3.1 Introduction

This chapter takes up some of the unfinished business of Chapter 2. In particular I consider the influence of markets and learning on anomalies. We consider the following three hypotheses:

1. Individuals incorporate information according to Bayes’ theorem.
2. Through learning, demand converges to some underlying pattern of preferences given any frame. In other words through repeated choice \( x(p, m, f) \rightarrow x(p, m) \) for any frame \( f \)
3. Through repeated choice \( x(p, m, f^*) \rightarrow x(p, m) \), when \( f^* \) is a market frame.

Hypothesis three is an important special case of hypothesis two. Meanwhile hypothesis 2 is more likely to be true if hypothesis one is also true, because it means that information is processed consistently.

My primary reason for taking up these issues is one prominent view within economics that repeated exposure to the incentives offered by markets will eliminate anomalies (see Binmore, 1999, for instance). Moreover, within non-market valuation advice on the optimal frames for preference elicitation often recommends an elicitation mechanism that mimics the psychology if not the incentives of the market place (e.g. Sugden, 2003a). Partly this advice is based on the idea that the familiarity of a market frame will evoke behaviour which is less prone to anomalies.

Anomalies in information processing have special relevance in the context of merit wants or policy towards bounded rationality. One commonly-made criticism of merit want models is that rather than subsidizing consumption of merit goods or taxing de-merit goods, such as tobacco, governments should limit their liberty-constraining actions to delivering accurate information about the costs and benefits of different choices. If, though, the processing of information is sub-optimal then simply providing it may not bring about the change in behaviour desired.

1 In fact information provision may not be optimal even in the context of the rational consumer (see Chapter 7 for an example).

There are two main conclusions to be had from the chapter. On the one hand, there are good reasons to be sceptical about the power of markets to eliminate anomalies. Those reasons are both theoretical and empirical. On the other hand, it is clear that behaviour does change with repetition and it typically does so in a way which makes it more consistent.

### 3.2 Probabilities, Information Processing and Bayes’ Theorem

The previous chapter dealt with some recorded examples of preferences which stray from the rational choice model, but rationality is often taken to imply more than a set of complete and consistent preferences. Consider two events A and B, which may linked in the sense that observation of A may be informative of the likelihood of B occurring and vice versa. Let P indicate probability with $P(B | A)$ meaning, in the standard notation, the probability of B given A and let $P(A \cap B)$ be the probability of A and B Bayes’ Theorem is then,

$$P(B | A) = \frac{P(A \cap B)}{P(A)}$$

Bayes’ Theorem is usually taken to be the rule for a rational person faced with the task of incorporating new information into their decisions. As with the axioms of utility theory, Bayes’ theorem implicitly makes predictions about what should not affect beliefs as well as predictions about factors that should alter probabilities.

Tests of Bayes’ theorem are probably not as common as tests of EUT, but nevertheless a considerable body of evidence has built up that individuals are not Bayesians. Tversky and Kahneman’s 1982 volume collected together much of the psychological literature on tests of information processing much of it devoted to tests of Bayes’ theorem. The general conclusion of this literature was that individuals were not rational information processors, but instead tend to rely on heuristics or simple information processing rules of thumb, the sub-optimality of which (or bias) could be demonstrated using simple experiments. Some typical heuristics and their biases are outlined below.

#### 3.2.1 Representativeness and Availability Biases

Kahneman et al. (1982), argue that one broad class of anomalies can largely be explained by the heuristic of representativeness, meaning that, when asked what is the probability that A belongs to class X rather than Y individuals focus on the extent to which A is typical of the class X rather than class Y. As a result, subjects ignore sample sizes and prior information. For instance, average heights for American men are below six feet tall. As a result, the probability that 60% of a sample of men exceed six foot declines as the sample size increases. However, Tversky and Kahnemann reported that estimates were the same for samples of 10, 100, 100.