TØI report 685/2003
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Summary:

A targeted market strategy for tram and metro in Oslo?

Object and background

Oslo has a high share of rail based public transportation, both considering the size of the city and the fact that several rail based modes share the market. Including the railway, which has an important role in commuting, three rail based modes cover different market segment. It is important to consider the role of the different modes as the city changes. Some strategic actions may be necessary to make the different modes more attractive and competitive.

The Institute of Transport Economics has been commissioned to summarize experiences from a number of tram and metro cities. The aim has been to describe experiences from which Oslo can learn. To make the experiences transferable, we have focussed on cities comparable to Oslo. This implies that the collection of cities are not "average". Some of the cities clearly are in the European top level regarding public transport. As a result Oslo stands out far worse than with an "average" selection of cities.

This report is an attempt to raise the head above the day-to-day discussion, and to see what possibilities there are for a better targeted market strategy for tram and metro in Oslo. The report suggests some strategic directions in which the tram and metro can be developed. These are suggestions for discussion rather than answers to the balance between different modes of public transport in Oslo.

This report is based on comparisons between a number of tram and metro cities in Europe. The description of the different cities and their experiences can be found in the annex report (TØI-report 685a/2003).

Combined measures result in a low share of private cars

In most of the cities described in this report, public transport has a high market share (Table S.1). Even though several of the cities are considered to be among the best public transport cities in Europe, Oslo by no means fall through. The main feature of the "best" public transport cities, however, is not only a high market share for public transport, rather private cars having a small market share. This is a result of combined measures in these cities. The aim has not only been to provide a high level of public transportation, they have also focussed on pedestrians and cyclists and rearranged the city centre for their benefit.

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Table S.1: Modes of transport in different cities (trips of more than 500 meter)

	Motorized vehicles	Public transport	Bicycle, walking etc.
Strasbourg	52	10	38
The Hague	32	16	52
Freiburg	29	18	52
Gothenburg	50	20	30
Oslo	41	22	36
Helsinki	43	26	31
Basel	27	32	41
Vienna	36	34	30
Croydon	40	35	25

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Oslo has a low level of subsidy

Considering the economic framework for Oslo Sporveier, the subsidies are small per capita compared to other cities. Nevertheless, Oslo Sporveier has managed to maintain a relatively high share of public transport. The average level of subsidies for the cities in this study, with comparable figures, are from 44 to 63 per cent. Oslo, in comparison, has a subsidy level of 37 per cent.

In Austria and France cities with tram or metro, are allowed to introduce a corporate taxation for the benefit of public transportation. In the Netherlands, subsidies for public transportation are earmarked. These alternative ways of funding create an environment where such investments to a lesser extent compete against other public services.

One of the main conclusions from the study is that the financial constraints for public transportation is tighter in Oslo compared to the other cities we have studied. To provide the same opportunities in Oslo as the cities in table S.2, the subsidies will have to be increased by 23 per cent per capita or NOK 170 million.

Table S.2: Key figures for the financing of public transportation (all modes included)

	Level of subsidy	Subsidy per capita NOK	Subsidy per passenger NOK
The Hague	63 %	1 948	7,5
Helsinki	52 %	1 438	3,8
Stockholm[1]	51 %	1 732	5,1
Gothenburg	44 %	1 630	5,9
Oslo	37 %	1 399	4,4

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[1] The figures for Stockholm are for the entire region, Greater Stockholm Region (SL).

Great network coverage but a low frequency in Oslo

The size and density of the population are important factors to explain differences in the market share for public transport. Oslo, however does not stand out negatively compared to any of the other cities of this study in that respect.

Oslo is characterized by the extent of the rail based public transportation system. Compared to the other cities, Basel is in a class by itself concerning the coverage of the rail based public transportation. However, Oslo and the Hague also performs well.

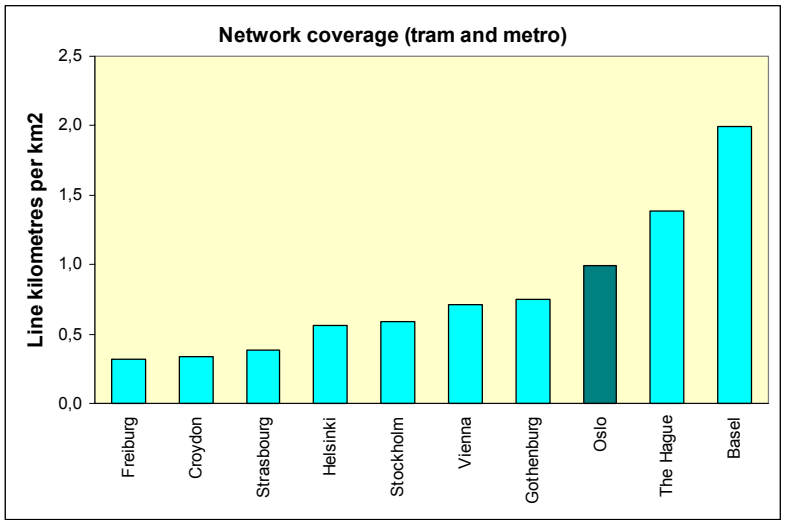

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Illustration S. 1 Total network coverage for tram and metro in Oslo compared to the other cities in the study (railway not included)

The customer base must be improved for public transportation

Oslo has a far worse customer base per km for both the tram and the metro compared to the other cities. This is mainly due to the fact that the network also cover areas with a relatively low population density. Illustration S.2 and S.3 show the customer base for tram and metro respectively.

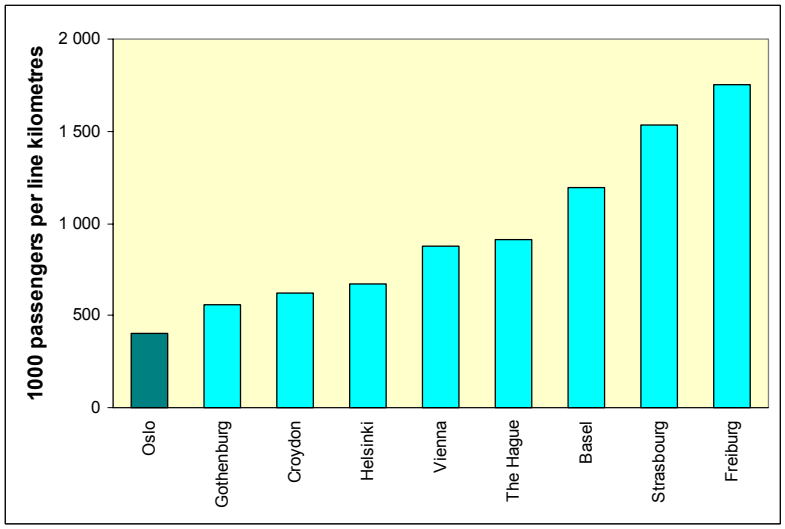

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Illustration S. 2 Customer base for the tram

With a customer base of less than 500.000 passengers on average per kilometre of line, the tram in Oslo is worse off compared to the other cities. This highlights one of the main challenges facing Oslo: It is expensive to provide a high frequency with few passengers per line. As Illustration S.3 shows, the metro also shares this basic problem.

In several of the cities we have studied, this problem has been solved by a clear geographical priority between the different modes of public transportation. The buss, tram and the metro seldom compete on parallel lines in these cities. A clear priority of the tram, close to the city centre through a refurbishing of streets and large pedestrian areas, together with "park and ride" facilities are some of the main tools. Furthermore, integrated connections between different modes of transport are developed to reduce the need for parallel lines between the different modes.

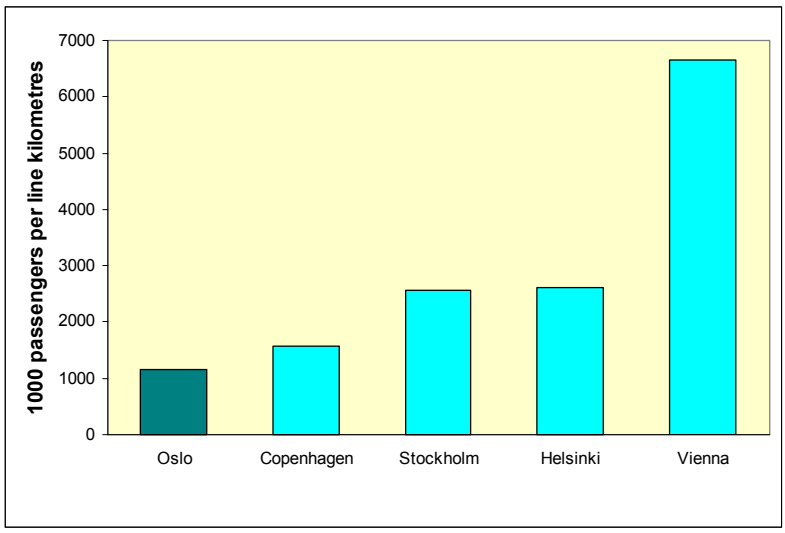

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Illustration S. 3 Customer base for the metro

The frequency must be increased

When public transportation is planned, a balance between the network coverage and the frequency of the departures must be found. Due to the high network coverage and the low level of subsidies, both the tram and the metro in Oslo has a low frequency (Illustration S.4 and Illustration S.5). This underline that the major challenge for Oslo is to increase the frequency of departures. In all the cities we have studied, the interval between departures is 10 minutes or less. The illustrations show a high frequency even in smaller cities than Oslo. A better targeted strategy is required for Oslo to reach this level.

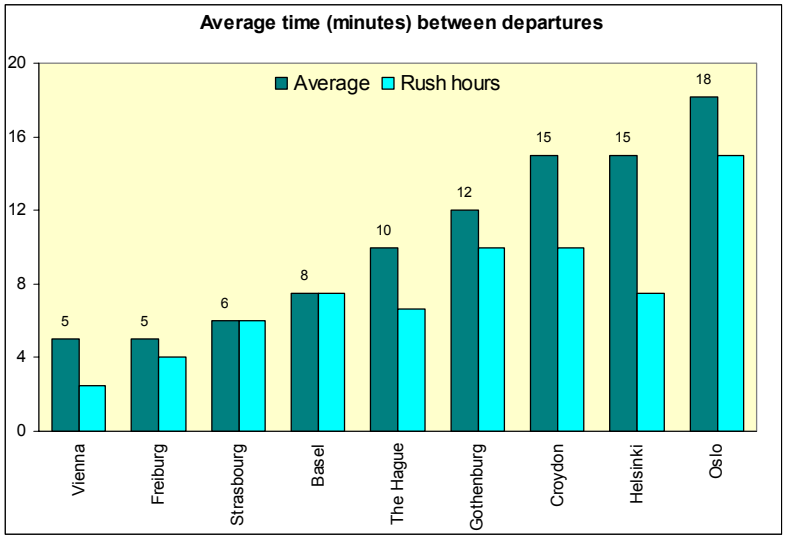

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Illustration S. 4 Frequency of departures for the tram

Not only the tram has a low level of frequency. The metro in Oslo run with four departures per hour most of the time, with a reduction to 2 departures per hour at night and late in weekends. Some of the problem in Oslo is related to the bottleneck caused by all lines having to run through the same tunnel in the major parts of the city.

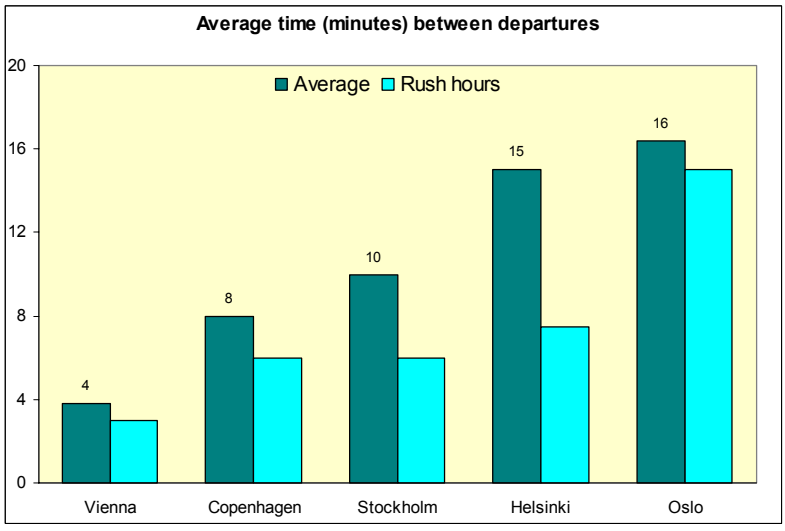

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Illustration S. 5 Frequency of departures for the metro

There is a need for better priority of the tram

The tram in Oslo stands out by having the lowest level of lines running separated from other traffic (Illustration S. 6). Nevertheless, when the average speed is considered the differences are smaller. This is due to the fact that the tram in many cities run in pedestrian areas and are required to have a low speed. The reliability, however, is increased by running in pedestrian areas.

Comparisons show that the tram in Oslo has a great potential for improving the reliability by priority measures and more tracks separated from other traffic. Customers will benefit greatly from this, first of all by higher reliability and secondly by a higher frequency as a result of more efficient use of the infrastructure and the rolling stock.

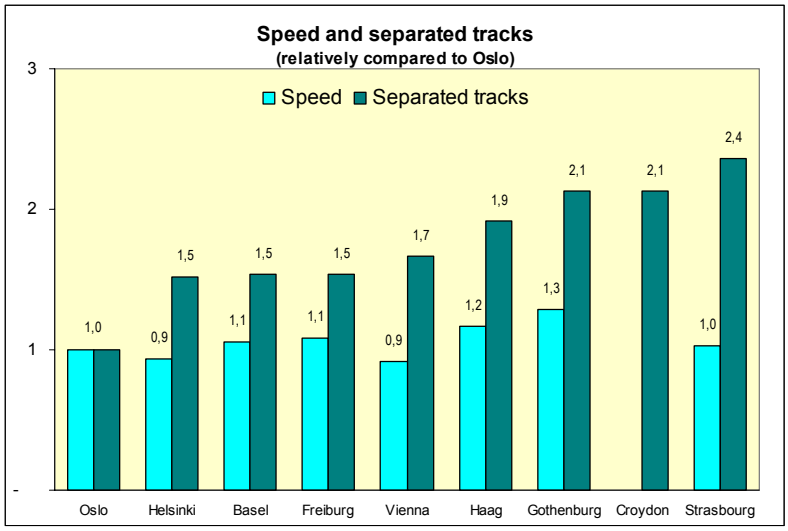

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Illustration S. 6 The speed and the share of separated tracks for the tram

The potential of a better targeted market strategy for tram in Oslo

One of the goals with this project has been to consider the market potential for a strategic vision for the tram labelled a “moving sidewalk” within the city centre. This “moving sidewalk” implies a high frequency making timetables obsolete and an increased average speed from 17km/h to 20 km/h through priority measures.

Based on experiences from other cities, there are three areas in which Oslo stands out:

1. Oslo has a higher network coverage and a lower frequency compared to other cities. This indicate that there are potential gains from restructuring the network and increasing the frequency.
2. Several cities have focussed on priority measures for the tram and increased the speed and the reliability far above the level in Oslo.
3. Several cities have used the tram as a mean in a targeted strategy to revitalise the city centre.

Based on this, we have first estimated the effects of a ”moving sidewalk” on all lines. This includes a 20 per cent increase in the average speed and frequency of 10 or 5 minutes between departures on all lines. This frequency would put Oslo on level with the best cities of this study. Such an increase, however, is not feasible due to the costs of producing 2-3 times as many vehicle kilometres.

The effect of a targeted strategy for a ”moving sidewalk” in the city centre

An alternative and less expensive solution is a better targeted strategy. This includes restructuring the network to allow a “moving sidewalk” in the central parts of the city. This is the strategy chosen by the Tram company, Oslo Sporvognsdrift AS, and we have tried to estimate the potential increase in demand from this targeted strategy.

This is part of a gradually implemented strategy to achieve an increased frequency. We have focussed on the first part of this strategy, which involves a new line concept. This concept will, according to Oslo Sporvognsdrift AS, produce 29 per cent more vehicle kilometres with a reduction of 4 trams, due to the expected priority measures and efficiency gains on the network.

The effects on demand from these basic efficiency improvements will depend upon the information and marketing of the new concept. We have made an estimate of the effect of increased production and increased speed (Table S.3). Our estimates show that the increased production and speed, isolated will increase the demand by 12 to 23 per cent. Assuming a proportional increase in the fare revenue, this will generate an increase in the revenue of somewhere between 28 and 52 million NOK. The cost of this strategy will depend on the efficiency gains and long term commitments by the local authorities. We have not estimated the cost of this strategy.

Table S. 3 Estimated effect on demand from a “moving sidewalk” (basic alternative)

	Change in demand (%)	
	Short term (1 year)	Long term (2-4 year)
Expected service elasticity (vkm)	0.42	0.75
Increased vehicle km on workdays	11 %	21 %
Increased speed (7-19)	3 %	6 %
Sum estimated effect (work days)r	15 %	27 %
Sum effect on total demand, incl weekends	12 %	23 %
Increased revenue (mill NOK/year)	28	52

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