2020 Research report summary

Towards a more efficient use of railways

Kristofer Odolinski

SNS

Summary

IN SWEDEN, as in many other countries in the world, railways have historically played a significant role in connecting different parts of the country. Railways are still an important part of the Swedish transport system for both passengers and freight, improving accessibility and contributing to economic growth. However, rail infrastructure is also a costly investment that requires recurrent maintenance. From a society's perspective, it is crucial to make the best use of the current infrastructure, especially before deciding to build new railways. The price a train operator pays, called the track access charge, is crucial for creating a more efficient use of the railways. These charges may have an impact on both fares and transport times, as well as on prices for goods that are (or potentially can be) transported by rail.

In this report, I consider various railway pricing models that could potentially generate better use of the railway infrastructure. Specifically, I examine what price should be used according to economic theory, how Sweden's track access charges relate to this price, and what knowledge gaps need to be filled to create a more efficient use of the infrastructure.

Railway politics and track access charges in Sweden

The railway system has long been considered a natural monopoly in which the market equilibrium results in only one firm producing railway services. This motivates public ownership or regulations to cap the negative consequences of monopoly power, while exploiting the economies of scale. However, Sweden and the EU have separated train operations from infrastructure management – a vertical separation – as evidence has suggested that train operators could lower their average

costs. This made it possible to introduce competition between train operating companies by running train services on one or several lines, while maintaining the natural monopoly case of infrastructure management with one owner, the state. Many other countries have chosen a vertically integrated railway system and have introduced regulations to reduce the negative effects of market power. Irrespective of the solution used, the public sector needs to decide on the price to be set, either through ownership or regulation.

Swedish transport pricing policy has varied over the years as pricing's contribution to efficient infrastructure use has been weighted against the need to cover costs. The role of track access charges in the pricing policy became apparent when the vertical separation was carried out in 1988. At that time, the charges comprised a fixed and a variable part. The view on cost recovery changed in the new transport policy presented in 1998, which stated that track access charges should correspond to the external (short run) social marginal costs. This resulted in a dramatic decrease in track access charges. The charges were then relatively constant until 2013, after which they successively increased, in part due to new research on the direct cost of a train service showing that track access charges were well below marginal costs.

Which pricing principle is suggested in research?

The marginal cost pricing principle has long been advocated by economic theorists as a way to generate an efficient use of railways. This implies that track access charges should correspond to the direct cost of running one extra train service on the line. However, marginal cost pricing will not cover costs in decreasing cost industries, which characterizes a natural monopoly. This created a marginal cost controversy in the academia. Advocates of marginal cost pricing have stated that it is more efficient to cover the (financial) loss with (lump sum) taxes instead of charging the users an amount to cover this loss. Critics of this pricing policy have emphasized that the need to subsidise the industry implies it lacks a market test for the production, whether it should stop, increase or decrease. This information can, however, be provided by a cost-benefit analysis, which is a tool for calculating if a project is beneficial from society's perspective.

Still, the efficiency of marginal cost pricing relies on other relevant markets (transport modes) using marginal cost pricing, which is rarely the case. This has made economists analyse so-called second-best solutions that deal with market imperfections in the best possible way. Transport policy in Sweden and in the EU has also resulted in prices that deviate

from the social marginal cost. We should then ask ourselves how big these deviations are and how we can come closer to a second-best solution.

The social marginal cost of railway traffic has not been covered by track access charges

As stated earlier, the Swedish transport pricing policy and its view on cost recovery has changed over the years. Still, the marginal cost of railway traffic has now been a pillar of the pricing policy for a relatively long period. The Swedish railway law (2004:519) and the EU's Directive (2012/34/EU) states that marginal infrastructure costs for train traffic are the minimum level for track access charges. The infrastructure manager can use mark-ups to cover costs if the level of those charges does not exclude market segments that only can pay the marginal cost. An efficient use of the infrastructure is thus the basis for the current transport pricing policy. Nonetheless, track access charges have, for a long time, been lower than the social marginal cost of train traffic. For the 2014–2015 period, the national plan for the Swedish transport system stated that track access charges shall increase to the estimated marginal costs, which does not include external costs for congestion and scarcity.

It is thus likely that the rail infrastructure was not being used efficiently and that this will continue to be the case even after the planned increase in track access charges, mainly due to the lack of knowledge on costs for congestion and scarcity. This creates problems in the transport system, with unnecessary train delays being the most obvious example.

It is not completely clear why track access charges have been lower than the social marginal cost of train traffic for such a long time. One interpretation, based on *the public interest theory*, is that this situation was created by a public sector that has tried to maximise social welfare by correcting inefficient markets. Another interpretation is that the situation is a result of interest groups or self-interested agents creating a more (in)efficient market (*the interest group theory or the public choice theory*). Irrespective of which descriptive approach one uses, we need marginal cost estimates to implement marginal cost pricing or to make transparent and balanced deviations from that price. Current knowledge indicates that the current transport policy and its track access charges are unnecessarily far from a second-best solution.

Policy recommendations

- The Swedish government and the Swedish parliament have decided that any improvements to the transport system should follow a principle that comprises four steps. We should abide by this principle and prioritize marginal cost-based charges that contribute to an efficient use of the infrastructure (step 1 and step 2). This will give us a better view of the need to either rebuild or invest in new infrastructure, and we can then choose the best alternatives (step 3 and 4).
- Develop knowledge on congestion costs and let track access charges reflect these in a correct way. The absence of these price signals can create an inefficient use of capacity and unnecessary delays. Great Britain has, for example, used congestion charges since 2002. Such charges are based on studies on the relationship between capacity utilisation and congestion-related reactionary delays. In general, we need a more comprehensive knowledgebase of the external costs of train traffic and how these costs are reflected in the pricing.
- If a policy creates a situation in which certain transport modes do not pay their external marginal costs, then the chosen deviations should be transparent and based on evidence. We need to generate more and better knowledge on how different track access charges affect prices faced by consumers and their propensity to shift to a mode that »cannot« pay its external marginal costs. What are the benefits and the costs to society with these deviations from the social marginal cost?