ABSTRACT. The paper presents results from two new experiments designed to test between the 'rational choice' hypothesis and the 'random error' hypothesis for intransitive choice. Error probabilities and population shares for transitive and intransitive preference types are estimated from data collected in the first experiment. An unrestricted model (which treats intransitive patterns as true patterns) performs no better than a model that is restricted to transitive patterns. Analysis of the conditional distributions of choice patterns, using data from the second experiment, confirms more directly the main results of the first experiment: that observed intransitive choice patterns are due to random error.

Keywords: Rational choice, random error, intransitive choice

INTRODUCTION

Transitivity is a common assumption or implication of most theories of rational choice. Indeed, a common view is that a violation of transitivity in choice, if it is done on purpose, is tantamount to irrationality. On the other hand, there is no shortage of theory permitting intransitive choice (see, for example, Fishburn, 1992, and references therein for a short but lucid overview of this literature). Probably the most convincing argument for considering intransitive choice behavior is that it may be implied by certain plausible (in the sense of being descriptive of how some people think) primitive notions about choice. One of the more well-known of these theories, regret theory (Loomes and Sugden, 1987), permits some types of intransitive choice, but does not permit certain other types. A recent experimental study (Loomes, Starmer and Sugden, 1991) found empirical evidence which seems to support the predictions of regret theory, with respect to intransitive cycles.

In this paper we present results from two new experiments designed to test an alternative proposition, that intransitive cycles are due to random error, and not to ‘rational’ or otherwise purposive intransitive choice. In the first experiment we collect data for a subset of the lottery choice questions used by Loomes et al. (1991) in their study, and then estimate an econometric model that allows us to test whether the intransitive choices made by subjects in the experiment are due to random errors made by individuals with transitive preferences, or whether some subjects, in fact, have intransitive preferences. In the second experiment we collect data for a new set of lottery choice questions which were selected to permit inferences about observed intransitive choice patterns to be drawn directly from observed choice frequencies, without estimating error rates.

Briefly, our findings are as follows.

(1) Under a plausible specification of the structure of errors made by individuals in answering lottery choice questions, observed intransitive choice patterns are not significant, in the sense that one cannot reject the hypothesis that the proportion of subjects whose preferences are intransitive is zero. Error probabilities and the population shares of various transitive and intransitive preference types are estimated from data collected in the first experiment. An unrestricted model (which treats intransitive patterns as true patterns) performs no better than a restricted model (which does not treat such patterns as true patterns).

(2) The absolute level and distribution of intransitive patterns can be seen as an artifact of an underlying distribution of preferences that obey transitivity. In particular, our version of the random error hypothesis does not predict that different intransitive patterns of choice will be ‘equally likely’, in contrast to the tests performed by Loomes et al. (1991) on their data. Further, maximum likelihood estimation of error rates using the data from their study yield essentially the same results as for our data: In most cases, one cannot reject the hypothesis that the proportion of subjects whose preferences are intransitive is zero.

(3) Analysis of the distributions of conditional choice patterns, using data from the second experiment, confirms more directly the main results of the experiment: that observed intransitive choice patterns are due to random error. Specifically, we find that only half of