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Financing road projects with tolls. The treatment of and consequences of tolls in cost benefit analyses

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English summary

This is a study of how tolls are treated in economic appraisals of road projects in Norway and what impact tolls have on economic profitability.

Tolls relieve public budgets and provide greater flexibility than if we were to depend on government funding alone. Potentially, less government financial flexibility in the future could limit the possibilities for further investment in roads and public transport. In that case, the extent of toll financing could increase. Another reason for toll financing roads of more local importance may be to avoid incentive problems. A third may be a desire to solve congestion problems effectively.

In Chapter 2, we show the extent of toll financing in Norway and discuss the large increase in the use of this form of financing in recent decades. There has been broad political consensus behind the vast majority of toll road projects and this may explain why tolls account for over one third of the total funds available for road financing.

How projects are financed is not irrelevant. Both tax and toll financing have a cost, both financial and social, for society. In Chapter 3, we discuss the economic costs of the two financing forms and the trade-offs we have to do in the choice of financing terms for projects.

Toll financing in Norway has a long tradition and today it is an integral part of the financing of national and county roads. Chapter 4 looks at the process leading to parliamentary approval of toll projects, the scope for tolls in the National Transport Plan (NTP), to what extent the effects of tolls are taken into account in economic appraisals, and how tolls are treated in the Norwegian Public Roads Administration's (NPRA) conceptual appraisals. We find that the economic consequences of tolls are generally not included in the economic appraisals. Projects that are prioritised in the first phase of the current NTP (2014-2023) are treated as if they will be 100 per cent government funded, although experience shows that the majority of the projects will be financed by tolls. This implies that the net benefit of the projects is presented incorrectly. The effects of toll financing have been included in about one-third of the conceptual appraisals, while two-thirds of the QA1 reports have calculated some effects of tolls for one or more of the alternatives. Practice with regard to calculating the effects of toll financing seems to be changing. The NPRA's guidelines to the regions for the NTP 2018–2029 are clear that tolls must be applied for projects with high traffic volumes.

Based on current practice in the road sector, we conclude that the treatment of tolls in conceptual appraisals and partly also in QA1 has probably been too cautious. If toll financing is likely or necessary, we should probably include the effects of user charging through tolls. The fact that the NPRA now ask the regions to take the effects of tolls into account is a step in the right direction.

Chapter 5 describes the methodology for calculating the economic consequences of different toll levels. We have used transport models to forecast the generation, distribution and road assignment of traffic. The models should be able to recreate the traffic that actually uses the roads today. Thereafter, the models should forecast what happens if we were to change the conditions in the transport network such as shortening or improving a road, with or without tolls.

With the information contained in models, we have a starting point to calculate the impact of tolls on social surplus. Different toll regimes are compared with full public financing. The cost of public funds is assumed to be 0,2 which is in line with the guidelines from the Norwegian Ministry of Finance.

In Chapter 6, we summarise the results of the economic appraisal. We draw the following main conclusions.

High tolls on low-volume roads with a high proportion of short and more price-sensitive trips reduce economic profitability compared to public funding. This type of loss was considerable in two of the studied projects (the Eiksund connection and the Atlanterhavstunnel). In the analysed projects of the same type, the loss was in the range of NOK 450–670 million, discounted over 15 years, and traffic growth not included. This corresponds to an economic welfare loss of around 45 % and 75 % of the investment costs respectively. However, we cannot exclude the possibility that the optimal toll level is closer to zero rather than zero, due to underlying uncertainties in the model. Hence, the economic welfare loss could be slightly over-estimated.

In some projects, there may be “thresholds” in the market that should be taken into consideration before toll rates are determined. Such thresholds may be linked to the choice of route and probably also the inducement of new traffic. In such cases, tolls that are marginally too high may reduce the economic profitability significantly. In this case, a slight reduction of the current toll level corresponds to an economic welfare increase of around 10 % of the investment costs.

In projects with high traffic volumes and low toll rates, there may be a balance compared with public funding, perhaps especially where there are tendencies to congestion. In such cases, the toll would also have a traffic regulating effect that may improve overall economic viability. The analysed project of this type (Kløfta-

Nybakk) showed no economic differences between the current tolls and full public funding.

However, for high-volume roads with tendencies to become congested, it should be noted that constant tolls throughout the day can “hide” an even better solution, namely time-differentiated tolls. Such tolls will not necessarily increase the total toll revenues, but they will probably provide a better economic outcome.

Toll collection has consequences in terms of economic benefits, but may also have some other effects, some of which are discussed in Chapter 7.

- Increased funding for road construction may lead to good-value projects being completed faster, but may also lead to faster realisation of economically unviable projects.
- It has been argued that toll financing may increase the number of unprofitable projects in which neither the local users nor the state are faced with the real costs. Toll financing may thus become “an offer you can’t refuse”. This may lead to a higher number of economically unprofitable projects being implemented.
- The state grant system with annual allocations from the state budget may mean that project implementation takes longer than necessary. Tolls may provide greater flexibility in the construction phase. This is probably part of the reason why the NPRA has been moving towards building longer stretches of roads financed by tolls, a move that is partially modelled on what has been done in other countries.
- Tolls are not unique to Norway, but we differ from other countries in two respects: we have tolls around several of the largest and medium-sized cities, and a large number of toll road projects spread over large parts of the country. This can form the basis for a restructuring of the tax system in the direction of congestion charging in major cities and time-distance-place based charging elsewhere.

A large percentage of Norwegian road projects are economically unprofitable. This does not mean that the projects do not deliver any benefits, but rather that the benefits to users are less than the overall costs to society. According to the principle of fairness, it could be argued that those who benefit from a new road should also pay for it. Tolls can thus provide better correlation between benefits and payments than government funding in some cases. However, financing a large number of unprofitable projects through tolls may weaken the objective of regional

integration, which is often the reason why the projects come onto the agenda in the first place.

Norway is among the countries in Europe with the most extensive use of tolls. We have also standardised processes and systems that enable relatively rapid implementation of this form of private co-financing. This can have a number of advantages, but also disadvantages in the form of reduced user benefits. Most major road projects are partly financed by tolls. In our opinion, the NPRA should be better at including the economic impacts of toll financing in its appraisals.

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