

Table 5 – Parking location for car drivers

Parking	May 2011	September 2011	May 2012
Street, parking lot without fee	2	8	6
Street, parking lot with fee	2	3	2
Visitors parking	2	2	0
Parking reserved for employees	94	87	92

p < 0.05, chi-square test

Change in the starting time of journeys

Free parking means that there will be a high demand for parking lots. Above, it has been shown that the parking capacity was full before the parking charge was implemented. This can influence starting time for work travels. In order to capture this aspect, car drivers were asked if they needed to travel early to find a free parking space. Table 6 illustrates that the proportion who states that they are traveling early to secure a parking space has been reduced from 69 to 31 percent. Thus, the parking fee has contributed to making it easier for those driving to find parking space and has therefore influenced starting time of journeys

Table 6 – Change in starting time of journeys

Parking	May 2011	May 2012
Need to travel early to secure parking space	69	31
Parking coverage does not influence departure time	31	68

p < 0.05, chi-square test

Findings on how acceptance evolves over time

The effect of an instrument can be measured in several ways. We have above studied how the parking fee has influenced the mode of transport to work, change in parking location and change in starting time for journeys. Another key element is legitimacy and study whether the parking fee has support among the employees and how support may change over time. In this case, the acceptance is measured by whether employees are positive or negative towards the measure.

The acceptance before the parking fee was introduced can be roughly categorized as follows. One third were against the parking fee, one third were neutral and one third were positive. However, the share of employees being positive increases after the parking fee was introduced, and the share of employees being negative is reduced. One year after the parking fee over 45 percent were positive towards the measure, one of three were neutral and 22 percent negative. Thus, the acceptance increased after they experienced the impact of parking fees. The development can be compared with the introduction of congestion charges in Stockholm. Support for congestion charging was higher after the measure was implemented (Schuitema, Step and Forward 2010).

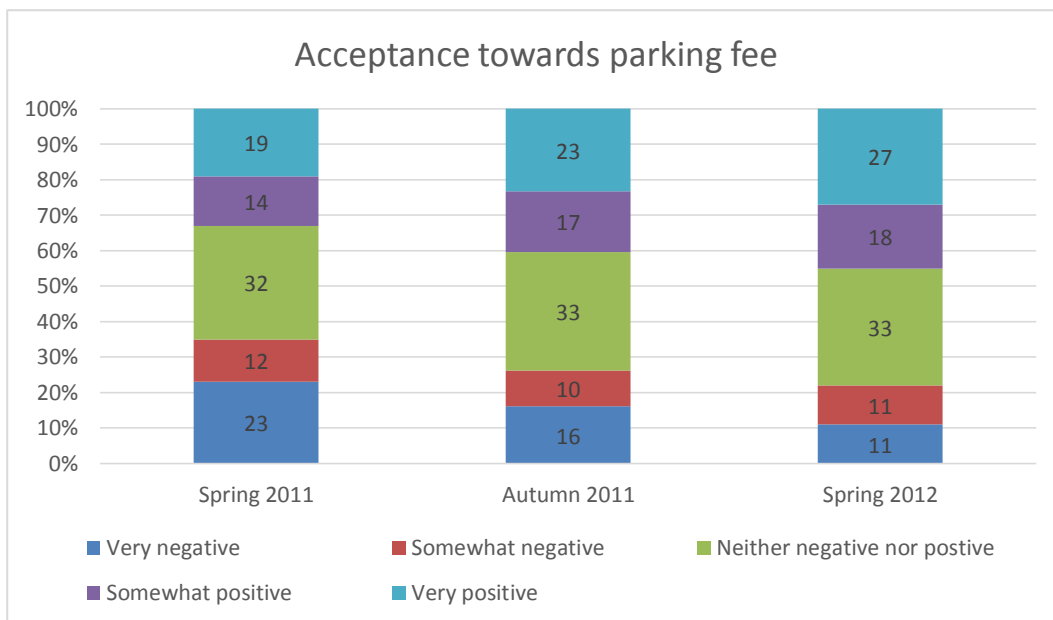


Figure 2 – Acceptance towards parking fee

$p < 0.01$, chi-square test

The employees were asked to state why they were negative towards the parking fee in the second and third survey. Most responded that the alternatives to the car are not good enough (31 percent). 27 percent of the responses stated that employers should offer free parking to employees. Higher costs are also a major reason why employees are negative.

The employees were also asked why they were positive. The response categories were divided into five categories. The first category covers ideology connected to that the employer should not subsidize parking. NPRA spent over 3.8 million NOK per year to subsidize parking before the fee. Approximately one fifth responded that this is a reason why they were positive. The environmental aspect is related to the parking fee contributes to less car use. Parking fee is from the employer's side intended to reduce unnecessary driving and follow national guidelines to encourage reduced car use. This option provides the greatest support, and shows that environmental impact has the greatest explanatory power.

Another environmental argument is that parking fee promotes NPRA as an environmentally conscious employer. They function as a good example for other businesses after introducing a fee. This option has the second most votes. Nearly one in four states that this as one reason for being positive. A more pragmatic argument is that the fee makes it easier to find parking. We have previously demonstrated that there is a clear tendency that drivers do not have to arrive early in order to secure parking space. This can partially explain why employees have been more positive.

Overall, the findings give support to the thesis that acceptability increases when the public has familiarity with a (restrictive) measure and experience the effects (Jones 2003, Eliasson and Jonsson 2011).

Table 7 – Causes for being negative or positive towards the parking fee

Why negative to parking fee	Percent
The alternatives for not driving is not good enough	31
Employer should offer free parking to employees	27
Transport expenses will increase	23
Other	19
Why positive to parking fee	Percent
The parking fee profiles the NPRA as an environmental employer	24
The parking fee makes it easier to find a parking space	19
The parking fee contributes to less car use	32
The employer should not subsidise parking	21
Other	4

Acceptance and mode of transport

According to Jaensirisak et al. (2005) there has been relative few studies about how acceptability differs for road pricing between users and non-users. In their study, they found, by the use of stated preferences that road pricing was more acceptable to non-users, people with environmental concerns and those who thought the scheme would be effective. Table 8 shows how acceptance varies according to car use for employees at the NPRA before and after the fee (in brackets) was implemented. Those who drove daily to work in the winter were largely negative to the fee, while those who did not often travel by car were more positive. The share of employees being positive are larger for all categories after the introduction of the fee. However, the acceptance are far greater for workers that seldom use car on their work travels. Thus, the results give support to the hypothesis that the car drivers are most negative towards the fee.

Table 8 – Car use during winter and attitudes to the parking fee

	Very positive	Rather positive	Neither positive or negative	Rather negative	Very negative	
Car use at least 5 times a week	4(14)	9(14)	27(33)	18(16)	42(23)	100 (N=100&81)
Car use 1-4 times a week	12(17)	18(25)	26(30)	16(14)	28 (14)	100 (N=76&71)
Less than 1 time a week	30(35)	15(17)	37(33)	7(7)	11(6)	100 (N=210&206)

p< 0.01, chi-square test

Acceptance and earmarking of revenues

Kallbekken and Sælen (2011) have studied how earmarking can help to increase support for higher fuel taxes in Norway. The results showed that earmarking helps to increase acceptance. One main reason is that people do not think a higher tax will help to improve the environment if the money is not earmarked for environmental purposes (ibid). The employees that were neutral or negative towards the parking fee were asked whether they would be positive if the revenues from the parking were earmarked to measures that facilitates for environmental friendly transport.

The results suggest that this is the case. During spring 2012, one in three (previously neutral or negative) would be very or rather positive, 46 percent stated that they would remain neutral, while 33 percent would still be negative. Overall, these findings suggests that support for the parking fee would increase significantly if the revenues were earmarked.

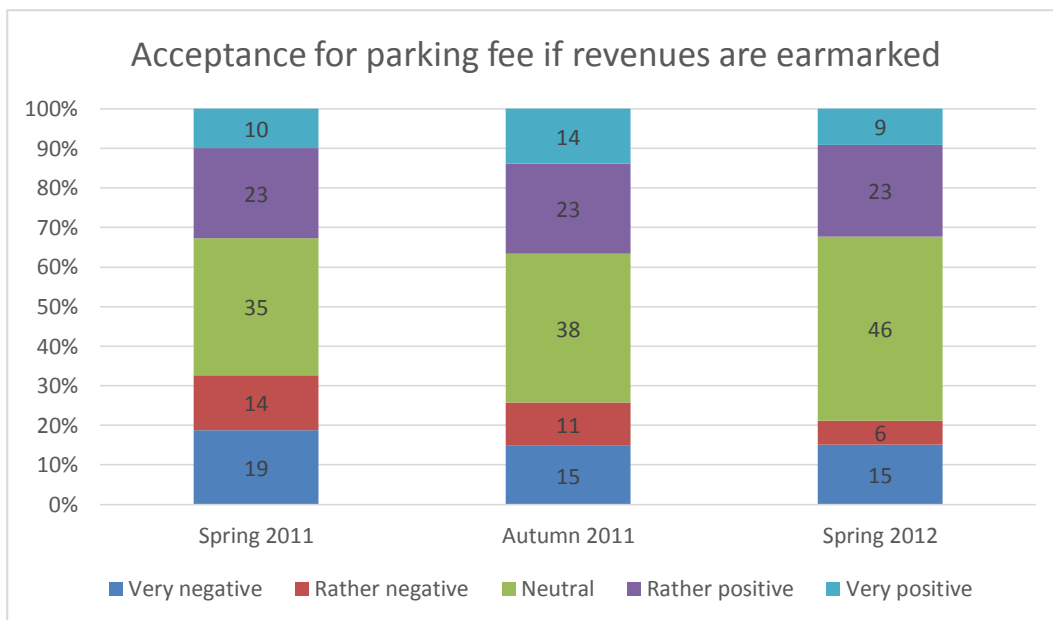


Figure 3 – Car use during winter and attitudes to the parking fee
 $p < 0.01$, chi-square test

Discussion and conclusion

Parking restrictions have for long been recognized as important for influencing travel behaviour and can thus play an important role in strategies for reducing congestion and pollution. The majority of workers in Oslo have free parking and this article documents that a modest parking fee has nudged employees to use less car. The occupancy at the parking garage has been reduced from 97 to 81 percent and the car share has been reduced by 23 percent. 12 percent of the workers state that they use less car after the parking fee was introduced. The parking fee has consequently affected the parking demand and parking utilisation. This means that a parking fee can be a well-functioning instrument also in areas outside the most central areas in a city. It also shows that the fee can be rather small in order to induce changes, even though the effects would be larger with higher costs. Moreover, the parking fee symbolises that NPRA takes its environmental responsibilities seriously. The symbolic factor is also one factor that explains why employees are positive towards the fee.

However, the findings also highlights the importance of contextual factors. There are tendencies towards spillover parking, but the effect is weak. This can probably be attributed to the fact that parking along roads in nearby areas would result in 5-10 minutes walking and that the fee is rather modest. At any rate, taking into account local transport factors are required in order to reduce the negative effects. In order to reduce spillover parking, local authorities can introduce residential zone parking (Mingardo et al. 2015).

For the employees, the effects are not only negative. The fee costs 6000 NOK per year if we assume that an employee drives to work every day. This is a modes cost compared to the market price (27 000 NOK). However, before the parking fee it was necessary to arrive early in order to secure a parking space. After the fee, the majority stated that they did not need to arrive early. The fee has consequently made the journeys more flexible since car drivers were secured a parking space no matter at what time of day they arrived. This effect has also increased the acceptability. Employers could thus use such an argument before a fee is introduced in order to increase the understanding and acceptability. This indicated the importance of how the fee is framed.

The case study also shows that parking fees can be controversial. Before the fee, 35 percent were negative and those who drove to work frequently were most inclined to be negative. The main reasons for being negative were not good enough alternatives to the car and increased costs. This illustrates the importance of highlighting the costs of providing free parking. Acceptance and understanding of the project may

increase by showing that car drivers, in this case, was subsidized with a sum that could give all employees free annual ticket for public transport.

The case study also documented that the employer could increase acceptance by use the income from the fee to promote environmental friendly transport. By earmarking funds or implement measures that stimulate to less car use, the employer uses both carrot and stick in order to encourage to environmentally friendly transport.

In the end the workers became positive towards the fee. This indicates that parking fees could be introduced despite resistance since acceptability increase when the benefits are demonstrated. Especially if the parking spaces are already fully utilized.

Further researcher may be extended to include studying how price elasticity for parking fees at work travels varies for different geographical contexts. Moreover, further studies are needed on strategies to increase acceptance for restrictive measures at work places.

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