



Summary:

Cost developments in Norwegian public transport – key observations

Public transport use in Norway is at all-time high. This high usage level is a result of political priorities, and represents a cost in terms of subsidies to public transport. These costs are mostly borne by the local governments, at county level. In parallel with increased purchase of public transport the last decade, unit cost in public transport has increased, mostly due to factors outside the control of local government, such as wages and fuel prices. The combination of increased volume of purchase of public transport services and increased unit prices has resulted in higher public expenditure.

New vehicle technologies have so far proven to be more expensive than conventional technologies. However, looking ahead to 2020 and 2025, there is a real possibility that zero local emission vehicles, in the form of battery electric busses, can be competitive also on price, for urban bus lines. Still, political priorities and demographic developments point towards increased need for public transport, and therefore, increased subsidies, in the foreseeable future.

A major cost of providing public transport is peak hour traffic. A consequence is that public transport service levels have to be higher than the average transport volumes suggest. Peak hour traffic results in both more expensive vehicle kilometers and underutilized capacity.

Much public transport is procured through competitive tendering. For this to be cost efficient, contracts have to be well designed. Local governments can take actions in order to provide for a competitive and functioning market with high levels of cost efficiency.

Norway has a rapidly growing population, but with 5,3 million inhabitants on 324 000 sq.km, the country is still sparsely populated. Only the capital city region of Greater Oslo has more than a million inhabitants. Public transport varies along a urban – rural dimension. The highest public transport use, as measured in modal shares, occurs in urban areas. More than half of Norway's public transport travel takes place in Greater Oslo.

In 2016, public transport use set a new record, reaching 665 million passengers. These are split between 369 million bus passengers, 171 million metro and trams passengers, 74 million heavy rail passengers, 40 million ferries passengers and 11 million passengers on scheduled passenger boats and high speed craft.

In Norway, transport with buss, metro, tram and scheduled boats / high speed craft is mostly conducted on contracts from the regional county governments. The responsibilities for ferries are split between county governments and the central government, according to road ownership. Heavy rail operations is a central government responsibility. This means that about 80 percent of Norwegian public transport passengers travel on services operated on behalf of county governments.



In 2016 the county governments spent a total of 10.8 billion NOK on purchases of public transport. This consist of NOK 6.4 billion spent on bus services, NOK 2.0 billion on ferries, NOK 1.3 billion spent on high speed craft services and NOK 1.1 billion on metros and trams. With the exception of metros and trams, most of this spending was made through competitive tendering, mostly on gross contracts.

Figure S.1 presents developments in ticket revenue and public purchase between 2005 and 2016. County government expenditure on public transport has increased quite sharply. Public expenditure as measured in NOKs per inhabitant has increased by 73 percent in the period and by 50 percent when measured per passenger trip. In contrast to this, passenger payment (or ticket revenue) per public transport trip has remained largely constant. Since passenger numbers have risen steadily over the period, figure S.1 shows that regional governments pay an increasing share of the cost of new passengers.

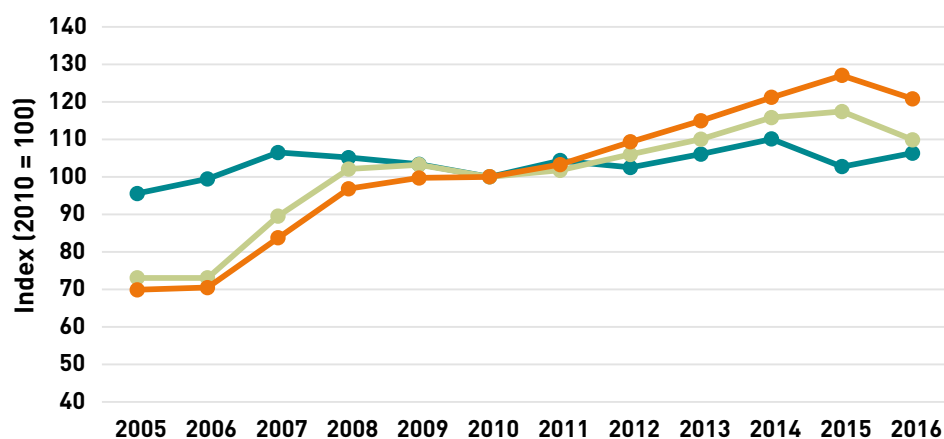


Figure s.1. Development in ticket revenues per passenger, public purchase per passenger and public purchase per inhabitant (index, 2010 = 100, Statistics Norway).

The cost of public transport provision is defined by the volumes of public transport services purchased multiplied with unit price. Between 2010 and 2017, both volumes and unit prices have increased considerably.



Cost structure

A considerable proportion of the costs of public transport provision is determined by factors that lie outside of the regional counties' control and even outside of the public transport operator's control. This relates to, inter alia, wage levels (which follow national tariffs in Norway), fuel prices, capital costs, and so on. All public transport modes face the same cost types. However, their share of total cost differs between the public transport modes. The most important cost elements include:

- Personnel – labour
- Repair and maintenance
- Fuel
- Administration
- Other operating costs
- Capital costs – capital and interest

Weighted together, they add up to cost indexes of public transport provision, which is suggestive of the unit price developments. Figure S.2 shows these indexes for bus, ferries and large high speed crafts. The three indexes have developed very similarly. Reflecting Norway's macroeconomic performance, labour costs have increased steadily and relatively rapidly during the period. Public transport by bus, boat and rail are relatively labour intensive industries. Therefore, wage increases translate heavily into cost increases for public transport. Further, the scope for reduced staffing is extremely limited – at least in the short run. Each bus or tram needs one driver and on the sea, staffing standards are largely determined by safety regulations.

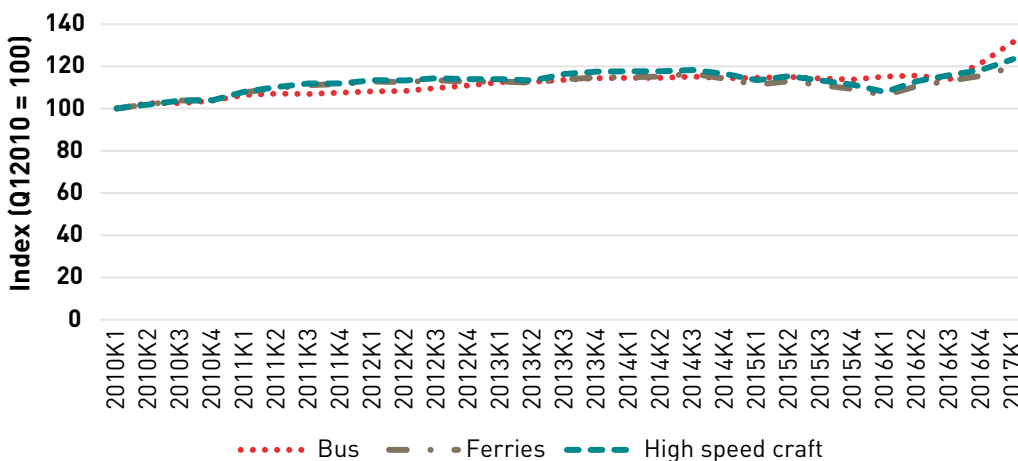


Figure S.2: Cost index for bus, ferries and large high speed craft. Q1, 2010 = 100 (Statistics Norway, TØI, MFM).



Policy-dependent cost drivers

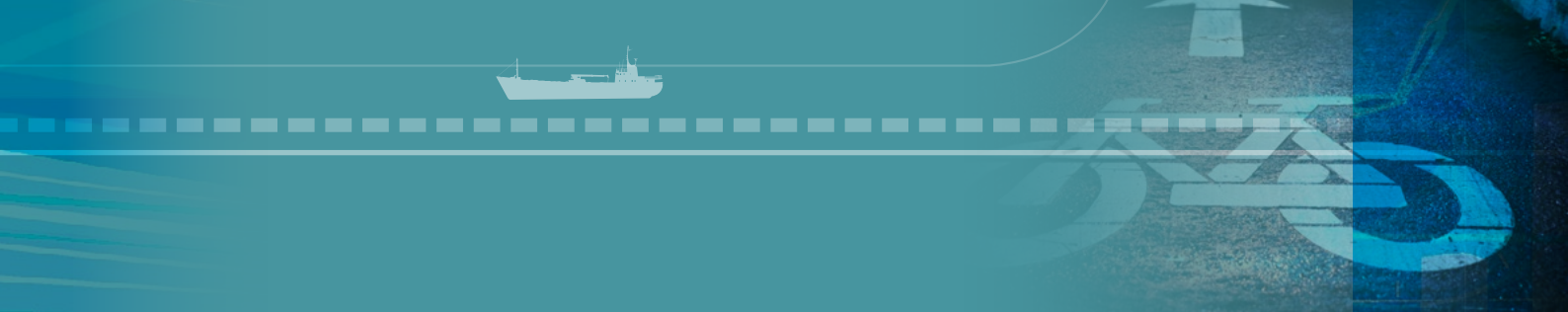
Regional policy can, however, impact a number of cost drivers in public transport operations. For example:

- The “Zero growth goal” states that all urban passenger growth shall be taken by public transport, walk and cycling. In general, the marginal cost of an additional passenger is higher than the average cost of passengers. This means, for example, that a one percent passenger increase will cause a cost increase of more than one percent.
- Peak-hour demand, especially in cities, is in general very costly. The system capacity needed to handle the peak periods, lies idle or underutilized during off-peak periods. Adding to this, peak hour congestion drives the cost of public transport provision up further. Regional county governments can influence parts of the rush-hour problems. For example, peak pricing of public transport and car use can help to smoothen out demand.
- School policies can also affect the rush hour problem. Firstly, school transport happens predominantly during rush hours. Secondly, in rural areas, public transport provision is largely defined by the needs for school transport. Thirdly, school location and school mergers determine the need for school transport.
- Vehicle technology: experiments with alternative vehicle technologies take place several places, in particular on road and sea. These trials are currently more costly than conventional operations. However, it is expected that already in the 2020s, the cost of battery electric bus operations will come down to competitive levels
- Local requirements and specifications of e.g. vehicles drive costs up.

Market-dependent cost drivers

An analysis of Norwegian bus contracts highlight the following:

- Competition for bus contracts is crucial. More bidders for a contract are associated with lower unit prices. In order to attract more bidders, we find that larger contracts (in terms of vehicle revenue kilometers) and requirements for newer buses tend to improve competition. We also observe more competition for bus contracts where the regional authorities provide basic facilities, like garages.
- Higher cost of urban bus operations. Bus operations in Oslo are considerably more expensive than elsewhere. Higher operating speeds will help bring down the costs – and also make the service more attractive.
- Repeated tenders tend to operate at lower unit costs and to attract more bidders.



The future

The cost of public transport provision is predominantly determined by the cost of labour. This will be the case also when we look ahead towards 2020 and even 2025. Beyond that time horizon, it is not possible to know the extent to which self-driving vehicles and other disruptive technologies will change the game.

The political goal of zero car growth in Norwegian urban areas suggest that public expenditure on public transport will continue to increase. The same goes for the policies of school centralization. The peak hour congestion problems also point towards increasing costs of public transport provision. However, new technology and pricing mechanisms may help reduce the problems of the peak by offering solutions to better utilization of existing capacity or by providing incentives to travel off-peak.

Since most public transport in Norway is purchased in the market, well-functioning competition for PSO¹ contracts is a prerequisite for cost efficiency. We see a tendency of reduced competition for bus contracts over time. A key challenge is to halt and reverse this trend.

1 Public Service Obligation