

CHAPTER 4

Empirical Testing of the RASTT Model in Time and Space

4.1 Introduction

The RASTT model has been presented in Chapter 3 to elucidate hypotheses and relationships for trips undertaken by consumers to and from malls. Where appropriate, data from the Sydney Project (1988/89) was used to support the modelling. The principle focus of this modelling has been time-discounting behaviour (Baker, 1994a, 2000a, 2002). This type of behaviour underpins the gravity hypothesis and is found in a range of socio-economic, time, hierarchical and trip strategies we have described in the previous chapter. Its occurrence in lower order retail centres and its dependence on time boundaries means that we are particularly well-placed to study the impact of shopping hour liberalisation on these centres. Consequently, in this chapter, these models are extensively re-tested over time and space. Firstly, changes in trip behaviour in Sydney over time will be compared from 1980/82 and 1988/89 to a new data set sampled between 1996 and 1998 at the same centres. Secondly, changes over space will be studied from case studies in a pedestrian shopping precinct in Armidale in regional New South Wales, Australia and in a pilot study of planned shopping centres (PSCs) in Auckland, New Zealand. This will provide further evidence to evaluate whether the RASTT model has the potential to describe global constructs of trip behaviour over space and time.

The RASTT model therefore provides a unifying framework that can act as a benchmark for the comparison of the changes in the nature of trips to shopping centres. In the Sydney Project, we returned seven years later to undertake sampling, wherever possible, at the same centres as in the previous decade. The first period in the 1980s was between 1980/82 and 1988/89 where shopping hours were regulated. Did consumer spatial behaviour change at the same planned shopping centre a decade later, particularly in regard to shopping hour liberalisation? For spatial contexts, the first case study at Armidale (in a non-metropolitan area) looks at the application of the model to a town with an unplanned shopping centre, where the public space of the pedestrian plaza is partly the floorspace equivalent of a privately-owned mall. How does the time-space behaviour of shopping in this town centre compare to a planned shopping centre in a capital city? The second case study looks at the shopping trips to planned centres in Auckland, New Zealand in 2000, where, at the time of surveying, there was shopping hour deregulation, but no regional planned shopping centres within the hierarchy. A key question there is: did the deregulation of shopping hours allow the sub-regional centres in the Auckland hierarchy to use time-for-floorspace substitution to dominate the market areas as 'de facto' regional malls? Therefore, using these case studies, the aim is to look at shopping change, firstly,

in different spatial contexts between cities and secondly, between metropolitan and non-metropolitan areas. Is there empirical justification for this 'global' view of the model?

4.2 Background to the Research Methodology

4.2.1 INTRODUCTION

The evaluation of this time-space approach to consumer travel behaviour to shopping centres requires an extensive empirical data set to assess the hypotheses developed from the theoretical models. Guy and Wrigley (1982) state that the development of a number of very promising analytical techniques, such as revealed preference and stochastic timing models, had been delayed by the lack of extensive and highly disaggregated data sets concerning shopping behaviour. Much of the emphasis in research in the 1980s had been on panel surveying, but there are a number of conceptual and practical problems with this method when evaluating the time-space behaviour to and from planned shopping centres. In the Sydney Project (1980-1998), the aim was to use cross-sectional data gathering, where large samples (greater than 100) are gathered in one hour segments at shopping centres. The sampling period changed from one to two hours in 1996/98 because of a substantial rise in the rejection rate of respondents. The panel alternative is to aggregate trip patterns from individual residences from travel diaries. This could test the stochastic modelling in Section 3.9 in the last chapter. However, a major problem with this approach is to obtain a satisfactory sample size for all the selected planned shopping centres from the selected panel. Furthermore, a number of hypotheses deal with changes in travel behaviour to these centres over a twelve-hour period and this requires an even greater sample size. A panel of this size would be very expensive to run and its spatial distribution difficult to service. However, some of the issues in selecting the empirical method are important and therefore will be reviewed briefly in the following sections.

4.2.2 A CASE FOR PANEL SURVEYING

Hensher (1987) defines panel surveying as involving repeated measurements on the same sample units at different points in time. It is argued that they provide much more detailed point-in-time information and much larger samples than many existing cross-sectional studies. Conversely, cross-sectional surveys provide a series of stationary representations of a population at several points in time. Duncan, Juster and Morgan (1987) argue that panel data has several analytical advantages over cross-sectional data, namely:

1. they make reliable measurements of change in the objective and subjective situations of families and individuals, which enable the researcher to estimate truly dynamic behaviour. Most attitudes can only be measured reliably at the time of the survey and therefore dynamic modelling of such processes requires the repeated measurement of the same household or individuals;