allocation notably. On the other hand, Substances which use infrastructure are different in railway. Hence it is needed to

remarkably high. This is due to high maintenance costs and user payments for new infrastructure development. In many EU countries, train-km is used as a calculating unit for TAC, and is an easy way to solve slot allocation problems. Hence train-km may be used as the unit.

DECISION FACTORS FOR TAC

Most TAC can be divided into either marginal cost pricing or AACP. The decision of which pricing is chosen would depend on demand volume, the government's financial situation and attitude towards new entries (promotion of new entries).

DEMAND VOLUME

Under a decreasing cost industry like the railway industry, demand volume would be the decision factor to seek a balanced budget for infrastructure organization. Demand volume in Sweden is notably low. Thus balanced budget for infrastructure organization is not required in Sweden³ and so the option below is selected; TAC is set based on marginal cost pricing and the government pays the deficit.

By contrast, demand volume in Germany, France and Great Britain is comparatively high. Thus those countries can recover a large part of the total cost without distorting the efficiency of rail track use. In fact, in order to recover more than marginal cost, marginal cost + markup and two part tariff are introduced in those countries. Germany, especially, has a strong desire to recover a large part of the total cost and hope to recover the total cost in the future.

Under free entry conditions, operators provide train service in the profitable sections, but they do not so in non-profitable sections. But there is a social need to provide service in non-profitable sections (mainly suburban trains and regional trains). In such cases, the government gives operators a grant to provide service.

GOVERNMENT FINANCIAL SITUATION

Eastern European countries face serious financial situation now, and the governments of those countries cannot give infrastructure organization large enough grant. Hence, those countries (mainly Baltic countries) are required to recover a large part of the total infrastructure cost. In fact, TAC in those countries is high compared with western European countries.

pay attention for price discrimination with amount used in the industry.

³ Although it is possible to set high TAC with average cost pricing in Sweden, high TAC would not be acceptable in real-world condition. Therefore, TAC pricing choice would converge to marginal cost pricing.

Observing the situation, it can be recognized that TAC in Baltic countries are set at average cost pricing.

ENTRY

While Germany, Sweden and Great Britain have achieved progressive free entry, France has not had the same progress. As free entry is a basic tool for realizing EU transport policy,

France can be regarded as transgressor against this policy. One of the causes would be nationalism (the exclusion of foreign operators) in France⁴.

Two part tariff (especially fixed charge) can be a method to restrict free entry. In fact, two part tariff has been introduced in France, and the fixed charge in high-speed sections is notably high.

COMPREHENSIVE CLASSIFICATION OF TAC PRICING

Figure 1 shows decision factors and the decision process with a tree diagram. Demand volume decides the framework of TAC in each country. In cases where a balanced budget for infrastructure organization is regarded as important, AACCP is selected. Then AACCP is separated by either a single part tariff (marginal cost + markup) or a two part tariff is selected. The selection depends on the attitude towards free entry.

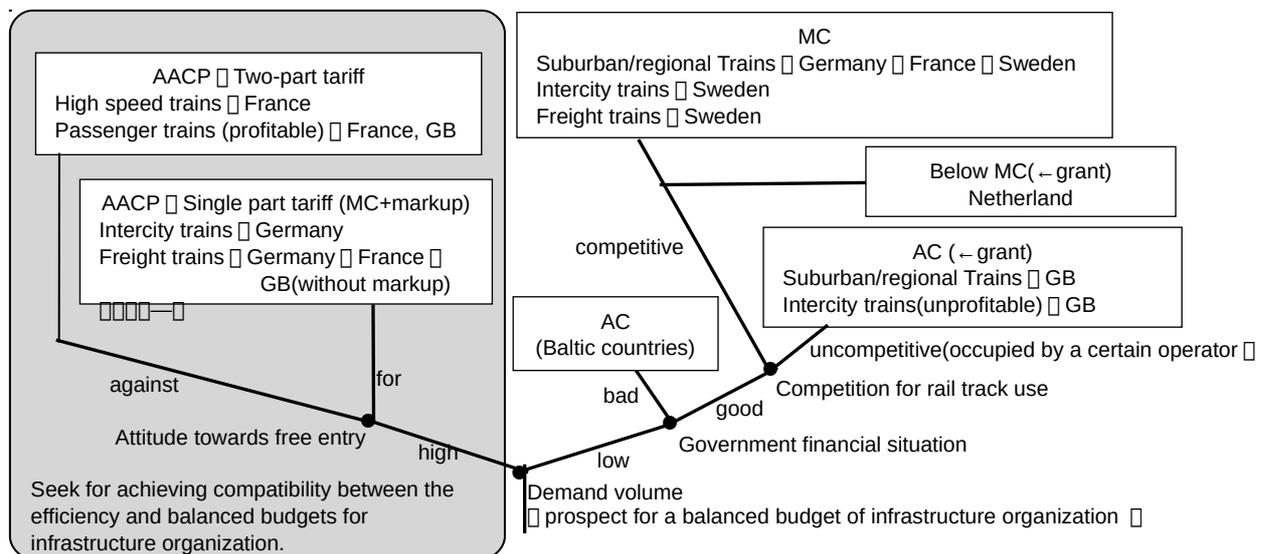


Figure 1 –Tree diagram of TAC

By contrast, if it is difficult to realize a balanced budget, either marginal cost pricing or average cost pricing is selected. The selection depends on the government's financial situation. If government cannot give the infrastructure organization a large enough grant, TAC pricing is divided with or without rail track use competitiveness. While the TAC framework differs from one country to another, freight train TAC is set by marginal cost pricing in many countries due to considering the price elasticity demand of the train.

⁴ We can see also the nationalist activities in the industrial policy in France (e.g. French government gave Renault a grant to let their factory stay in France. Regarding the grant, France is criticized from the EU, because the grant discourages free economic activities in the EU.

TAC CONSIDERATION

The countries that have introduced AACP (Germany, France and Great Britain) try to contrive ways to simultaneously achieve both the efficient use of rail tracks and a balanced budget for infrastructure organization. But the way to achieve this differs from country to country. The following paragraphs describe the ways efficient rail track use is achieved in various countries and the existence of barriers against efficiency⁵.

GERMANY

Single part tariff (marginal cost + markup) has now been introduced in Germany. But the country had introduced two-part tariff in the past. The tariff was abolished due to criticism from operators that operated a small number of trains (small operators). They complained that a fixed rate prevents small operators from entering the railway market. A fixed rate raises the average cost of small operators compared to dominant operators. Thus a fixed rate can be entry barrier⁶. Based on this experience, removal of entry barriers (more operators provide more trains) is one of the visions for achieving efficiency of rail track use in Germany, and the recovery of more than marginal cost. On the other hand, considering the price elasticity demand of freight trains, TAC of these trains is set below that for passenger trains. In addition, a congestion charge is set on high density sections.

GREAT BRITAIN

Two-part tariff has been introduced in Great Britain. Only franchisees pay a fixed rate (freight operators and passenger operators without a franchise do not pay it). Under a franchise system, a fixed rate reflects a willingness to pay for entry demand (taking franchise) and a variable rate depends on actual train operation. Thus two-part tariff in a franchise system can provide more efficient pricing (minimum distortion of resource allocation) than an open access system⁷.

FRANCE

In France, a two-part tariff has been introduced under an open access system. There are five categories in the fixed rate. All operators pay a fixed rate, but the fixed rate for the low

⁵ In this regard, we recognize that more detail research and analysis are needed.

⁶ This point can be regarded as capital requirements (the need for large capital outlay) which is considered as one of entry barrier factors in Bain (1968).

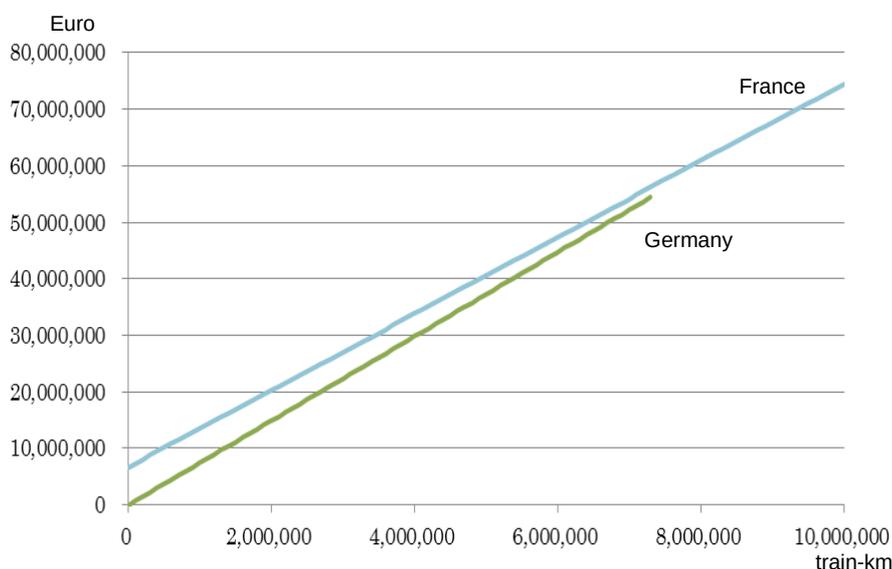
⁷ Nash(2005) suggests that two-part tariff under open access would provide distortion of resource allocation rather than franchise system and the tariff would be applied for the system. On the other hand, franchise system has some factor which provide distorting efficiency of rail track use (e.g. long-term entry block) . Hence multifactor analyses are needed in order to evaluate the efficiency of franchise system.

density intercity sections is zero. The fixed rate varies with the range of the network range (km) on which the trains run.

Considering the price elasticity demand of freight trains, TAC for freight trains is set below that for passenger trains. In addition, a congestion charge is set on high density sections. There are three categories of congestion charge according to time period. TAC charging is stricter in France than other countries.

PRICING OF INHIBITIONS AGAINST EFFICIENCY

At two-part tariff can realize efficient resource allocation under a balanced budget. However, to realize that, it is necessary to set a fixed rate with demand for entry and a variable rate according to the elasticity of demand of each operator. If the government fails to set those rates correctly, resource allocation can be distorted considerably, and a fixed rate can become an entry barrier.



*Regarding France, the curve shows the situation where trains run on the network of 1496km (actual network in France)

Figure 2 – Average TAC of high speed sections in Germany and France

Considering the fact that the fixed rates for high speed sections in France is remarkably high (12 times higher than for urban sections), and that France has not yet achieved progressive free entry, we examine, based on comparisons with high speed sections in Germany, whether the fixed rate in France practically provides an entry barrier for small operators⁸.

⁸ In recent days, we can see the situation that small operator tries to operate the trains running on high-speed section in Germany. Based on the situation, TAC of high-speed section in Germany don't prevent small operator from entering into the section. Then TAC of the section in Germany is picked up as a target for comparison with France.

Figure 2 shows an average TAC (per month) curve which is calculated with a distance (each high-speed section)-weighted average⁹.

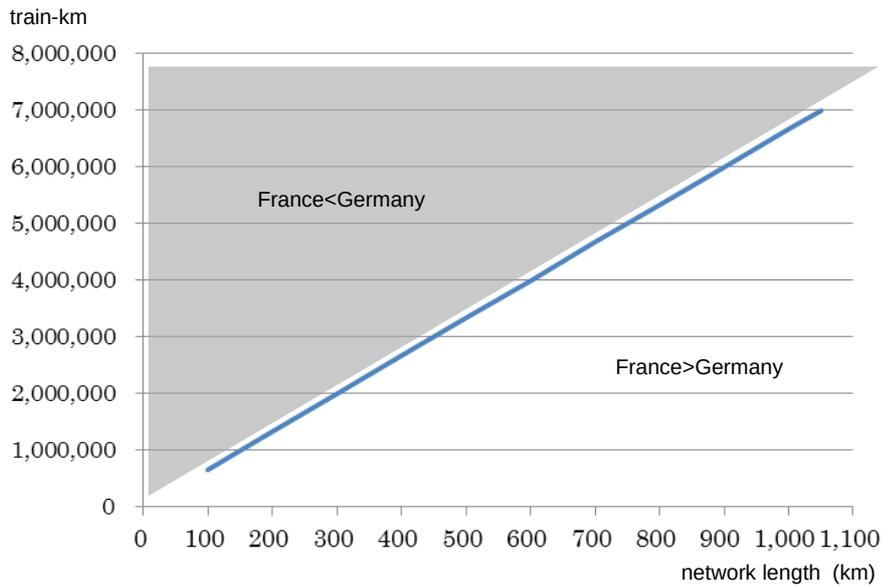


Figure 3 – combination of network range and train-km where the TAC of both countries is equal

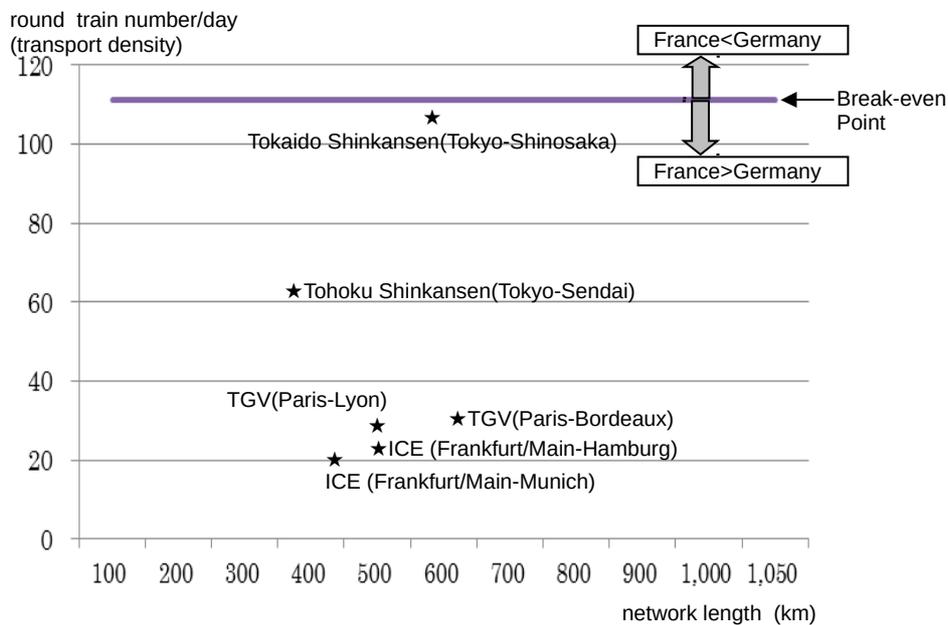


Figure 4 – network range where the TAC of both countries is equal and the transport density

⁹ Referring Remond (2004), high-speed train network in France is 1496km. Of this, N1 is 718km, N2 is 457km and N3 is 321km. The train network in Germany is 2060km. Of this, F-plus is 270km, F1 is 1760km.

As the fixed rate in France depends on the range of network on which trains run, the point at which both curves on figure 2 are equal varies with the range. The curve on figure 3 shows the combination (relationship between) of network range and train-km where the TAC of both countries is equal. On figure 3, while TAC in France is cheaper than in Germany in the upper area of the curve, TAC in Germany is cheaper than France in the lower area.

Figure 4 shows the network range where the TAC of both countries is equal and the transport density (train-km over network range: described by round train numbers per day) in major high-speed sections is the same. It can be seen on figure 4, that unless operators can provide more than 111 round train trips per day, TAC in France cannot be cheaper than in Germany. Considering that actual round train numbers in major high-speed sections in the EU is approx. 20 or 30, the fixed rate of the section in France would be an entry barrier for small operators in practical terms. In order to achieve same entry situation as in Germany, the rate would have to be lowered to 1209€/km.

CONCLUSION

The pricing principle of TAC in the EU corresponds to EU transport policy, but only a few countries such as Sweden comply with the principle. Most actual TAC is set based on AACP. In the countries that have introduced AACP, there have been efforts to simultaneously achieve both efficient use of rail track and a balanced budget for infrastructure organization. On the other hand, pricing such as two-part tariff inhibits efficient use of rail track. Considering that the pricing structure of two part tariff is complicated and obtaining data (e.g. elasticity demand for entry) on fixed rates is difficult, a two-part tariff would have the risk of distorting resource allocation (especially under an open access system).

If the movement to recover more of the total cost with TAC (e.g. Germany tries to recover all of the total cost) continues and pricing which inhibits efficient use of rail track continues, the results sought by EU transport policy may not be realized. Consensus for the introduction of AACP or average cost pricing due to the government's financial situation could be built. But consensus for financially-well countries (e.g. major western European countries) seeking to recover more of the total cost would not be built, because the consensus would prevent efficient use of rail track. In addition, the presence of inconsistent TAC would also inhibit efficient use of rail track¹⁰.

About 15 years have passed since the pricing principle of TAC was decided in the EU. During this time, each country has set TAC according to its own situation. In Nash (2005) and ECMT (2005), the approval process to set TAC based on situation of each country is described. But now the discussion and efforts to create TAC standards corresponding to this principle are of little importance. In order to achieve the goal of EU transport policy, it is necessary to pay

¹⁰ Regarding freight trains operation between Antwerp and Ruhr region (Germany), we can see now the situation that many freight trains run through Netherland due to cheaper TAC. It is one of the problems arisen from inconsistent TAC.

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