Priceless policies

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Chapter 2

Acceptability and revenue use

The role of revenue allocation for the acceptability of transport pricing policies

Abstract
Generally, pricing policies are believed to be effective in reducing problems of massive car use. However, pricing policies are not easily implemented, as they are hardly acceptable to the public. Studies indicate that revenue allocation is important for the acceptability of transport pricing. However, this has never systematically been examined. In the present study, revenue allocation is systematically examined, using between-subjects and within-subjects designs. Results revealed that transport pricing is more acceptable if revenues are allocated to the transport system instead of to general public funds. The between-subjects designs revealed that investing revenues in road infrastructure was hardly acceptable, while this type of revenue allocation was evaluated more favourably when following a within-subjects design. This suggests that the chosen design should dovetail with the aim of the study.

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Introduction

In densely populated areas, increasing car use results in a reduction of accessibility (e.g. through congestion), quality of life (e.g. though noise) and environmentally quality (e.g. though CO_2-emmissions). Economists maintain that increasing the costs of car use is an effective strategy to reduce car use (Ubbels & Verhoef, 2007). However, the acceptability of such measures often is low (Jones, 2003).

The acceptability of transport pricing is assumed to depend on an evaluation of the expected outcomes of these policies, and is therefore defined as an attitude towards transport pricing (Bamberg & Rölle, 2003; Jones, 2003; Schade & Schlag, 2000). The design of a transport policy largely determines the outcomes of the policy for individual car users. One important feature for the acceptability of transport pricing is the allocation of the revenues (Jones, 1991a; Schlag & Schade, 2000; Schade & Schlag, 2003; Small, 1992).

A survey in Great Britain revealed that charges on driving in city centres and motorways were more acceptable if revenues were invested in public transport or used to reduce car-related taxes (Commission for Integrated Transport, 2001). In line with this, other British surveys concluded that investing revenues in public transport is the most acceptable revenue allocation, in particular when these investments were made in the area in which transport pricing was introduced (Ison, 2000; Jones, 1991a).

Schade & Schlag (2000) examined acceptability ratings of three packages of pricing policies in four European cities (see also, Schlag & Schade, 2000; Schade & Schlag, 2003). The revenue allocation was described in the policy packages, linking the revenues to a specific transport policy. Their results showed that these policy packages were acceptable if their revenues were allocated to public transport, conditions for pedestrians and cyclists, or used to lower car-related taxes. Investing revenues in general public funds or lowering income taxes were evaluated as less acceptable. Verhoef (1996) evaluated various types of revenue use without any reference to a specific transport policy, and found that a large majority of Dutch respondents preferred allocating revenues to road infrastructure. Reducing car-related taxes or investing in public transport was more acceptable than allocating revenues to general public funds. However, in a British survey only a minority of respondents favoured allocating revenues to increasing road capacity rather than to allocating revenues to public transport (Commission for Transport, 2004). Allocating revenues of Norwegian toll-rings to public transport was generally preferred over investments in road infrastructure (Thorpe, 2002). Different conditions of the Dutch, Norwegian and British transport system, in terms of number of travellers as well as the condition of public transport and road infrastructure, may be one explanation for these contrasting results. Moreover, Verhoef's sample consisted of morning peak road users, while the British and Norwegian survey was conducted among a representative sample of British adults and inhabitants of three specific cities, respectively.

In the studies above, respondents evaluated either total packages of transport policies including revenue allocation or single types of revenue use with or without any reference to a specific transport policy. When packages of transport policies are evaluated, acceptability is confounded with many other policy features, such as the price level. Moreover, the packages often consist of multiple pricing policies and revenue allocations. When single types of revenue allocation are evaluated, respondents evaluate the investment of revenues in general, without

realising that this money is disposable because their costs for car use have increased. This may result in unrealistic acceptability judgements, because the focus of respondents is on the domain in which revenues are invested rather than on the total pricing policy, which includes a specific revenue allocation.

So far, the role of revenue allocation in acceptability judgements of transport pricing has not been examined systematically. The aim of this paper is twofold. First, we examine to what extent revenue allocation influences the acceptability of transport policies. Second, we compare the evaluation of revenue allocations with and without a reference to specific transport policies.

Different types of revenues allocation may be categorised as follows (see Figure 1). First, revenues can be allocated within the transport system or outside the transport system (viz., to general public funds). Second, when investing revenues within the transport system, revenues can be used to benefit car users or users of alternative transportation modes, such as public transport or cycling. Third, when revenues are allocated to benefit car users, revenues can be used to reduce car taxes that are not related to car use (labelled as fixed costs, such as road taxes), reduce car-related taxes that depend on car use (labelled as variable costs, such as fuel taxes), or used to invest in road infrastructure. Moreover, revenues used to benefit users of alternative transportation modes can be categorised as: reducing costs that are not related (e.g., costs of seasonal tickets of public transport) or are related (e.g., public transport fares) to the frequency of using alternative modes, or invested in infrastructure (such as railways or cycle tracks). This categorisation lies beyond the scope of this paper and is therefore not included in Figure 2.1.

The acceptability of transport policies depends on the expected outcomes of the measure. Kahneman, Knetsch, & Thaler (1986a) demonstrated that people evaluate outcomes of situations in terms of gains and losses relative to their current situation. Most car users would probably consider the effects of transport pricing policies as a loss (i.e., their costs for car use increase). Cost increases can be compensated by returning the revenues to car users. It is expected that the more certain it is that car users are compensated, the more acceptable a transport pricing policy will be. People will feel more compensated when they perceive a direct link between their increasing costs on the one hand, and the compensation for these costs on the other (cf., Geller, 1989), which is the case in particular when revenues of transport policies are allocated to benefit car users. Based on this reasoning, for each level in Figure 2.1

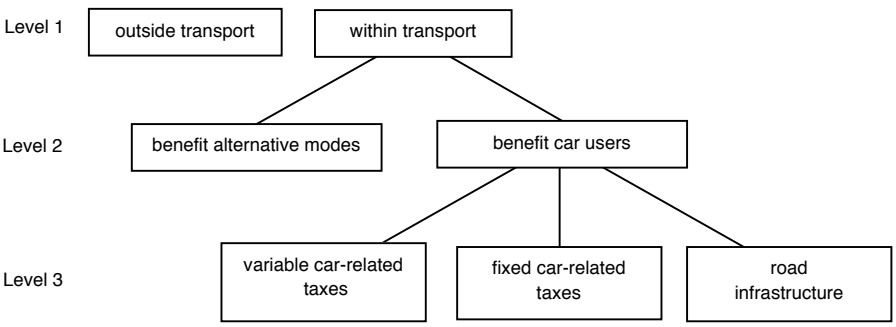

Figure 2.1 Classification of revenue allocations

hypotheses about the acceptability of transport policies are formulated for various revenue allocations.

First, it is hypothesised that car users evaluate the acceptability of transport pricing policies more favourably if revenues are allocated within the transport system, compared to outside the transport system. Whether and to which extent car users profit from revenues that are allocated outside the transport system depends on one's personal situation. For instance, healthy people do not profit from improved health care and unemployed people do not profit from decreased income taxes. If revenues are allocated within the transport system, car users are more sure that they will be compensated.

Second, if revenues of transport pricing are allocated to benefit car users, the latter are more directly compensated for their increasing costs than if revenues are allocated to benefit users of alternative transportation modes. Thus, it is hypothesised that transport pricing is more acceptable when revenues are allocated to benefit car users than users of alternative transportation modes.

Third, using revenues of transport pricing to benefit car users may imply decreases in fixed or variable costs or investments in road infrastructure. All car users will profit directly from decreased fixed or variable car-related taxes. So, these revenue allocations of transport pricing are expected to be most acceptable. Car users probably do not distinguish between the extent to which they are compensated for increasing costs if revenues are used to reduce fixed or variable car-related taxes. Therefore, we expect no differences in the acceptability judgements of these revenue allocations. When revenues of transport pricing policies are invested in road infrastructure, car users may be uncertain whether they will benefit personally from these investments as infrastructure may not be improved in the area in which they drive. Moreover, car users benefit only in the long term from investments in road infrastructure, whereas car users benefit directly from decreased car-related taxes. Thus, it is hypothesised that investing revenues in reducing (fixed or variable) car-related taxes is more acceptable than investing revenues in road infrastructure.

All hypotheses concern the acceptability of transport pricing by car users. Non-car users are more in favour of transport pricing than car users (Jaensirisak et al., 2005), because these measures do not increase their costs. However, this study focuses on car users, because this is a large and influential group with regard to the implementation of transport pricing policies.

Method

The first aim of this paper is to examine systematically to what extent the acceptability of transport pricing is affected by revenue allocation. To do so, two different kilometre charges in which revenue use was systematically varied were evaluated; between-subjects designs were followed. To make sure respondents evaluated revenue allocations with reference to specific pricing policies, realistic descriptions of the kilometre charges were presented to the respondents. Therefore, both kilometre charges were based on charges which the Dutch government seriously considers to implement.

Next, single revenue allocations without a reference to specific transport policies were evaluated by respondents; a within-subjects design was followed. In this case, various revenue allocations of transport policies in general were evaluated. This enabled us to compare evaluations of revenue allocations with and without reference to specific transport policies.

Data for this study were collected in one questionnaire study. To facilitate reading this paper, data are presented as three separate studies. The studies are presented in the same order as the respondents filled out the questionnaire.

Sample and procedure

The study was conducted by means of a computerised questionnaire. Respondents were selected from a telepanel of the Dutch marketing research institute TNS NIPO (Dutch Institute for Public Opinion and Market Research). Respondents were randomly selected from commuters who experienced at least twice a week congestion during the morning rush hour. Of the total sample, eight respondents were excluded from the analyses, because they filled out the questionnaire too quickly (viz., in less than 10 minutes; the average time used was 21 minutes), as a result of which 507 respondents were included in the analyses.

Compared to the Dutch average, the present sample comprised more male respondents (75%), with a high educational level (lower education was finished by 16.6%; 28.6% had finished middle education; 36.3% had finished higher education) and high gross household annual income (17.6% earned less than €28.500; 34% earned between €28.500 and €45.000; 29.8% earned between €45.000 and €68.000; 18.1% earned more than €68.000). This sample is comparable with other samples of commuters who are often confronted with traffic jams (Bureau Goudappel Coffeng, 1997; Steg, 2005).

Study 1: Acceptability of kilometre charge based on car weight

Method

First, respondents indicated the weight category of their car (light, medium, heavy). Next, respondents were presented with a description of a kilometre charge, implying that they had to pay for each kilometre driven by car. It was indicated that the price level was dependent on how environmentally friendly their car was, and that this was estimated on the basis of the weight of the car. People with a light car had to pay 4 €cents per kilometre driven, for medium-sized cars 5 €cents per kilometre, and for heavy cars 6 €cents per kilometre was charged. To give respondents an impression of the financial consequences of this measure, an estimation of the total cost increase for an average household was presented. For an average household (driving approximately 16,000 kilometres a year) costs per month could increase with €53 (for a light car), €66 (for a medium-sized car) or with €79 (for a heavy car)[1].

The description of the kilometre charge above was presented to all respondents, only the allocation of revenues varied systematically between respondents. Five types of revenue use were distinguished[2]: revenues could be allocated to (a) general public funds (N = 79), (b) transport system improvements (N = 82), (c) abolish road taxes (N=66), (d) decreasing fuel taxes (N = 69), and (g) new road constructions and improvement of existing road infrastructure (N = 69). Respondents were randomly assigned to one of the conditions[3]. After reading the scenario, the acceptability of this kilometre charge was indicated on a seven-point scale (1 -very unacceptable- to 7 -very acceptable-).

Results

Overall, the kilometre charge based on car weight was judged as rather unacceptable (M = 3.3, SD = 1.87). Table 2.1 gives an overview of the mean acceptability scores and standard deviations of the five conditions of revenue allocation. A one-way ANOVA was conducted, revealing a main effect for revenue use on the acceptability of the kilometre charge ($F(4, 360) = 5.98$, $p<.001$)[4].

Contrast tests revealed that the kilometre charge was less acceptable if revenues were allocated to general public funds compared to being allocated to the transport system in general (viz., the mean acceptability scores in the conditions when revenues were allocated to improve public transport, abolish road taxes, decrease fuel taxes and invested in road infrastructure). No statistically significant differences were found between the acceptability of the kilometre charge when revenues were used to improve public transport compared to when they were allocated to benefit the 'car user' (viz., the mean acceptability of revenues allocated to abolish road taxes, decrease fuel taxes and invested in road infrastructure). The kilometre charge was less

Table 2.1 Contrast tests of kilometre charge based on car weight for different types of revenue allocation

	Contrast	M	(SD)	value contrast	t (360)	p
1	revenues allocated to public funds	2.7	(1.62)	2.65	2.86	.004
	versus					
	transport system (viz., mean score on revenues allocated to public transport, road taxes, fuel taxes, road infrastructure)	3.4	(1.90)			
2	revenues allocated to public transport	3.2	(1.89)	0.90	1.27	.206
	versus					
	car user (viz., mean score on revenues allocated to road taxes, fuel taxes, road infrastructure)	3.5	(1.91)			
3	revenues allocated to road taxes	3.7	(1.93)	0.19	0.57	.553
	versus					
	fuel taxes	3.9	(1.88)			
4	revenues allocated to road taxes	3.7	(1.93)	-0.92	-2.93	.004
	versus					
	road infrastructure	2.8	(1.75)			
5	revenues allocated to fuel taxes	3.9	(1.88)	-1.10	-3.56	.001
	versus					
	road infrastructure	2.8	(1.75)			

Note: Acceptability varied from 1 (very unacceptable) to 7 (very acceptable)

Table 2.2 Contrast tests of kilometre charge based on car weight for different types of revenue allocation, without investing revenues in road infrastructure

	Contrast	M	(SD)	contrast value	t (360)	p
1	revenues allocated to public funds	2.7	(1.62)	2.58	3.60	.001
	versus					
	transport system (viz., mean score on revenues allocated to public transport, road taxes, fuel taxes)	3.6	(1.92)			
2	revenues allocated to public transport	3.2	(1.89)	1.27	2.51	.013
	versus					
	car user (viz., mean score on revenues allocated to road taxes, fuel taxes)	3.8	(1.90)			

Note: Acceptability varied from 1 (very unacceptable) to 7 (very acceptable)

acceptable if revenues were invested in road infrastructure compared to using them to abolish road taxes, or decrease fuel taxes. No significant difference was found between the acceptability of the kilometre charge when spending the revenues on abolishing road taxes and decreasing fuel taxes.

The low acceptability of the kilometre charge when allocating revenues to road infrastructure may explain the fact that no significant difference was found for the second contrast (viz., 'public transport' versus 'car user'). In fact, allocating revenues to improve road infrastructure was almost as unacceptable as allocating revenues to general public funds. Therefore, the first and second contrast analyses were conducted again, this time without allocating revenues to road infrastructure (see Table 2.2). As expected, two significant contrast effects were found. Again, respondents evaluated investing revenues in 'general public funds' as less acceptable than investing them in the 'transport system in general', that is, the mean acceptability scores of investing revenues to improve public transport, abolish road taxes, and decrease fuel taxes. In contrast to the previous contrast tests, the kilometre charge was less acceptable when revenues were used to improve public transport rather than when revenues were used to benefit the car user, that is, by abolishing road taxes and decreasing fuel taxes.

Discussion

In accordance with the first hypothesis, the kilometre charge was more acceptable when revenues were invested within the transport system than when revenues were allocated to public funds. Our second hypothesis was confirmed as well: the kilometre charge was more acceptable when revenues were allocated to benefit the car user rather than in case users of alternative transportation modes would benefit. However, this was only the case when allocating revenues to road infrastructure was not included. Third, no differences in the acceptability of the kilometre charge appeared when revenues were allocated to decreasing fixed taxes (viz. road taxes) or variable taxes (viz. fuel taxes). Finally, the kilometre charge was less acceptable when revenues were invested in road infrastructure compared to when revenues were used to reduce car-related taxes. In fact, investing revenues in road infrastructure appeared to be almost as unacceptable as allocating revenues to general public funds. This suggests that our assumption that investing revenues in road infrastructure would be perceived as a large benefit to car users was not validated. Apparently, car users expect hardly to benefit from investments in road infrastructure, which probably resulted in low acceptability levels. Moreover, the results support our reasoning in general: acceptability of kilometre charges increases when car users expect to benefit more directly from the revenue allocation.

Study 2: Acceptability of flat kilometre charge

Method

A description of a flat kilometre charge was evaluated by respondents, implying that everyone had to pay for each kilometre driven by car. A 3 (price level) by 3 (revenue use) between-subjects design was followed, implying 9 different versions of this kilometre charge (Table 2.3). Revenue allocations could either be (a) the government has not yet decided how to use the revenues, (b) revenues are used to construct new roads and improve existing road

Table 2.3 Design, average costs and number of respondents per condition for flat kilometre charge

		Revenues allocated to		
		(a) general public funds	(b) construct new and improve existing road infrastructure	(c) abolish road taxes and taxes on the purchase of cars
Price level (€cent/km)	2.5	a. h. c. increase: €33 per month (N=50)	a. h. c. increase: €33 per month (N=49)	a. h. c. decrease: €33 per month (N=60)
	5	a. h. c. increase: €66 per month (N=50)	a. h. c. increase: €66 per month (N=64)	a. h. c. increase: no change (N=56)
	7.5	a. h. c. increase: €99 per month (N=59)	a. h. c. increase: €99 per month (N=60)	a. h. c. increase: €33 per month (N=59)

a.h.c. = average household costs

Table 2.4 Contrast tests of flat kilometre charge for different types of revenue allocation

	Contrast	M	(SD)	contrast value	t (360)	p
1	revenues allocated to public funds	2.3	(1.54)	0.48	2.66	.008
	versus					
	road infrastructure	2.8	(1.62)			
2	revenues allocated to public funds	2.3	(1.54)	2.03	11.23	.001
	versus					
	reduce road taxes and taxes on purchase of cars	4.4	(1.78)			
3	revenues allocated to road infrastructure	2.8	(1.62)	1.55	8.75	.001
	versus					
	reduce road taxes and taxes on purchase of cars	4.4	(1.78)			

Note: Acceptability varied from 1 (very unacceptable) to 7 (very acceptable)

infrastructure, or (c) revenues are used to abolish road taxes and taxes on the purchase of cars. Further, the charge level was varied systematically: 2.5, 5 or 7.5 €cents per kilometre driven. Again, total costs per month for an average household were indicated (driving 16,000 kms a year). Average cost increases for an average household were estimated for each price level: 16,000 kms * price per km. In case allocating revenues was (a) the government has not yet decided or (b) construct new roads and improve existing road infrastructure, respondents were shown an estimation of costs increase per month for an average household, namely €33 (when charge was 2.5 €cent/km), €66 (when charge was 5 €cent/km) or €99 (when charge was 7.5 €cent/km). In case revenues were (c) allocated to abolish road taxes and taxes on the purchase of cars, a different estimation of the costs for an average household was shown to the respondents, because the reduction of costs by reduced car-related taxes was taken into account. Respondents read that monthly costs for an average household could decrease with €33 (when charge was 2.5 €cent/km), stay unchanged (when price level was 5 €cent/km) or increase with €33 (when price level was 7.5 €cent/km) (see Table 2.3).

Respondents were randomly assigned to one of the experimental conditions[5], and were asked to indicate how acceptable the policy scenario was to them on a 7-point scale (1 -very unacceptable- to 7 -very acceptable-).

Results

The average acceptability of the flat kilometre charge was 3.2 (SD = 1.87), which means that this measure was judged as rather unacceptable. An one-way ANOVA[6] revealed a main effect of revenue use on acceptability of the flat kilometre charge ($F(2, 504) = 70.1$, $p<.001$). Table 2.4 shows the results of the contrast tests conducted to examine the differences between the acceptability of the flat kilometre charge, given three types of revenue allocation. First, respondents evaluated the kilometre charge as less acceptable when revenues were used to improve general public funds compared to using revenues for improving road infrastructure. Second, the kilometre charge was less acceptable when revenues were allocated to general public funds, compared to when revenues were allocated to abolish road taxes and taxes on the purchase of a car. Finally, allocating the revenues of the kilometre charge to the latter was more acceptable than allocating revenues to road infrastructure.

Discussion

When revenues were invested in road infrastructure the kilometre charge was more acceptable than in case revenues were invested in general public funds. However, both investing revenues of a flat kilometre charge in road infrastructure and general public funds were rather unacceptable. Again, car users do not appear to expect to benefit from revenues allocated to road infrastructure. The flat kilometre charge was most acceptable when revenues were used to reduce car-related taxes, supporting our conclusion from Study 1 that acceptability of kilometre charging increases when car users expect to benefit more from the revenues.

Study 3: Acceptability of revenue allocations without reference to a specific policy

Method

Each respondent was asked to evaluate five different types of revenue allocation of transport pricing in general: “the government can allocate the revenues of transport policies in various ways. How acceptable are the following types of revenue allocation to you?”. The types evaluated were revenues allocated to (a) general public funds, (b) construct new roads, (c) improve the quality of public transport, (d) abolish existing road taxes, and (e) decrease existing fuel taxes. Scores could range from 1 (very unacceptable) to 7 (very acceptable).

Results

A repeated measures ANOVA was conducted to examine the acceptability of five types of

Table 2.5 Mean and standard deviation of acceptability judgments for 5 types of revenue allocations

Revenues allocated to	M	SD
General public funds	2.1	1.46
Improve public transport	4.0	1.93
Build new roads	5.2	1.43
Decrease fuel taxes	5.6	1.40
Abolish existing road taxes	5.8	1.22

Note: Acceptability varied from 1 (very unacceptable) to 7 (very acceptable)

revenue allocation without making any reference to a specific transport pricing policy. As Table 2.5 shows, allocating revenues of transport pricing policies to decrease fuel taxes, abolish road taxes and build new roads was judged far more acceptable than investing them in general public funds ($F(5, 502) = 392.3$, $p<.001$). Acceptability of revenue use to improve the quality of public transport took a middle position. Estimation of marginal means showed that average acceptability judgements of all types of revenue allocation differed significantly from each other ($p<.001$).

Discussion

Strikingly, investing revenues in road infrastructure appeared to be a very acceptable type of revenue allocation, which is in contrast to the results of Study 1 and 2. In Study 3, investing revenues in road infrastructure was almost as acceptable as reducing car-related taxes. We will elaborate on this finding in the general discussion, below.

In accordance with Study 1 and Study 2, the most unacceptable type of revenue allocation is investments in general public funds, while investing revenues in public transport took a middle position. Again, acceptability of transport pricing is higher when car users expect to benefit directly from revenue allocations (i.e., when car-related taxes are reduced) than when car users expect to benefit less directly from the revenue allocation (i.e., investments in general public funds).

General discussion

In three studies it was shown that the acceptability of transport pricing strongly depends on the allocation of revenues. Generally, results of three studies support our reasoning that acceptability of transport pricing increases when car users expect to benefit from the allocation of revenues, which is especially the case when revenues are allocated to decrease fixed car-taxes (viz., road taxes) and variable car-taxes (viz., fuel taxes). When revenues are allocated to benefit users of alternative transportation (viz., public transport) car users do not expect to benefit as much as when car-related taxes are decreased, but they expect to benefit more than when revenues are invested in general public funds. In Study 1 and 2, investing revenues to road infrastructure appeared to be almost as unacceptable as allocating them to general public funds, which suggests car users hardly expect to benefit from investing revenues in road infrastructure. Finally, car users expect to benefit least from revenues when they are allocated to general public funds. In this study, the revenue allocation outside the traffic domain was defined as ‘general public funds’ without a specification of the exact revenue allocation. This does not imply that only allocation of revenues outside the transport domain is not acceptable. In fact, transport pricing may be acceptable in case of specific revenue allocations outside the transport domain, for instance when revenues are invested in environmental improvements (e.g., see Jones, 1991a; Schlag & Schade, 2000).

The description of the kilometre charge in Study 1 was complex, and respondents may have had difficulties to comprehend all aspects of the charge. It cannot be concluded that the acceptability judgements were not affected by the comprehensibility of the scenarios since we do not have an indication of how well the respondents understood the scenarios. However, it seems not plausible to expect that respondents did not understand the scenarios well for two

reasons. First, in case respondents did not understand the scenarios, it may be expected that differences between groups would not be significant. Second, results of Study 1 were consistent with the results of Study 2, in which a rather simple scenario was presented to the respondents.

In addition, a price level depending on car weight may have been affecting respondents' perception of the fairness of this policy. For instance, this policy may be more fair to a car owner who possesses a light car than to a car owner with a heavy car. Because the acceptability of transport pricing increases when people perceive this policy as fair (Bamberg & Rölle, 2003; Jakobsson et al., 2000; see also Chapter 5 of this thesis), the perceived fairness of this kilometre charge may have played a role as well. However, in Study 2, the description of the flat kilometre charge was not complicated and the description gave less cause for variations in the perceived fairness of the policy. The results from Study 2 were in line with the evaluation of the kilometre charge in Study 1. Interestingly, the mean and variance of acceptability levels did not differ between the kilometre charge based on car weight and the flat kilometre charge. This suggests that differences in acceptability can be attributed to various revenue allocations rather than to the complexity or perceived fairness of the kilometre charge based on car weight.

In general, results from Study 3 were in accordance with the results of Study 1 and 2, with one exception. In Study 1 and 2 investing revenues in road infrastructure was judged as rather unacceptable, whereas in Study 3 this was a very acceptable type of revenue allocation. Results of Study 3 are in line with Verhoef's (1996) study, in which the same method was used. These contrasting results can be explained by the study designs that were used. Two factors may play a role. First, in Study 1 and 2 revenue allocations were linked to a specific pricing policy, whereas in Study 3 respondents evaluated revenue allocations without reference to actual pricing policies. In general, investing revenues in road infrastructure may be an acceptable allocation (Study 3), but when people realise that the money they are paying via transport policies is invested in road infrastructure, this revenue allocation may not be that acceptable after all (Study 1 and 2). In terms of Rawls (1999), respondents were situated behind a 'veil of ignorance': revenues were evaluated while respondents did not realise that transport pricing policies may affect their own situation. In Study 1 and 2, respondents were not ignorant of how kilometre charging would affect their own situation, and they probably considered these effects when evaluating the acceptability of the charges.

Second, in Study 3 respondents could compare single revenue allocations, because of the within-subjects design. This was not possible in Study 1 and 2, where between-subject designs were followed, which may result in different acceptability judgements. Similar results were found in a study on the acceptability of transport pricing among firms (Steg, Tillema, Van Wee, & Schuitema, 2008). Respondents first evaluated a kilometre charge where revenues were used to decrease income taxes. Next, they indicated how acceptable this kilometre charge would be if revenues were used in different ways (including decreasing income taxes), making comparisons between the revenue allocations possible. In the second task, revenues used to decrease income taxes were less acceptable than in the first task. Hendrickx and Nicolaij (2004) also found similar differences in responses between within- and between-subjects designs. They argue that for within-subjects designs task variations are more conspicuous than for between-subjects designs.

In conclusion, results of within-subjects designs do not always correspond to results of between-subjects designs. The choice of the design should be based on the purpose of the study. First, if the aim is to examine evaluations of a given type of revenue allocation in relation

to other types of revenues, making a reference to existing pricing policies is not necessary. If the aim is to examine evaluations of given types of revenue allocations in relation to the consequences of a policy as a whole, revenue allocations should be linked to a specific pricing policy. Second, when using a within-subjects design contrasts of revenue allocations are emphasised, whereas when using a between-subjects design isolated judgments of revenue allocations are given.

The acceptability of transport policies appeared to depend strongly on revenue allocation: acceptability increases when car users expect to be compensated for negative consequences. This is even more striking when considering the fact that our sample comprised commuters with high incomes, whose travelling expenses probably are (partly) refunded. As a result, the effect of transport pricing on this group of car users may actually be rather small. Nevertheless, the acceptability of transport pricing varied depending on revenue allocation, suggesting that when car users feel more compensated for possible negative consequences, in particular if car-related taxes are reduced, the acceptability of transport pricing increases.

This study provides additional evidence that the consequences of pricing policies should be clear for respondents when judging (aspects of) transport policies, because this affects people's judgements. In this case, investing revenues in road infrastructure appeared to be less acceptable when car users realised they had to pay themselves for these investments via kilometre charges. Furthermore, this study provides more insight in the way acceptability judgements of transport policies are formed, by systematically examining the role of revenue allocation in this process. It was shown that acceptability increases when car users expect to benefit from the allocation of revenues. This is important for communicating the implementation of transport policies to the public. By emphasising when and how car users can benefit from transport pricing, acceptability may increase (or decrease).

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[1] Cost increases for an average household (driving 16,000 kms a year) were estimated for each weight category. For a small car (€0.04 per kilometre; 16,000 kms a year) costs increased with €640 a year, (≈ €53,- a month). For a medium-sized car (€0.05 per kilometre; 16,000 kms a year) costs increased with €800 a year (≈ €66,- a month). For a heavy car (€0.06 per kilometre; 16,000 kms a year) costs increased with €960 a year (≈ €79,- a month).

[2] In fact, seven revenue allocations corresponding to Figure 2.1 were included. Two categories covered more than one revenue allocation, that is, revenues allocated within the transport system and to benefit car users. These two categories were excluded from the analyses because they do not give insight in the evaluation of one specific type of revenue allocation.

[3] The seven groups were comparable on four socio-demographic features (i.e., sex, age, income and educational level) as well as on the length of their commuting trip.

[4] An one-way ANOVA was conducted, because this allowed us to examine the contrasts on which our hypotheses are based. These results were similar to the results of a two-way ANOVA: A main effect for revenue use was found ($F(4, 350) = 6.37$, $p<.001$). Acceptability did not depend on the perceived car weight ($F(2, 350) = 1.36$, $p=.26$) and there was no interaction effect ($F(8, 350) = 1.53$, $p=.15$). Since we do not focus on the relationship between car weight and acceptability, we will not elaborate on this.

[5] The nine groups were comparable on four socio-demographic features (i.e., sex, age, income and educational level) as well as on the length of their commuting trip.

[6] Again, an one-way ANOVA is reported to be able to examine the desired contrasts. Similar to the results of the one-way ANOVA, a two-way ANOVA revealed a main effect for revenue use ($F(2, 498) = 70.2$, $p<.001$). Moreover, a main effect for price level was found ($F2, 498) = 5.3$, $p<.05$): the flat kilometre charge was less acceptable the kilometre charge was 7.5 €cent/ km compared to 2.5 or 5 €cent/ km. No interaction effect was found ($F(4, 498) = .81$, $p=.52$). The effect of price level on acceptability is not described in detail, since it lies beyond the scope of this chapter.