Priceless policies

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Chapter 1
General introduction

Introduction

After many years of intense debate on transport pricing, the Dutch government recently decided to implement a national kilometre charge (see Box 1.1). Lorries will be charged from 2012 and, next, the charge will gradually be implemented for private cars[1]. During his presentation of the plans for the kilometre charge, the Dutch Minister of Transport declared that public support is one of the main premises for the kilometre charge. Indeed, public support appears to be crucial in this respect, because lack of public support hindered the implementation of transport pricing policies in the Netherlands during the last decades (Nationaal Platform Anders Betalen voor Mobiliteit, 2005). Similarly, in many other countries, transport pricing has hardly been implemented due to low acceptability levels (Jones, 1991a; 2003). Thus, public support is a very important precondition for the implementation of transport pricing policies. Therefore, the main objective of this thesis is to understand which factors influence the acceptability of transport pricing policies.

Politicians have some intuitive ideas on how to increase the acceptability of transport pricing. To illustrate, the Dutch Minister of Transport stressed three issues that may safeguard

Box 1.1. November 30, 2007: Announcement of a kilometre charge in the Netherlands

In a press conference at November 30, 2007, Camiel Eurlings, the Dutch Minister of Transport, announced that the Dutch Cabinet had reached the decision to implement a different system to pay for mobility. The new system implies that vehicle taxes and taxes on the purchase of new car are abolished. Instead, all car users have to pay per kilometre driven. The kilometre charge is budget neutral, meaning that on average costs for car users will not change. Compared to their current situation, those who drive more kilometres than average and during rush hours will pay more, and those who drive less than average and outside rush hours will pay less.

Quotes of The Dutch Minister of Transport during the press conference:

"This is a fair system, in which 8 million car owners do not pay for the possession of a car, but for the use of it."

"This is fair. The total tax burden for car users does not increase"

"Fairness, affordability and public support. I am proud that our decision meets these principles"

"How does this system reduce congestion? Very simple. We can design the system in such a way that car users pay a lower fee when few cars are on the road and on places where congestion hardly occurs. That makes it attractive to avoid busy and expensive hours"

"Experiences from abroad reveal that this system is effective in making car users choose carefully. The car user will consider: do I need the car and do I want to go by car, or do I choose alternative options?"

"Other countries have a system in which people pay for mobility, but the choice to implement such a system nationwide has never been made before in any country in the world. Also the fairness principle (you do not pay more, but in a different way) is unique"

"This decision implies that The Netherlands will stay mobile and environmental goals will be achieved"

Source: Dutch Ministry of Transport (2007). The text of the speech can be downloaded from http://www.verkeerenwaterstaat.nl/actueel/toespraken/perspresentatieandersbetalenvoormobiliteit.aspx (in Dutch)

acceptability in his presentation about the kilometre charge, that is, revenue use (viz., abolish car-related taxes), fairness (viz., the 'polluter pays principle'), and expected benefits (viz., reduced congestion in particular). Apparently, the Minister assumes that public support for the kilometre charge will be secured when he stresses that average costs for car users will remain the same, the charge is presented as a fair system, and congestion will decrease. Are these assumptions correct? Does allocating revenues to car drivers by reducing car-related taxes increase the acceptability of transport pricing policies? Does stressing that a kilometre charge will reduce congestion increase the acceptability of transport pricing policies? Is the kilometre charge perceived to be fair, and are fair policies more acceptable? Is 'the polluter pays' the most important fairness principle to secure the acceptability of transport pricing policies? These are the main questions that are addressed in this thesis.

This chapter starts with an outline of the background of this thesis. Facts and figures about car use are car ownership are given and strategies aimed at changing car use are outlined. Next, a theoretical framework of the acceptability of transport pricing policies is presented, and factors that affect the acceptability of transport pricing policies are discussed. Finally, an outline of the remaining chapters in this thesis is given.

Background of this thesis

Car transport: facts and figures

Worldwide, the number of cars has increased rapidly. In 1970, there were 200 million cars in the world, while in 2006 this number was over 850 million (Worldwatch Institute, 2006). The largest increase in numbers of cars per 1,000 inhabitants is noted in Western countries, such as New Zealand, Canada, the United States and European countries. Worldwide, the total number of kilometres driven in private vehicles has increased substantially as well (EMCT, 2006; OECD, 2001). For instance, in European countries, the number of passenger kilometres increased from 1,536 million kilometres in 1970 to 4,347 million kilometres in 2003 (EMCT, 2006). It is generally believed that both car ownership and car use will increase further in the future (WBCSD, 2004; OECD, 2008; see also, Vlek, 2007).

In the Netherlands, the growth in car use and car ownership is in line with the worldwide trend. The possession of cars in Netherlands has increased from 5,633 thousand cars in 1995 to 7,542 thousand cars in 2009 (see Figure 1.1), which implies an increase of 34%. Forty-four percent of the Dutch population owned a car in 2006. Most kilometres travelled were driven by car, either as a driver or a passenger (see Figure 1.2). Moreover, the number of kilometres travelled by car (13%) increased stronger than the amount of kilometres travelled with other modes of transportation (5%) between 1995 and 2006.

Strategies to change car use and car ownership: TDM Measures

Many hold the view that the current transportation system is not sustainable, and that policies are needed to regulate the negative impacts of car traffic (e.g., EU, 2003; OECD, 2001; UNEP, 2001). Technological innovations can effectively reduce various emissions, such as concentrations of particulate matter (Groot, 2001). However, many positive effects of technological innovations are counterbalanced by the increase in the possession and use of

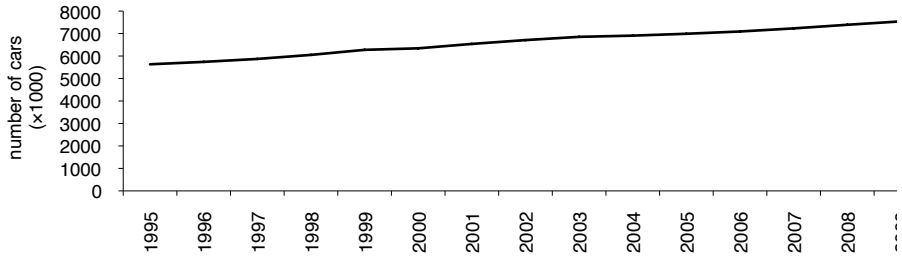

Figure 1.1 Number of cars in the Netherlands between 1995 and 2009
Source: AVV-MON, 2007; CBS, 2009

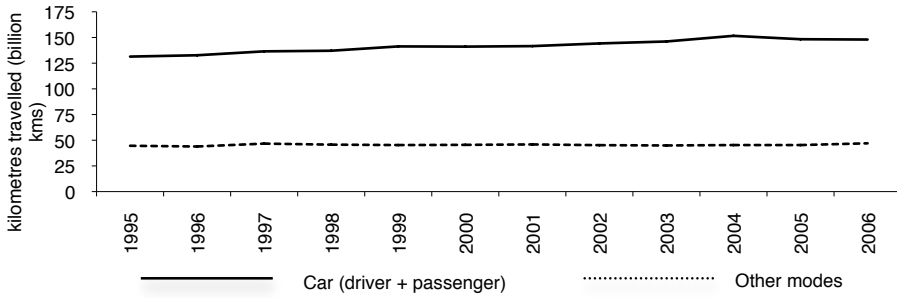

Figure 1.2 Total number of kilometres travelled in the Netherlands by car and other transport modes in 1995 – 2006
Source: AVV-MON, 2007

cars. Also, technological solutions do not necessarily reduce congestion levels or improve the accessibility of destinations. Therefore, policy measures that target the demand for car use are needed as well (e.g., Chapman, 2007; Johansson, 2009; OECD, 2001), often referred to as *travel demand management* (TDM) measures (Kitamura, Fujii, & Pas, 1997). Four types of TDM measures can be distinguished that target different antecedents of travel demand (Steg, 2003). These TDM measures involve either psychological or structural strategies for behaviour change.

Psychological strategies aim to change people's perceptions, knowledge, attitudes, beliefs, values, and norms concerning car use and car ownership. The underlying assumption is that when people change their perceptions and beliefs, they will adapt their car use and car ownership accordingly. Examples of psychological strategies are the provision of information about positive and negative aspects of car use, individualised marketing (providing people with tailored information about their travel options), social modelling (e.g., prominent public figures using alternative travel modes), and feedback on effects of behaviour changes.

TDM measures involving structural interventions are aimed at changing the context in which decision are made, in order to change the relative attractiveness of specific behaviours, such as car use or car ownership. On the one hand, structural changes can be aimed at making the desired behaviour more attractive (e.g., driving outside rush hours, purchasing an energy-efficient car); these are usually referred to as pull measures. On the other hand, undesired

behaviour can be made less attractive (e.g., driving during rush hours, purchasing an energy-inefficient car); such strategies are usually referred to as push measures (see also, Jones, 2003; Steg, 1996; Stradling, Meadows, & Beatty, 1999).

Structural interventions include physical changes, legal policies, and pricing policies. Physical changes are aimed at decreasing the relative attractiveness of car use and car ownership, for example by removing parking places, or constructing speed ramps (push measures), or by improving the infrastructure for public transport, walking and cycling (pull measures). The underlying assumption of physical changes is that people adapt their behaviour to changes in their physical environment.

Legal policies enforce certain behaviour, such as reducing car use or changing car ownership. Examples include the prohibition of car traffic in city centres, parking regulations (push measures), or giving cyclists right of way and allowing busses to drive on emergency lanes (pull measure). The assumption is that people will comply with these regulations. In addition, it is anticipated that in the longer term legal policies result in changes in social norms, which may also result in changes in car use and car ownership.

Pricing policies are aimed at making car use and car ownership relatively less attractive by increasing the costs for car ownership or car use. Also, pricing policies can be aimed at decreasing costs for travelling with other modes than car or by decreasing the costs for energy-efficient cars. Examples are congestion charges, road pricing, and taxation of fuels and cars (push measures), subsidising fares for public transport (pull measure) or energy-efficient cars. The underlying assumption of pricing policies is that people's travel choices depend on cost-benefit analyses of travel options, and that the financial costs are the prevailing factor in the cost-benefit analyses.

TDM measures differ in the extent to which they enforce people to change their behaviour, that is, the coerciveness of measures differs (Gärling & Schuitema, 2007). The coerciveness of TDM measures depends on the extent to which people are able to evade the measure. In general, push measure are considered to be more coercive than pull measures and push measures are also generally more effective in changing car use and car ownership. Of the push measures, transport pricing policies proved to be effective in changing car use (see Box 1.2). Consequently, in many countries, the implementation of transport pricing policies is considered, including China (Shanghai, 2008-2010), Denmark (Copenhagen, 2009), the Czech Republic (Prague, 2010), The Netherlands (2012) and New Zealand (Auckland, 2015-2020) (Commission for Integrated Transport, 2006).

The acceptability of transport pricing policies is generally low (e.g., Jones, 1991a; Jones, 2003; Schade & Schlag, 2003). To illustrate, in 2005, 75% of the inhabitants of Edinburgh rejected the implementation of a congestion charge in their city (Gaunt, Rye, & Allen, 2007). Also, in Manchester, public resistance was the main reason why a congestion charge was not implemented in 2006. So, acceptability is an important precondition for the implementation of transport pricing policies. This thesis focuses on factors that explain the acceptability of transport pricing policies. More specifically, the thesis will mainly focus on the acceptability of transport pricing policies that are aimed at increasing the costs of car ownership and car use.

Box 1.2. Examples of implemented transport pricing policies

Area license scheme in Singapore
In 1975, a licence scheme was implemented in Singapore. In 1998, the design of the scheme was changed so that motorised vehicles were charged when entering the city centre (between 7.30 a.m. and 7.00 p.m.) and on expressways (between 7.30 a.m. and 9.30 p.m.). A year after the introduction of the scheme in 1989, overall traffic volumes decreased by 15% during the entire day and with 16% during rush hours. Traffic volumes mainly decreased because people chose different routes, and, to a lesser extent, because of shifts from car to carpooling and bus use.

Source: Menon (2000), Santos, Li and Koh (2004)

Toll rings around Norwegian cities
In 1991, a tolling system was introduced on the ring road of Trondheim. Tolls were charged between 6.00 a.m. and 5.00 p.m. on weekdays. During peak hours, car traffic reduced by 10%. However, outside peak hours, car traffic increased by 8-9%. So, the toll ring around Trondheim mainly resulted in a shift in travel times. Similar to Trondheim, toll rings were implemented around Bergen (in 1986) and Oslo (in 1990). In these cities, the effects of the toll rings were rather small. In Bergen, estimations of reductions in inbound car trips varied between 3% and 7% twelve months after the toll ring was implemented. In the first year the Oslo toll ring operated, it was estimated that the number of cars crossing the toll ring reduced by 3 % to 10%.

Source: Larsen (1995), Merland (1995), Ramjerdi, Minken and Østmoe (2004), Tretvik (2003)

Congestion charge in London
In London, a congestion charge was implemented in 2003, which implied a daily charge of £5 for driving or parking on public roads within the central zone between 7.00 a.m. and 6.30 p.m., Monday to Friday. In 2005, the charge was raised to £8, and expanded to a larger area. A reduction of 16% in the total number of vehicles entering the city centre was observed between 2002 and 2006, while the number of cars entering the city centre decreased by 21%. Travellers mainly switched from car to busses, taxis, powered two-wheelers and bicycles. After the changes made in 2005, hardly any additional reductions in total traffic volumes or cars entering the central zone were observed.

Source: Santos (2004b), TfL (2006; 2007)

Congestion charge in Stockholm
In the first six months of 2006, a trial with a congestion charge was implemented in Stockholm. Between 6.30 a.m. and 6.30 p.m. motorised vehicles were charged when entering the city centre. The overall reduction in car traffic was about 22%. Car trips were mainly replaced by trips by public transport, bicycle or foot. After a referendum on the permanent implementation of the congestion charge, the Stockholm council decided to implement the congestion charge permanently in August 2007.

Source: Stockholmförsöket (2006)

Acceptability of transport pricing policies

Definition of acceptability

Acceptability of transport pricing policies has been defined as an attitude towards these policies (Bamberg & Rölle, 2003; Eriksson, Garvill, & Nordlund, 2006; 2008h; Jakobsson, Fujii, & Gärling, 2000; Schade & Schlag, 2003), which subsequently influences behaviour. Attitudes, and thus acceptability, reflect a psychological tendency that is expressed by evaluating a

particular entity (such as pricing policies) with some degree of favour or disfavour (Eagly & Chaiken, 1993; 2007). Attitudes are determined by a set of accessible beliefs, which reflect the subjective probability that an attitude object (e.g., a policy measure) has certain consequences (Ajzen, 1991c). These consequences can be negative (e.g., higher travel costs or reduction of freedom of choice) as well as positive (e.g., reduced congestion or improved environmental quality). Attitudes, and thus acceptability, can affect behaviour and the political decision making process to a large extent (Jones, 2003).

Theoretical framework to explain acceptability

Transport pricing policies can have positive as well as negative consequences for individuals and society. On an individual level, costs for car use probably increase people may decide to travel less by car or one's car use may be affected. On the other hand, society will benefit if these policies result in a reduction of car-related problems, such as congestion and environmental problems. Such societal gains can benefit individuals as well. For example, reductions in congestion may result in decreased travel times, and local air quality may improve when less people drive their car. As such, the acceptability of transport pricing policies can be described as a social dilemma. A social dilemma has two basic characteristics: (i) each individual is better off when they choose to defect (i.e., focus on individual outcomes), but (ii) all individuals are better off when everybody chooses to cooperate (i.e., focus on collective outcomes) (Dawes, 1980). With respect to the acceptability of transport pricing policies, choosing to defect implies that people evaluate transport pricing policies as unacceptable, because they do not want to give up the advantages of car use and do not want to pay higher prices for travelling by car. Choosing to cooperate implies that transport pricing policies are evaluated as acceptable, because this implies that people are willing to contribute to the reduction of car-related problems. People may choose to cooperate because of collective concerns, and as a consequence, all individuals are better off in the long term. Therefore, individuals may expect to benefit themselves from reduced car-related problems as well in the long term.

Studies on the acceptability of transport pricing policies revealed that the acceptability of these policies depends on two other factors besides the expected effects: revenue allocation and perceived fairness of transport pricing policies (Banister, 2008; Eriksson et al., 2006; 2008g; Bamberg & Rölle, 2003; Jakobsson et al., 2000; Ubbels, 2006). A theoretical framework that can be used to explain how and why these three factors are related to acceptability judgements is the Greed-Efficiency-Fairness (GEF) hypothesis (Wilke, 1991). The GEF-hypothesis states that in a social dilemma, people are *a-priori* greedy (G), that is, they want to maximise their own outcomes. Transport pricing policies will be evaluated as unacceptable when people expect their own interests to be negatively affected by these policies. The acceptability of transport pricing policies may increase when the negative outcomes of transport pricing policies for individuals are reduced or even removed. Therefore, compensating individuals for the negative consequences of transport pricing policies may increase the acceptability of these polices.

The GEF-Hypothesis states that people are not always greedy. People have the desire to use collective resources efficiently (E) as well, that is, they consider the interests of the collective. Hence, if people would focus more on the collective outcomes than on the individual

outcomes of transport pricing policies, acceptability levels are likely to increase. In large scale social dilemmas, the extent to which collective problems can be solved depends largely on the behaviour of others; car-related problems will only be solved when many people adapt their car use. In this respect, people's expectation about the behaviour of others (referred to as social uncertainty, Wilke, 1991; Yamagishi, 1986) is an important factor. If people expect that others do not act greedy too, the perceived effectiveness of policies will increase, and the acceptability of transport pricing policies will probably increase as well.

Finally, the GEF-Hypothesis states that people do not always act greedy, because they also have the desire to distribute outcomes fairly (F). This implies that acceptability levels of transport pricing policies will be higher if the outcomes of that policy are distributed fairly.

In sum, the acceptability of transport pricing policies can be enhanced in three different ways. First, individuals can be compensated for negative consequences of the policies. Second, the positive outcomes of the policy can be stressed. Third, costs and benefits of a policy should be distributed in a fair way. Below, we elaborate on these three ways to influence acceptability levels.

Compensating for negative consequences

When transport pricing policies are implemented, generally, the costs of private car use will increase or people reduce their car travel. In case people focus on individual outcomes rather than on collective outcomes of transport pricing policies, the acceptability of transport pricing policies is probably low, because increasing costs and car use reductions are usually perceived as disadvantageous for individual car users. Indeed, Jakobsson et al. (2000) found that the acceptability of transport pricing policies decreases when car users expect their own car use to be affected, because this was perceived as an infringement on their freedom. Consequently, acceptability is likely to increase when individuals are compensated for possible negative consequences of policies.

Revenues can be used to compensate car users for increases in travel costs (see also Box 1.1). It can be expected that the more car users benefit from the allocation of revenues, the more acceptable transport pricing policies are to them. Indeed, transport pricing policies appear to be more acceptable when revenues are allocated within rather than outside the transport domain (Schade & Schlag, 2000; Schlag & Schade, 2000). However, which specific type of revenue allocation within the transport system is the most acceptable is not clear. Some studies show that transport pricing policies are most acceptable when revenues are invested in public transport (Commission for Transport, 2004; Ison, 2000; Thorpe, 2002), while others reveal that allocation of revenues to reduce car-related taxes is most acceptable (Schade & Schlag, 2000), or that people most strongly favour investments of revenues in road infrastructure (Verhoef, 1996).

The contradicting results on which type of revenue allocation increases the acceptability of transport pricing policies most may be the result of the specific types of revenue allocations included in the studies or of different methods that were used. In some studies, respondents evaluated single types of revenue use without any reference to a specific transport policy (e.g., Verhoef, 1996), while in other studies packages of policies with different revenue allocations (e.g., Schade & Schlag, 2000) were evaluated. When single types of revenue allocation are evaluated, respondents evaluate the investment of revenues in general, probably without realising that this money is disposable because their costs for car use have increased. This may

result in unrealistic acceptability judgements, because respondents focus on the domain in which revenues are invested rather than on the total pricing policy, which includes a specific revenue allocation. When packages of transport policies are evaluated, acceptability judgements are confounded, because these packages often comprise multiple pricing policies and revenue allocations. Hence, when packages are examined, it is not clear which is the critical factor for acceptability.

In this thesis, we systematically examine the influence of revenue allocation on the acceptability of transport pricing policies (Chapter 2). First, we examine how the acceptability of two types of transport pricing policies is related to revenue hypothecation. We use an experimental approach: the evaluated policy measures are kept constant, while only revenue allocation is systematically varied. This approach enables us to draw conclusions on the causal relationship between revenue allocation and the acceptability of pricing policies. Second, the evaluation of single revenue allocations without a reference to a transport pricing policy is examined. As a result, we can compare the evaluation of revenue allocation with and without a reference to specific policy measure.

Increase efficiency

The GEF-Hypothesis states that people do not always act greedy. People also have the desire to preserve collective resources, such as environmental quality (reflecting 'efficiency'). Various studies suggest that people indeed consider collective interests as well as their own interests (see also, Lindenberg & Steg, 2007; Stern, 2000; Stern & Dietz, 1994). For example, recycling behaviour (Thøgersen, 1996), intention to donate to humanitarian and environmental organizations (De Groot & Steg, 2008), reducing meat consumption (Harland, Staats, & Wilke, 1999), willingness to reduce car use (Abrahamse, Steg, Gifford, & Vlek, 2009; Nordlund & Garvill, 2003), and mode choice for commuting trips (Van Vugt, Van Lange, & Meertens, 1996) appeared to be related to individual as well as collective interests. Also, transport pricing policies are more acceptable when people expect reductions in car-related problems, such as congestion and environmental problems (Gärling, Jakobsson, Loukopoulos, & Fujii, 2008; Rienstra, Rietveld, & Verhoef, 1999). On the other hand, if car users expect negative individual outcomes, such as a reduction of their own car use or increasing travel costs, transport pricing policies are evaluated as unacceptable (Jakobsson et al., 2000; Schuitema, Ubbels, Steg, & Verhoef, 2008).

As yet, the relative importance of the expected individual and collective outcomes for the acceptability of transport pricing policies has not been studied. That is, are acceptability and personal outcome expectations most strongly related to individual ('greed') or to collective outcomes ('efficiency') when they are evaluated in combination? In Chapter 3, we aim to fill this gap in the literature by studying the relative importance of the expected individual and collective outcomes of transport pricing policies for their acceptability. Moreover, we study how the expected individual and collective outcomes of transport pricing policies influence the extent to which people expect to feel better or worse off when these policies are implemented (reflecting 'personal outcome expectations'; cf., Schade & Schlag, 2003). We assume that acceptability and personal outcome expectations reflect both one's attitude towards transport pricing policies, consequently, we expect that both constructs are in a similar way influenced by the expected individual and collective outcomes of these policies.

It is likely that the outcomes of transport pricing policies are linked to the objectives of these

policies (for an overview of different objectives of transport pricing policies, see Verhoef, 2008). For example, environmental taxes on cars will probably reduce the environmental impact of cars, but will hardly affect congestion levels, while time dependent tolls will mainly affect congestion and hardly the environmental quality. Therefore, it can be expected that the acceptability of various policy measure is related to different expected outcomes, depending on the main objectives of a particular policy. In Chapter 3, we compare the relative importance of the expected individual and collective outcomes of transport pricing policies for policy measures with different objectives, that is, either mainly aimed at decreasing congestion or at decreasing environmental problems.

After pricing policies are implemented, people are able to observe the effects of pricing policies. Perceptions about the effects of the policies after they are implemented may differ from the initial expectations that people have. It has been argued that changes in perceptions of effects during their implementation of transport pricing policies result in changes in the acceptability of these policies. More specifically, many have argued that acceptability levels increase after the implementation of pricing policies because people experience their positive outcomes (e.g., Jaensirisak, Wardman, & May, 2005; Odeck & Bråthen, 1997; Odeck & Bråthen, 2002; Rienstra et al., 1999; Schade & Schlag, 2000; Schlag & Teubel, 1997; Stockholmförsöket, 2006; Tretvik, 2003; Winslott-Hiseliu, Brundell-Freij, Vagland, & Byström, 2008). However, empirical evidence to support this hypothesis is lacking. In Chapter 4, we examine if increases in acceptability of transport pricing policies can be explained by the experience of more positive effects or less negative effects of these policies during their implementation.

Fairness

The GEF-Hypothesis states that people also have a desire to distribute outcomes fairly (reflecting 'fairness'). The GEF-Hypothesis proposes that people prefer an equal distribution of the outcomes, that is, everybody should get an equal share (Wilke, 1991). However, other distributions of outcomes may be relevant as well (Steg & Schuitema, 2007). Costs and benefits may be distributed in different ways, and people may differ in their preferences for different types of distributions of costs and benefits. Little is know about which distribution of cost and benefits people prefer with respect to transport pricing policies. In Chapter 5, we examine the role of different types of policy outcome distributions (reflected by fairness principles) for the overall fairness and acceptability of transport pricing policies.

In general, people compare policy outcomes with a reference point (Kahneman, 1992a). Three different types of comparisons can be made, each based on a different reference point: intrapersonal, interpersonal and intergenerational comparisons. In Chapter 5, we identify six fairness principles that relevant in explaining the overall fairness and acceptability of transport pricing policies, based on intrapersonal, interpersonal and intergenerational comparisons.

Intrapersonal comparisons refer to a comparison of the individual outcomes of a policy with an internal reference level (e.g., one's current situation), independent of the outcomes of others (Loewenstein, Thompson, & Bazerman, 1989e). A fairness principle based on an intrapersonal comparison may concern the comparison of one's financial situation before and after the implementation of a policy measure.

Interpersonal comparisons imply that people compare the outcome of a policy for themselves with the outcomes of others after a policy is implemented (Loewenstein, Thompson,

& Bazerman, 1989d). Also, an interpersonal comparison may reflect a comparison of policy outcomes across individuals or groups in the population. Two important fairness principles that are used to evaluate the distribution of policy outcome across individuals or groups are equality (i.e, policies affect everybody equally) and equity (i.e., policies affect people in proportion to individual characteristics (e.g., income) or contributions (e.g., contributions to car-related problems) (e.g., Deutsch, 1975; 1985).

When intergenerational comparisons are made policy outcomes of others are considered in a broader context, that is, outcomes of policies for future generations are considered as well (Clayton, 2000; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008c). The interests of future generation are protected when collective resources are preserved. Therefore, a fairness principle reflecting that nature, the environment and future generations are protected may be a relevant fairness principle for the evaluation of transport pricing policies as well (reflecting environmental justice).

Different policy measures have different costs 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). We assume that differences in overall fairness and acceptability of transport pricing policies are due to the fact that these policies meet fairness principles differently. Thus, we assume that the same fairness principles predict overall fairness and acceptability of various transport pricing policies. To test this assumption and to test the robustness of our results, we examine in Chapter 5 how fairness principles are related to the overall fairness and acceptability of six different transport pricing policies. These six policy measures vary systematically on two characteristics that are assumed to be related to differences in overall fairness and acceptability. First, push measures (focusing on increasing costs for car use and car ownership) and pull measures (focusing on increasing benefits for car use and car ownership) are distinguished. 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 (e.g., Eriksson et al., 2006; 2008f; Gärling & Schuitema, 2007). Finally, a combination of push and pull measures may be considered to be more fair and acceptable than separate push or pull measures, because when push measures are combined with pull measures, problems may be solved, while alternatives are provided as well.

Second, we distinguish measures that aim to reduce the impact per car (focusing on fixed costs and benefits of car use and car ownership) and measures that aim to reduce car use (focusing on variable costs and benefits for car use and car ownership). Policies that aim to reduce the impact per car 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, Steg, Vlek, & Wiersma, 2003; Steg, Dreijerink, & Abrahamse, 2006).

The aim of Chapter 5 is threefold. First, different fairness principles that are potentially relevant for the overall fairness and acceptability of transport pricing policies are identified. Next, the relative importance of these fairness principles for the overall fairness and acceptability of transport pricing policies is examined. Also, we test whether the same fairness principles are relevant for overall fairness and acceptability of transport pricing policies that differ in overall fairness and acceptability.

Outline of this thesis

As yet, no theoretical framework has been identified to explain the acceptability of transport pricing policies. We proposed that the GEF-Hypothesis (Wilke, 1991) can explain which factors influence the acceptability of transport pricing policies. We argued that the acceptability of policies can be increased when people are compensated for the negative consequences of these policies (via revenue allocations of transport pricing policies), when the benefits of the policies are stressed (viz., the expected and perceived outcomes), and when the policies are believed to be fair. In the next four chapters, we present a series of studies in which we systematically examine how the acceptability of transport pricing policies is affected by these key factors.

Similar to other studies on the acceptability of transport pricing policies, we examine the role of these key factors for various transport pricing policies. The added value of our approach is that we systematically varied policy characteristics as to identify if and how the evaluation of pricing measures differed for various characteristics of the policy measures. For example, in Chapter 2 respondents evaluated transport pricing policies that systematically differed on revenue allocations only.

Most studies on the acceptability of transport pricing policies focus on hypothetical pricing policies, that is, scenarios of pricing measures are evaluated. This is a useful approach, because it helps to understand which factors affect the acceptability of policy measures before their implementation. In addition, it is also important to study the acceptability of policies measures that were actually implemented, especially because studies revealed that acceptability increases after the implementation of transport pricing policies (Odeck & Bråthen, 1997; 2002; Stockholmförsöket, 2006; Tretvik, 2003; Winslott-Hiseliu et al., 2008). In this thesis, we study how people evaluate hypothetical transport pricing policies as well as a policy that has actually been implemented, to examine why acceptability changes over time. In addition, we are able to compare both approaches.

The outline of this thesis is as follows. In Chapter 2, we examine the influence of revenue allocation on acceptability of transport pricing policies. In Chapter 3, the relationship between the expected individual and collective effects of transport pricing policies and their acceptability is studied. Chapter 4 reports a study in which differences in acceptability before and after the implementation of a congestion charge in Stockholm was examined. In addition, it is examined why these differences occur. Chapter 5 reports to what extent different fairness principles are related to the overall fairness and acceptability of transport pricing policies. Finally, in Chapter 6 the main results are discussed as well as their theoretical, methodological, and practical implications.

[1] Initially, lorries would be charged from 2011, but the implementation of the kilometre charge has been expanded with 8 months (Dutch Ministry of Transport, 2009). Recently, the Dutch government fell, and as a result, decisions about implementation of the kilometre charge are postponed until after the national elections in June 2010.