Appendix C: Models estimated on DCE Data: the Mixed Logit Model

Formally expressed, the utility (for example, the improvement in welfare or happiness) obtained from removing the food hypersensitivity is given by:

(1.) U= Adj + V(T) – ? COST (1)

where:

- Adj is the adjustment cost in utility terms
- V(T) is the utility gain from removing the condition for a period of T years
- COST is the monetary payment required to remove the condition and ? is the utility change associated with that payment (the marginal utility of money).

If we generalise (1) we can specify that the utility person n gains from an outcome j is given by:

(2.)

Where x denotes a vector of attributes describing the outcome j, and ?n a vector of marginal utilities associated with x, which are individual (n) specific.

When faced with a number of outcomes to choose from, and assuming ? is iid extreme value, the conditional probability of selecting outcome i from the set of J is given by:

(3.)

The unconditional probability of making a choice requires integration of (3) over all possible values of ?n.

One has to specify a distribution for the random parameters: here we assume they follow a normal distribution:

(4.)

Where ?m and ? represent the mean and variance of the distribution, and z represents a vector of individual specific variables that ‘shift’ the mean of the distribution.

The latter appear as interaction effects with the attributes in the estimated model.

In our implementation we assume that the coefficients associated with the length of time the condition is removed, and the cost are constant across individuals. Individual specific heterogeneity is included only for the Alternative Specific Constant (ASC) associated with the adjustment cost. We find that including this fixability in the model substantially improves the fit of the model, while retaining the simplicity of having fixed parameter estimates associated with the WTP estimates.

Estimation is undertaken using the *mixlogit* command within Stata 17.