ABSTRACT. We develop a model of Disappointment in which disappointment and elation arise from comparing the outcome received, not with an expected value as in previous models, but rather with the other individual outcomes of the lottery. This approach may better reflect the way individuals are liable to experience disappointment. The model obtained accounts for classic behavioral deviations from the normative theory, offers a richer structure than previous disappointment models, and leads to a Rank-Dependent Utility formulation in a transparent way. Thus, our disappointment model may provide a clear psychological rationale for the subjective transformation of probabilities.

KEY WORDS: disappointment theory, expected utility violations, probability weighting, rank-dependent utility

Several descriptive theories of choice under risk have been proposed to explain behavioral departures from the Expected Utility (EU) model. Among them, Regret theory, proposed by Bell (1982) and Loomes and Sugden (1982), and Disappointment theory subsequently developed by these same authors (Bell, 1985; Loomes and Sugden, 1986) provide attractive alternatives because they are based on simple, intuitively compelling psychological postulates.

The basic proposition of Regret theory is that, in choosing between two options, individuals will evaluate the outcome of one option by comparison with the outcome that the other option would have yielded. If the outcome of the forgone alternative is superior, the individual will experience regret, if it is inferior, he/she will experience rejoice. A key assumption of Regret theory is that individuals will anticipate
the possible feelings of regret \textit{ex ante} and factor them into their decision making. Disappointment theory is based on a similar idea: instead of comparing the outcome received with what would have been obtained had another alternative been chosen, the hypothesis here is that individuals compare the outcome they receive to a prior expectation. If the outcome is inferior to their expectation, individuals will be disappointed; if it is superior, they will be relieved. Again, the proposition is that individuals take these feelings into account while evaluating choices. Both regret and disappointment may influence individuals preferences concurrently. For example, Inman et al. (1997) propose a model of consumer satisfaction incorporating both regret and disappointment.

1. PREVIOUS DISAPPOINTMENT MODELS

Previous approaches to Disappointment have used the expected (subjective) value of the lottery as a benchmark for categorizing the outcomes as “disappointing” or “elating”. For instance, Loomes and Sugden (1986) propose the following. Denote by $X$ the lottery that delivers payoff $x_i$ with probability $p_i, i = 1, \ldots, n$. The individual’s subjective valuation of payoffs is captured by a function $v(\cdot)$, and his/her prior expectation about $X$ is taken to be the expected subjective value of the lottery, $E[v(X)] = \sum_{i=1}^{n} p_i v(x_i)$. Disappointment and elation arise from comparing the subjective value of the outcome obtained, $v(x_i)$, with $E[v(X)]$. Therefore, the utility experienced upon receiving outcome $x_i$ is given by:

$$u(x_i) = v(x_i) + D(v(x_i) - E[v(X)]),$$

where $D(\cdot)$ is an increasing function capturing the effects of disappointment or elation, depending on whether $v(x_i) - E[v(X)]$ is less than or greater than 0, respectively. The lottery’s overall utility is just the mathematical expectation of the modified utility expressed in (1):