Chapter 5

Acceptability and fairness

When are Transport Pricing Policies Fair and Acceptable?

Abstract

This study examines the relative importance of six fairness principles for the perceived fairness and acceptability of pricing policies aimed at changing transport behaviour. The overall fairness and acceptability of six different types of transport pricing policies were systematically related to two fairness principles, that is, environmental justice and equality. The overall fairness and acceptability of policy measures was higher when respondents believed that future generations, nature and the environment were protected (reflecting environmental justice), and to a lesser extent, when everybody was equally affected by the policy outcomes (reflecting equality), irrespective of absolute differences in overall fairness and acceptability of the policies. Fairness principles reflecting egoistic concerns (e.g., being financially worse off) and equity (e.g., policy outcomes proportional to people's contribution to problems) were related to the overall fairness and acceptability of some policy measures, but no systematic pattern was found across all six policy measures. Our results suggest a general preference for environmental justice and equality. Also, fairness principles that focus on collective considerations appear to be more important for the overall fairness and acceptability of transport pricing policies than those focusing on individual interests. Theoretical and practical implications of these results are discussed.

This chapter is based on:
Schuitema, G., Steg., L., & Van Kruining, M., (2010). When are transport pricing policies fair and acceptable? The role of six fairness principles. *Social Justice Research, revised paper under review.*

Introduction

Public policies aimed at reducing social problems often involve that some people should change their behaviour or are restricted in their freedom to safeguard collective qualities. For example, transport policies are implemented to protect environmental quality or to reduce traffic accidents, and public health is protected by increasing taxes on alcohol and cigarettes. Although such policies generally increase overall quality of life of the population, they may have negative consequences for some groups. For example, transport pricing policies may reduce environmental problems and congestion, but they can affect car drivers negatively as travel costs increase or because some people can no longer afford to make certain trips. The extent to which the collective and individuals are affected by policies depends on the way policy outcomes are distributed. Public acceptability of such policies tends to be low when the outcomes are believed to be distributed in an unfair way (Cvetkovich & Earle, 1994; Tyler, 2000). But which distribution of costs and benefits is perceived to be fair and acceptable? This is a highly relevant question, as policy makers are reluctant to implement policies that lack public support.

Little is known about which distribution of policy outcomes is considered to be most fair and acceptable, especially with respect to public policies. Important questions are: how should costs and benefits of public policies be distributed to increase overall fairness and acceptability of these policies? Which type of distributional fairness do people prefer? This study aims to study how the evaluation of the distribution of costs and benefits (i.e., distributional fairness) is related to the evaluation of the overall fairness and acceptability of public policies. As a case in point, we focus on a public policy for which perceived fairness and acceptability play a key role, that is, transport pricing policies. Transport pricing policies are aimed at reducing the negative effects of car use and car ownership, including environmental problems and congestion, by increasing the costs of the undesired behaviour (e.g., extensive car use, the purchase of energy inefficient cars) or decreasing the costs of the desired behaviour (e.g., reduced kilometrage, purchase of energy-efficient cars).

Various studies showed that the perceived overall fairness and acceptability of transport pricing policies are strongly related (e.g., Bamberg & Rölle, 2003; Eriksson et al., 2006; 2008c; Fujii, Gärling, Jakobsson, & Jou, 2004; Jakobsson et al., 2000; Odeck & Bråthen, 1997). This result is not surprising, because the definition of acceptability is quite similar to the definition of distributive fairness. Acceptability of transport pricing has been defined as ‘an evaluation of the expected costs and benefits of transport pricing’ (e.g., Eriksson et al., 2006), while distributive fairness has been defined as ‘an evaluation of the *distribution* of expected costs and benefits of transport pricing’ (Deutsch, 1975; 1985). People may differ in their preferences for distribution of costs and benefits of policies, and thus in their preference for different fairness principles.

To evaluate the fairness of policies, people compare the expected outcomes of the policy with a reference point (Kahneman, 1992b). In general, three different types of comparisons can be made, each based on a different reference point: intrapersonal, interpersonal and intergenerational comparisons. Below, we explain these three types of comparisons, and propose six fairness principles reflecting these types of comparisons that are relevant for the evaluation of the fairness and acceptability of transport pricing policies (see also Figure 5.1).

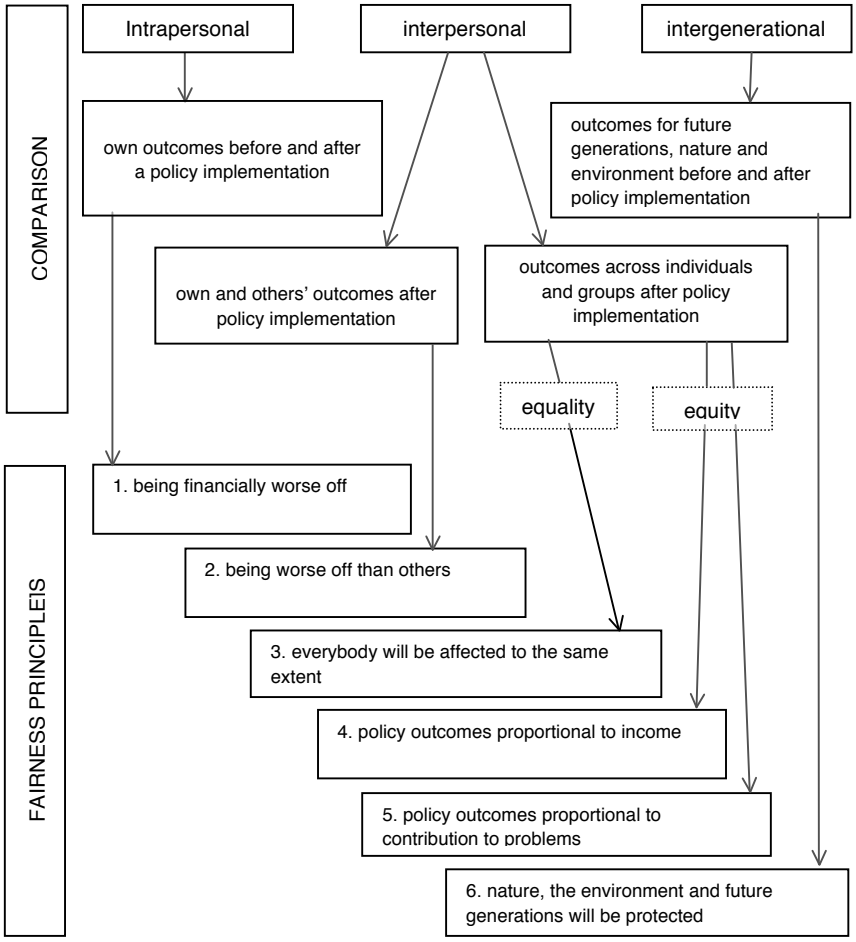

Figure 5.1 Classification of fairness principles

Intrapersonal comparisons

Intrapersonal comparisons refer to a comparison of policy outcomes with an internal reference level or previous personal outcomes, independent of outcomes of others (Loewenstein, Thompson, & Bazerman, 1989c). Thus, an intrapersonal comparison reflects that people compare their current outcomes (i.e., outcomes before a policy is implemented) with outcomes of a policy for themselves after a policy is implemented. So, in this case people focus on outcomes for themselves. Such comparisons are often associated with a focus on self-interest, which is not believed to reflect fairness (e.g., Bazerman, Loewenstein, & White, 1992; Bazerman, White, & Lowenstein, 1995; Bethwaite & Tompkinson, 1996; Handgraaf, Dijk, Wilke, & Vermunt, 2004; Loewenstein, Thompson, & Bazerman, 1989b). However, we believe that people may consider it as unfair if they are worse off after the implementation of a policy

measure than before. Therefore, we consider a comparison of one's own outcomes before and after the implementation of a policy measure as a relevant fairness principle. With respect to fairness and acceptability of transport pricing policies, a relevant intrapersonal comparison involves a comparison of ones *financial* costs before and after the implementation of transport pricing policies. So, the first fairness principle we distinguish reflects the extent to which one is financially worse off after a policy implementation (fairness principle 1: being financially worse off).

Interpersonal comparisons

Interpersonal comparisons imply that others' outcomes are taken into account when people evaluate policy outcomes, that is, how policies affect different individuals or groups in society. Two different interpersonal comparisons can be made. First, one can compare one's own outcomes with the outcomes of others, which reflects to what extent one is worse off than others (fairness principle 2: being worse off than others). This fairness principle refers to negative outcomes for oneself relative to others: policies are probably considered to be less fair an less acceptable when people expect to be worse off than others (cf., Diekmann, Samuels, Ross, & Bazerman, 1997a).

Second, one can compare the outcomes of policies across individuals or groups in the population. Two important fairness principles for evaluating the cost and benefits across individuals or groups are equality and equity (Deutsch, 1975; Messick, 1993; Hegtvedt & Cook, 2001). Equality refers to an equal distribution of the costs and benefits across all people (Deutsch, 1975; 1985). In the realm of transport pricing policies, an equal distribution implies that a policy affects everybody to the same extent (fairness principle 3: equality).

Equity implies that outcomes of policies are distributed in proportion to personal characteristics or to one's contribution to a problem (Adams, 1965; Walster, Berscheid, & Walster, 1973). A personal characteristic that is particularly relevant in the case of transport pricing policies is income, because it is often argued that lower income groups should not be affected disproportionally (see, Ubbels & Verhoef, 2007). Hence, a relevant fairness principle reflects a distribution of the outcomes of transport pricing policies in proportion to one's income. We defined the fourth fairness principle as: low income groups are affected less strongly than high income groups when transport pricing policies are implemented (fairness principle 4: equity, policy outcomes proportional to income).

Equity can also imply that outcomes are distributed in proportion to people's contribution to problems. With respect to transport pricing policies, people's contribution to car-related problems, such as congestion or emissions, is a relevant evaluation criterion that could be used to determine the overall fairness and acceptability of policies (Button, 1993). This is reflected in our fifth fairness principle: those who contribute most to problems are most strongly affected by transport pricing policies (fairness principle 5: equity, policy outcomes proportional to contribution to problems).

Intergenerational comparisons

Recently, it has been proposed that the outcomes of others should be considered in a boarder context, that is, the outcomes for future generation should be taken into account as well (Clayton, 2000; Wade-Benzoni, 2002; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008b),

which implies that intergenerational comparisons are made. Generally, people consider and value the outcomes for future generations, particularly in the sense that nature and the environment should be protected (Clayton, 2000; Wade-Benzoni, 2002; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008a). The fairness principle environmental justice reflects the extent to which future generations are protected, by preserving natural resources (Clayton, 2000). Environmental justice may be important for the fairness and acceptability of transport pricing policies, because these policies are generally aimed at preserving collective resources by reducing the environmental impacts of cars. Therefore, the sixth fairness principle that we distinguish concerns the protection of nature, the environment, and future generations (fairness principle 6: environmental justice).

Relationship between Fairness, Acceptability and Fairness Principles

We assume that people's evaluation of the extent to which transport pricing policies meet fairness principles affect the evaluation of the overall fairness and acceptability of these policies. Which outcome distribution is most predictive of the overall fairness and acceptability of transport pricing policies probably depends on one's value orientation (Anderson & Patterson, 2008). It is often assumed that people *a priori* act upon their egoistic values, implying that they aim to maximise their self-interests (Moore & Loewenstein, 2004). The first two fairness principles we distinguished (i.e., being worse off financially and being worse off than others) reflect a concern with egoistic outcomes, as both refer to a specific concern with negative outcomes for oneself. Hence, if people are indeed merely concerned with self-interest, they probably find transport pricing policies unfair and unacceptable when they expect to be financially worse off or worse off than others after the implementation of a policy measure.

However, it has also been proposed that people do not only try to maximise their own interests, but they consider interests of the collective as well (De Groot & Steg, 2008; Stern, 2000; Stern & Dietz, 1994), and act upon altruistic and biospheric values too. In line with this, it has been argued that the fairness principles equality, equity, and environmental justice are important to people due to a collective concern (Lerner, 2003; Schwartz, 1977; Tyler, 2000; Wade-Benzoni & Tost, 2009d). In addition, individuals may expect to personally benefit as well when outcomes are distributed on the basis of equality, equity, or environmental justice, for example because people feel good about themselves when taking care of others (e.g., Diekmann, Samuels, Ross, & Bazerman, 1997b; Messick & McClintock, 1968; Wade-Benzoni & Tost, 2009c). If people indeed focus on collective outcomes, it can be expected that transport pricing policies are considered to be more fair and acceptable when outcomes are distributed on the basis of equality, equity, or environmental justice.

Studies on fairness and acceptability of transport pricing policies indicate that collective considerations are indeed important, in addition to self-interest (De Groot & Steg, 2009b; Eriksson et al., 2006). Also, studies in the energy field indicate that the acceptability of policies aimed to promote energy conservation is related to collective considerations (e.g., Steg, Dreijerink, & Abrahamse, 2005). Studies indicate that solving collective problems related to car use is particularly important for the acceptability of transport pricing policies rather than individual outcomes (Schuitema, Steg, & Forward, 2010; Schuitema, Steg, & Rothengatter, 2010), suggesting that the overall fairness and acceptability for transport pricing policies are more strongly related to collective interests than to individual interests. Therefore, it may be

expected that the overall fairness and acceptability of transport pricing policies depend more strongly on the fairness principles that reflect a concern with collective outcomes than to fairness principles that reflect a concern with individual outcomes. Thus, it can be expected that the fairness principles 'equality' 'policy outcomes proportional to income', 'policy outcomes proportional to contribution to problems' and 'environmental justice' are more strongly related to the overall fairness and acceptability of transport pricing policies than the fairness principles 'being financially worse off' and 'being worse off than others'.

Are equality, equity and environmental justice equally strongly related to the overall fairness and acceptability of transport pricing policies? Many studies indicate a general preference for an equal distribution of outcomes over other fairness principles (e.g., Eek, Biel, & Gärling, 1998; 2001; Kahneman, Knetsch, & Thaler, 1986b; Loewenstein, Thompson, & Bazerman, 1989a; Messick & Sentis, 1979a; Messick & Schell, 1992), but these studies did not include environmental justice. Recent studies that did include environmental justice suggest that people have a strong preference for environmental justice as well. For example, Clayton (2000) found that the fairness principle environmental justice was considered to be more important in environmental conflicts than distributions based on equity and equality. So, there seems a general preference for equality and environmental justice. Therefore, it may be expected that overall fairness and acceptability of transport pricing policies are more strongly related to equality and environmental justice than to equity.

Fairness and Acceptability of Different Types of Transport Pricing Policies

Different policies have different cost and benefits, and consequently, the overall fairness and acceptability of transport pricing policies may differ for various types of policies (e.g., Eriksson et al., 2006; Steg, 1996). We assume that differences in the overall fairness and acceptability of policies are due to the fact that these policies meet the six fairness principles differently. If this is true, the six fairness principles should predict overall fairness and acceptability in a similar way, that is, the same fairness principles should consistently predict overall fairness and acceptability of different types of policies. To test this assumption and to test the robustness of our results, we will examine how the fairness principles are related to the overall fairness and acceptability of six different transport pricing policies. These policies differ systematically on two characteristics that are important for the overall fairness and acceptability of policies, as explained below.

First, we distinguish transport pricing policies that aim to change car ownership in order to reduce the environmental impact per car (e.g., impose a tax on cars with high environmental impact) and transport pricing policies that aim to reduce car use (e.g., impose a tax on a high annual kilometrage). Policies that aim to reduce car ownership are generally evaluated as more acceptable than policies that aim to reduce car use, because the latter usually requires more effort and reduces people's freedom (Poortinga et al., 2003; Steg et al., 2006). To authors' knowledge, no studies examined differences in the perceived fairness between policies aimed at reducing car use versus policies aimed at changing car ownership. Considering that the perceived fairness and acceptability of policies are strongly correlated, it is likely that policies aimed to change car ownership are also considered to be more fair than policies aimed to reduce car use.

Second, transport pricing policies can imply increasing the price of undesired behaviour

(e.g., purchasing a car with a high environmental impact or a high annual kilometrage). These policies are usually referred to as push measures. On the other hand, transport pricing policies can imply a decrease in the price of desired behaviour (e.g., purchasing a car with a low environmental impact or a low annual kilometrage). These policies are usually referred to as pull measures. Pull measures generally increase people's opportunities: the desired behaviour becomes more attractive while the consequences of the undesired behaviour do not change. Pull measures increase or, at least, do not decrease individual freedom of choice. Push measures, on the contrary, regulate people's behaviour in such a way that their options and freedom to move are restricted to some extent, since car use or the purchase of environmentally-unsound cars becomes less attractive. Overall, push measures are evaluated as more coercive than pull measures, and as a result, push measures are generally considered to be less fair and acceptable than pull measures (Eriksson et al., 2006; 2008b; Gärling & Schuitema, 2007; Schade & Schlag, 2003; Steg, 1996). Push measures are generally more effective in changing car use and car ownership, and consequently in reducing car-related problems, than pull measures (Gärling & Schuitema, 2007). A combination of push and pull measures may be more fair and acceptable than separate push or pull measures, because when push measures are combined with pull measures, problems are likely to be solved, while alternatives are provided as well.

This study

In sum, we assume that the extent to which a transport pricing policy meets particular fairness principles predict the overall fairness and acceptability of these policies. First, in line with previous studies, we hypothesise that overall fairness and acceptability of transport pricing policies are strongly and positively related to each other. Our main aim is to examine to what extent different fairness principles are related to the overall fairness and acceptability of transport pricing policies. Our study is explorative, but based on previous studies, we have the following expectations. First, we expect that the fairness principles 'equality', 'policy outcomes proportional to income', 'policy outcomes proportional to contribution to problems' and 'environmental justice' are more strongly related to the overall fairness and acceptability of transport pricing policies than the fairness principles 'being financially worse off' and 'being worse off than others'. Second, we expect that equality and environmental justice are stronger predictors of the overall fairness and acceptability of transport pricing policies than both fairness principles reflecting equity (i.e., policy outcomes proportional to income and policy outcomes proportional to contribution to problems). Third, we assume that overall fairness and acceptability of different transport pricing policies is consistently related to the same fairness principles, irrespective of the differences in the overall fairness and acceptability of policy measures. To test this assumption, transport pricing policies that are assumed to differ in overall fairness and acceptability are evaluated.

When asking respondents directly to evaluate the relative importance of fairness principles, they may provide socially desirable answers in order to present a favourable picture of themselves (cf., Diekmann, 1997). To reduce the chance of socially desirable answers, we will ask respondents to what extent different fairness principles apply to a particular policy, without explicitly asking them to compare or to rate the fairness principles. Next, we examine to what extent overall fairness and acceptability are predicted by the extent to which the different

fairness principles are met when the policy would be implemented. This is an indirect way of establishing the importance of fairness principles, which has proven to yield reliable results in studies in other domains (cf., Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

Method

Procedure and sample

A questionnaire was distributed in various neighbourhoods in an average-sized city in The Netherlands. Respondents were approached at home and requested whether they owned a car. In case they did, they were asked to fill out a questionnaire. About 33% (N = 101) of the people contacted completed the questionnaire. Questionnaires were collected at their homes within a few days later upon appointment.

The sample was reasonably representative of the Dutch population, although respondents with a high income and education level were overrepresented. Also, respondents' annual kilometrage was somewhat higher (17,000 km/year) than the national average (16,000 km/year). However, income, educational level and annual kilometrage did not systematically correlate with perceived fairness, acceptability and the evaluation of six fairness principles. So, it is unlikely that the higher income, educational level and annual kilometrage of respondents affected our results. Moreover, because we are interested in correlations rather than in mean scores, a sample that is not fully representative is less problematic (cf., Schultz et al., 2005).

Design

The study followed a 2×3 within-subjects design (see Table 5.1). The first factor reflected the aim of the policy measure. Two levels were distinguished: a policy measure aimed to reduce car use and a policy measure aimed to change car ownership. The policy measures that aimed to reduce car use implied that road taxes depended on people's annual kilometrage. The policy measures that aimed to change car ownership implied that a tax on the purchase of new cars depended on the fuel consumption of the car.

The second factor had three levels. The policy measure could be a push or a pull measure, or a combination of both. For the policy measure aimed at reducing car use, the push measure implied that road taxes increased with €500 for car users driving more than the Dutch annual kilometrage (i.e., 16,000 kms) ('car use, push'). The pull measure implied that road taxes decreased with €500 a year for car users with an annual kilometrage below 10,000 km's ('car use, pull'). A combination of both descriptions was given in case push and pull measure were combined ('car use, combination'). The policy measure aimed at changing car ownership implied that prices of cars that drives 13 kms or less on 1 litre of fuel would increase by €1,000 ('car ownership, push'), that prices would decrease by €1,000 when a car drives 17 kms or more on 1 litre of fuel ('car ownership, pull'), or a combination of the two ('car ownership, combination'). The policy measures were presented in a random order to prevent order effects, so different versions of the questionnaire were distributed. All respondents evaluated all six transport pricing measures.

Table 5.1. Design and descriptions of evaluated policy measures

	Reduce car use	Change car ownership
Push	increase of road tax with €500 when annual kilometrage >16,000 a year	increase of tax on purchase of new cars with €1,000 for cars using 1 litre fuel or more to drive 13 kms
Pull	decrease of road tax with €500 when annual kilometrage <10,000 a year	decrease of tax on purchase of new cars with €1,000 for cars using 1 litre fuel or less to drive 17 kms
Combination push/ pull	increase of road tax with €500 when annual kilometrage >16,000 a year; decreased of road tax with €500 when annual kilometrage <10,000 a year	increase of tax on purchase of new cars with €1,000 for cars using 1 litre fuel or more to drive 13 kms; decrease of these taxes with €1,000 for cars using 1 litre fuel or less to drive 17 kms

Table 5.2 Fairness principles

Fairness principle	Item in questionnaire
	if this policy is implemented, ….
1. being financially worse off	my financial situation will get worse
2. being worse off than others	I will be worse off compared to others
3. equality	everybody will be affected to the same extent
4. p.o. proportional to income	people with low incomes will be affected less than people with high incomes
5. p.o. proportional to contribution to problems	people who cause problems (e.g., congestion, pollution) will be affected most strongly
6. environmental justice	nature, the environment and future generations will be protected

p.o. = policy outcomes

Measurement of fairness, acceptability, and evaluation of fairness principles

After the description of each policy measure, respondents indicated how fair the policy measure was to them ('How fair is this policy measure to you?'; scores could range from 1 -very unfair- to 7 -very fair-). Next, respondents indicated to what extent they thought six fairness principles were applicable to the policy measures (e.g., 'if this policy measure would be implemented, my financial situation will get worse'; scores could range from 1 -strongly disagree - to 7 -strongly agree-) (see Table 5.2). Finally, respondents indicated how acceptable the policies were to them ('How acceptable is this policy measure to you?'; scores could range from 1 –very unacceptable- to 7 -very acceptable-).

On average, all policy measures were considered to be relatively fair and acceptable (see Table 5.3). However, as expected, the overall fairness and acceptability of the six policy measures differed across the six policies (see, Tables 5.3 and 5.4). Following a 2 (car use, car impact) by 3 (push, pull, combination) design, ANOVA's repeated measures revealed two main effects; no significant interaction effects were found. The first main effect, as expected, implied that respondents evaluated policy measures aimed at changing car use as less fair and less acceptable than policy measures aimed at changing car ownership. The second main effect indicated that fairness and acceptability judgements differed for the push, pull and combination policies. Push measures were considered to be less fair and acceptable than pull measures (mean difference on fairness: -.33, $p<.05$; mean difference on acceptability: -.27, $p<.05$) and combination measures (mean difference on fairness: -.26, $p<.05$; mean difference on

Table 5.3 Means and standard deviations of overall fairness and acceptability, and correlation coefficients between overall fairness and acceptability of six transport pricing policy measures

Policy measure	Fairness[1]		Acceptability[1]			
	M	SD	M	SD	r	
Car use, push	3.9	1.72	4.0	1.70	.76	**
Car use, pull	4.5	1.64	4.3	1.70	.79	**
Car use combination	4.3	1.53	4.3	1.48	.83	**
Car ownership, push	4.8	1.56	4.7	1.60	.82	**
Car ownership, pull	4.9	1.37	4.9	1.47	.83	**
Car ownership, combination	5.1	1.46	5.0	1.53	.91	**

[1] Scores could range from 1 (very unfair, very unacceptable) to 7 (very fair, very acceptable)
** p<.001

Table 5.4 ANOVA repeated measures of a 2 (car use; car ownership) by 3 (push; pull; combination) within-subjects design on fairness and acceptability of six policy measures

	F	df1, df2	p
Dependent variable: fairness			
Factor A (car use versus car ownership)	19.58	1, 100	.000
Factor B (push, pull versus combination)	6.11	2, 99	.003
Interaction (Factor A x Factor B)	2.88	2, 99	ns
Dependent variable: acceptability			
Factor A (car use versus car ownership)	19.86	1, 100	.001
Factor B (push, pull versus combination)	7.42	2, 99	.000
Interaction (Factor A x Factor B)	1.27	2, 99	ns

Note: for means and standard deviations, see Table 5.3

acceptability: -.31, p<.001), whereas no significant difference was found between the fairness and acceptability of the pull and combination measures.

Results

Relationship between overall fairness and acceptability

Table 5.3 shows that for all six policy measures, perceived fairness is strongly and positively correlated with the acceptability of transport pricing policies: the more fair a policy measure was considered to be, the more acceptable that policy measures was. Across the six policy measures correlation coefficients between fairness and acceptability varied from .76 to .91.

Relationship between fairness and acceptability judgements and fairness principles

Multiple regression analyses were conducted to analyse the relationships between respondents' evaluation of the extent to which the six fairness principles[1] were met when the transport pricing policy measures would be implemented and the perceived overall fairness and acceptability for each policy measures separately. The six fairness principles explained between 34% and 46% variance in the overall fairness of the six transport pricing policies (see Table 5.5). The fairness principle 'environmental justice' significantly contributed to the explanation of the overall fairness of all six policy measures. The beta-coefficients indicate strong and positive relationships, implying that all six policy measures were considered to be more fair when people expected nature, the environment and future generation to be protected. The fairness principle 'equality' contributed significantly to the explanation of the overall fairness of five out of six

policy measures. All policy measures were considered to be more fair if the policy measure affected everybody equally; this relationship, however, was weak and not significant for the policy measure 'car use, pull'. The fairness principle 'being worse off than others' significantly contributed to the explanation of the variance in overall fairness of the policy measures were considered to be less fair when respondents expected to be worse off than others after their implementation. For two policy measures (viz., 'car use, combination' and 'car ownership, pull'), the fairness principle 'being financially worse off' was significantly related to overall fairness judgements: respondents judged these policy measures as less fair when they expected their financial situation to deteriorate. In case of two policy measures ('car use, push'; 'car use, combination'), the evaluation of the fairness principle 'policy outcomes proportional to contribution to problems' significantly added to the explanation of the variance in its perceived fairness. Respondents considered these policy measures to be more fair when they more strongly believed that the policy measures more strongly affected people who contributed strongly to problems. Finally, the fairness principle 'policy outcomes proportional to income' significantly contributed to the explanation of the overall fairness of the policy measures 'car use, pull' and 'car ownership, pull'. The perceived fairness of the policy measure 'car use, pull' was lower when respondents expected low income groups to be less strongly affected than high income groups. For the policy measures 'car ownership, pull' the direction of this relationship was the other way around: overall fairness was higher when respondents expected low-income groups to be less strongly affected than high-income groups.

The six fairness principles explained between 40% and 56% variance in the perceived acceptability of the policy measures (see Table 5.6). As for overall fairness, the fairness principle 'environmental justice' significantly contributed to the explanation of the variance in the acceptability of all six policy measures: if respondents expected nature, the environment and

Table 5.5 Regression of overall fairness of six policy measures on evaluation of six fairness principles

	Car use			Car ownership		
	push	pull	comb	push	pull	comb
	β	β	β	β	β	β
1. being financially worse off	.10	.01	-.29 *	-.11	-.35 *	.01
2. being worse off than others	-.43 **	-.26 *	-.01	-.08	.07	-.27 *
3. equality	.18 *	.09	.23 *	.37 **	.37 **	.36 **
4. p.o. proportional to income	-.13	-.25 *	-.06	.14	.20 *	.04
5. p.o. proportional to contribution to problems	.23 *	.14	.22 *	-.11	.09	.05
6. environmental justice	.31 **	.39 **	.30 *	.52 **	.39 **	.49 **
explained variance (%)	43 **	34 **	35 **	46 **	37 **	45 **

p.o. = policy outcomes; *p≤.05; **p≤.001

Table 5.6 Regression of perceived acceptability of six policy measures on evaluation of six fairness principles

	Car use			Car ownership		
	push	pull	comb	push	pull	comb
	β	β	β	β	β	β
1. being financial worse off	.09 *	-.06	-.11	-.03	-.35 *	.02
2. being worse off than others	-.35 **	-.23 *	-.23 *	-.16	-.02	-.24 *
3. equality	.20 *	.19 *	.30 **	.33 **	.36 **	.35 **
4. p.o. proportional to income	-.02	-.18	.06	.02	.26 *	.03
5. p.o proportional to contribution to problems	.26 *	.18	.21 *	.08	.08	.10
6. environmental justice	.44 **	.38 **	.40 **	.50 **	.46 **	.45 **
explained variance (%)	56 **	40 **	47 **	47 **	44 **	44 **

future generations to be protected, they evaluated all six policy measures as more acceptable. Also, the fairness principle 'equality' significantly contributed to the explanation of the variance in acceptability judgements for all six policy measures. All six policy measures were more acceptable if respondents expected that everybody would be equally affected by the policy measures. The acceptability judgements of four policy measures were significantly lower when respondents expected to be worse off than others (viz., 'car use, push'; 'car use, pull'; 'car use, combination'; 'car ownership, combination'). In case of two policy measures ('car use, push'; 'car use, combination'), the fairness principle 'policy outcomes proportional to contribution to problems' significantly added to the explanation of the variance in acceptability. Respondents considered these policy measures to be more acceptable when they more strongly believed that the policy measures affected people in proportion to their contribution to car-related problems. Finally, the fairness principles 'being financially worse off' and 'policy outcomes proportional to income' contributed significantly to the explanation of the acceptability of the 'car ownership, pull' measure: this policy measure was less acceptable when respondents expected to be worse off financially and when respondents expected low-income groups to be affected less strongly than high-income groups after its implementation.

Overall, the regression analyses showed that the fairness principles 'environmental justice' and 'equality' were systematically and consistently related to the overall fairness and acceptability of the six policy measures. For the fairness principles 'being financially worse off', 'being worse off than others', 'policy outcomes proportional to income' and 'policy outcomes proportional to contribution to problems' no consistent relationships with overall fairness and acceptability of all six policy measures were found.

Discussion

In this paper, we studied which fairness principles determine the overall fairness and acceptability of transport pricing policies. Six fairness principles that are potentially relevant in this respect were identified: (1) being financially worse off than before policy implementation, (2) being worse off than others after policy implementation, (3) equality, (4) policy outcomes proportional to income, (5) policy outcomes proportional to one's contribution to problems and (6) environmental justice. To test the robustness of our results, we examined the extent to which these six fairness principles determined the overall fairness and acceptability of six policies measures that were expected to differ on overall fairness and acceptability. Indeed, the overall fairness and acceptability of the six policy measures differed. As expected, policies aimed at changing car use were evaluated as less fair and less acceptable than policy measures aimed at reducing the negative environmental impact per car. Also, push measures were generally considered to be less fair and acceptable than pull and combination measures.

First, we examined the correlation between overall fairness and acceptability of the six policy measures. As expected, all six policy measures were more acceptable when respondents considered them to be more fair. This is in line with other studies and indicates that fairness in indeed an important factor for the acceptability of transport pricing policies (see also, Bamberg & Rölle, 2003; Jakobsson et al., 2000; Eriksson et al., 2006; 2008a).

Second, we assumed that the overall fairness and acceptability of transport pricing policies depend on judgments on the distributions of the expected costs and benefits of these policies, reflecting different fairness principles. The results showed a clear pattern: two out of six fairness

principles were systematically related to the overall fairness and acceptability of all six transport pricing policies, namely, environmental justice and equality. Overall, the policy measures were considered to be most fair and acceptable when future generations, nature and the environment were protected. With one exemption, equality was systematically related to the overall fairness of and acceptability of all transport pricing policies. Also, for some policy measures, other fairness principles were more stronger related to the overall fairness and acceptability than the fairness principle equality. This indicates that the overall fairness and acceptability of transport pricing policies is strongly related to the fairness principle environmental justice and, to a lesser extent, to equality. This is in line with our expectations and with results of previous studies (Clayton, 2000; e.g., Messick & Schell, 1992). Distributions of policy outcomes on the basis of environmental justice are probably preferred because these benefit the collective as well as individuals (see also, Messick & McClintock, 1968; Schwartz, 1977; Wade-Benzoni & Tost, 2009b). Environmental justice in aimed at reducing collective problems. Hence, our results suggest that reducing collective problems related to car use is considered to be very important, which is in line with previous studies (e.g., see Schuitema et al., 2010 ;Chapter 3 of this thesis).

Two fairness principles that typically reflect egoistic concerns (i.e., being financially worse off, being worse off than others) were related to the overall fairness and acceptability of some policy measures only. Hence, fairness principles reflecting egoistic concerns seem to be related to the overall fairness and acceptability of a few policy measures only, but not to any transport pricing policy. Collective considerations (as reflected in environmental justice and equality) appear to be more important for the overall fairness and acceptability of transport pricing policies.

The two fairness principles reflecting equity, that is, policy outcomes proportional to income and policy outcomes proportional to contribution to problems, were also related to the overall fairness and acceptability of a few policy measure only. In our sample, people with high incomes and high annual kilometrage were somewhat overrepresented, which indicates that in general respondents would probably be more negatively affected when the highest income groups and those who cause problems are most strongly affected. If respondents would be particularly concerned with positive outcomes for themselves they would probably not favour both fairness principles reflecting equity. However, our results show the opposite: in case the overall fairness and acceptability of policy measures were related to equity principles, overall fairness and acceptability were higher when people expected low income groups to be less strongly affected than high-income groups and when those who cause problems would be most strongly affected. This supports our previous conclusion that egoistic concerns are not strongly and systematically related to overall fairness and acceptability of transport pricing policies.

Overall, in line with our expectations, environmental justice and equality were systematically related to overall fairness and acceptability of all policies, irrespective of the differences in overall fairness and acceptability for the six policy measures. So, our study suggest that despite differences in costs and benefits of different policies, fairness and acceptability depend most strongly and consistently on environmental justice and equality, albeit to a lesser extent. The overall fairness and acceptability of some policy measures were related to the fairness principles being financially worse off, being worse off than others, policy outcomes proportional to income and policy outcomes proportional to contribution to problems, but no systematic pattern of results was found for all six policy measures. We did not detect any logic in the conditions under which the other four fairness principles did or did not predict overall fairness

and acceptability of the transport pricing policies included in this study. Future research is needed to study under which conditions these fairness principles are likely to play a key role for the overall fairness and acceptability of policy measures.

The fairness principle environmental justice was most strongly related to the fairness and acceptability of all the six policy measures. This may be explained by the specific policy measures that were evaluated in this study: all six policy measures were aimed at improving environmental quality. Future studies should test whether our results can be generalised to other environmental policies: protecting nature, environment and future generations may well be important for the fairness and acceptably of any policy that aims to improve the environmental quality (see also, Clayton, 2000).

Our results can probably not be generalised to policies in general, in particular when the relevant policies are not directly aimed at improving environmental quality. Some policies, including transport pricing policies, are not aimed at reducing the environmental impact of transport in particular, but are for example aimed at improving accessibility. When the main objective of a policy measure is not aimed at improving environmental quality, the fairness principle environmental justice is probably less predictive of overall fairness and acceptability. Future studies are needed to test this assumption.

Generally, people with a high income, educational level and annual kilometrage were slightly overrepresented in our sample. However, we think it is unlikely that the overrepresentation of people with high incomes, educational levels and annual kilometrage affected our results, as our key variables were not related to income, educational level and annual kilometrage (see also, Jaensirisak et al., 2005; Ubbels, 2006). Furthermore, our sample consisted of car users only, which means that we cannot generalise our results to the general Dutch population. From a policy maker's point of view, it is relevant to understand which fairness principles underlie overall fairness and acceptability judgements of car users in particular, because especially car users generally oppose to the implementation of transport pricing policies (Jaensirisak et al., 2005). If the aim is to increase fairness and acceptability for transport pricing policies, our results indicate that policy makers should aim to design policies that meet the fairness principles equality and environmental justice. An example of a policy that meets the fairness principle environmental justice is increasing taxes on cars with high emissions levels. Another option is allocating the revenues of pricing policies in such a way that outcomes are distributed equally or that nature, the environment and future generations are protected via the allocation of revenues. For example, nature, the environment and future generations can be protected when the revenues of transport pricing policies are invested in the development of more energy-efficient cars or to improve public transport. Another practical implication of our study concerns the communication about the intended or expected effects of transport pricing policies. Communication about transport pricing policies often focuses on reducing congestion or improving accessibility (e.g., Dutch Ministry of Transport, 2007). Our results indicate that communication on effects on environmental quality may well increase overall fairness and acceptability of transport pricing policies.

[1] Overall, the six fairness principles did not strongly or systematically correlate. However, strong correlations (between .35 and .71; $p<.001$) were found between the evaluation of the fairness principles 'environmental justice' and 'policy outcomes proportional to contribution to problems' for all six pricing measures. Furthermore, strong correlations (between .51 and .81, $p<.001$) were also found between the evaluation of the fairness principles 'being worse off than others' and ' being financially worse off' for all six measures.