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## Behavioural Economic Perspectives on Inertia in Travel Decision Making

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## Summary

### **Behavioural Economic Perspectives on Inertia in Travel Decision Making**

“Why is it so difficult to persuade car drivers to use public transport more often?”, is a much discussed question among policy makers and researchers engaged with travel behaviour. Despite many policy initiatives aimed at making alternative modes of transportation more attractive, car use has steadily increased during the past decades. Nowadays, each second EU citizen owns a car and about 85% of all passenger kilometres are made by car. As a consequence of this growth in car ownership and use, car users are increasingly faced with traffic congestion, the accessibility of important economic, residential and social centres has become problematic, and concerns over traffic safety and quality of life near major roads have risen. A number of reasons can be put forward for the increasing dominance of the car during the past decades: a substantial improvement in the price-quality ratio of travelling by car, various socio-economic and cultural trends such as increasing welfare and individualisation, and travel policies that were chiefly concerned with accommodating increasing demand for road capacity. Most car users will favour investments in the public transport system, but despite the fact that they experience the disadvantages of car use themselves, they are barely willing to abandon their car occasionally and use alternative modes of transport more often.

This is only one example of individual travel choices that are sometimes difficult to explain for transportation researchers and policy makers. The aim of this thesis is to advance our understanding of individual travel behaviour by exploring this inertia from a behavioural economic

perspective. Inertia was defined as invariant behaviour while from a mainstream economic perspective change of behaviour is deemed rational (or vice versa) because it would be utility maximising for the individual. Behavioural economics is a relatively new stream within the economic sciences, in which traditional, neoclassical economics, assuming individual utility maximizing behaviour, is the mainstream. Behavioural economists attempt to find better explanations for observed behaviour that the traditional economic model has difficulties accounting for, by adapting or extending this model with insights from, among others, psychology and sociology.

This thesis investigated whether perspectives from behavioural economics could contribute to a better understanding of inertia in travel behaviour. For this purpose, section 2.1 gave an overview of how individual behaviour has generally been approached in transportation research. Next, section 2.2 described the basic assumptions underlying the mainstream economic approach to behaviour and section 2.3 the principal alternative approaches that have been proposed in behavioural economics. In chapters 3 to 7 a number of these alternative approaches have been further investigated in the context of travel behaviour. Chapter 8 finished with discussion and conclusion.

Chapter 2 found that a basic premise in transportation research is that generally travel is not a goal in itself, but derived from the need or desire to participate in activities spread over space and time. Moreover, travel choices are subordinated to mobility related choices. The suitability and relative desirability of means of transport are strongly influenced by long-term commitments. Decisions such as where to live and work, and in which means of transport to invest, are examples of this. A further assumption is that travellers are informed about the advantages and disadvantages of the available modes of transport and consider these carefully to choose the best, utility maximising alternative. Rational

behaviour thus is an important premise in travel behaviour analysis. In recent years there has been increasing attention for differences in preference, habituation and choice set between travellers. The difference between the objective choice set, which is the starting point of conventional analysis and contains all transport alternatives available to a person, and the subjective choice set, which contains only the subset of alternatives actually considered by this person, has been advanced as one of the principal causes of inertia. For now, however, an analytical framework incorporating heterogeneity among travellers has not been developed.

Traditional, neoclassical economics assumes that people behave rationally, individual utility maximising, as a *homo economicus*. This assumption has been criticised a long time, also within economics. A main argument is that it does not fit with how people actually make choices. After all, people are limited in their capacity to gain and process information and their reasoning is regularly clouded by emotions. Meanwhile, six alternative approaches have been proposed in behavioural economics that may describe behaviour better: bounded rationality, prospect theory, judgement of probabilities, interdependence, adaptive and relative preferences, and intertemporal choice. They approach in different ways peoples' limitations in ability and motivation to comprehend choice problems, judge the advantages and disadvantages of choice alternatives, evaluate these, and arrive at a decision. Applications of these six alternative approaches in transportation research have been discussed, but their number was limited.

Chapters 3 to 7 report the findings of research into a selection of these alternative approaches in the context of travel behaviour, with a particular focus on the choice set people use in travel decision making. Chapters 3 and 4 investigated the effect of strikes in public transport on the behaviour and subjective choice set of travellers. Following a strike, public

transport travellers' preferred alternative disappears from their choice set and they are forced to search for alternative means of transport and to (re-)consider and possibly (re-)try them. It turns out that some travellers have no (suitable) alternative option, but most travellers reach their destination using an alternative mode, or with help from others. Especially travellers with alternative options in their choice set and young travellers judge negatively about strikes in public transport and state that it may affect their future travel behaviour. Various studies have shown that negative experiences with a strike in combination with positive experiences with the chosen alternative may lead a proportion of the unsatisfied travellers to adapt their travel behaviour structurally. The market share of public transport suppliers eventually decreases after a strike and, therefore, it is important to prevent strikes (or their negative effects on travellers) as much as possible.

Chapters 5 and 6 investigated the subjective choice set of car and public transport users in relation to characteristics of the traveller, the trip and perceptions of alternative modes of travel. About half of the train users was a choice traveller and now and then considered the car for their trip. The main reasons for not choosing the car included a preference for public transport, habituation and anticipated congestion and parking problems when travelling by car. Investments in solving traffic congestion or increasing parking capacity may therefore lead these travellers to use the car more often. This induces extra car traffic. The proportion of car users considering public transport for their trip was substantially smaller. An important reason for this was their perception of the travel time by public transport for the same trip, which on average was 2.3 times higher than by car. A comparison of objective and perceived travel times showed that car users overestimated travel time by public transport by about a half, and that the extent of overestimation was associated with familiarity with the public transport system. In case car users' perception of travel time by

public transport would be accurate, the proportion of car users considering public transport would possibly rise to two out of three. This does not necessarily mean that these car users will actually change their behaviour, but it does underline the importance of correct information for making good travel decisions.

Chapter 7 explored differences in preferences and decision making between travellers. Using a novel method for transportation research, Q methodology, four distinct preference segments for middle-distance travel were revealed: choice travellers with a preference for public transport, deliberate-choice travellers, choice travellers with car as dominant alternative, and car-dependent travellers. These preference segments differ as follows: The cognitive effort spent on travel decision making; the extent to which they find means of transport suitable and consider them for use; and the susceptibility to policy measures aimed at influencing their travel behaviour. In a way, all car users could be stimulated to consider and perhaps use public transport more often, but policies may be most effective when they are directed at choice travellers and explicitly take into account their preference structures.

The discussion in chapter 8 commented on the focus of this thesis and some of the data used. This study was focused on the choice set people use in travel decision making, and therefore only a selection of the potential causes for inert travel behaviour has been highlighted. The analyses presented in chapters 4, 5 and 6 were based on secondary data. It is recommended to replicate them with data that was collected specifically for the aim of the respective studies. The conclusion was that this study has contributed to our understanding of travel behaviour by showing the importance of taking into account choice sets explicitly in travel policy and analysis. Travellers make their decisions from a choice set, which may or may not have been generated in a rational way. The choices from this subset of the available alternatives, in turn, can also be

either rational or inert. The model that is most appropriate as approach of the travel behaviour analysed in any study should therefore follow the context and purpose of that particular study. Further, it is noteworthy that invariant behaviour does not necessarily imply inertia. It can also be rational behaviour. Moreover, invariant behaviour is not necessarily undesirable. It can also be a good habit, that should be sustained by policy. The chapter finishes with the main implications for transport policy and discusses some interesting directions for further research.