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Binary Gambles of a Gain and a Loss: An Understudied Domain
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Beginning in the 1970s it became increasingly widely recognized that subjective expected utility (SEU), no matter how compelling it may seem normatively, is systematically wrong descriptively. Edwards (1992) provides an appraisal. Moreover, for some of us, it even seemed questionable normatively because it admitted no real distinction between gains and losses. For SEU to make any reasonable sense, all alternatives had to be case in terms of total wealth. Although little was said in print, almost everyone knew that this was a bit of myth because hardly anyone formulates choices at that level. To be sure, one's state of wealth affects the domain of realistic choices, but it is an implicit background fact (if one can call something "a fact" when few of those who hold stocks and real estate know on a daily or weekly basis their current wealth to an accuracy of better than 10%). The alternatives actually contemplated always seem to be relatively precise increments and decrements in that wealth, whatever it is. Various theorists, and increments and decrements in that wealth, whatever it is. Various theorists, and certainly all experimentalists, recognized this unreality of classical EU or SEU, but it was really Kahneman and Tversky's (1979) prospect theory that initiated a serious change in theorizing. Since then and to the present, theorists have concentrated on variants of SEU. Most of the effort, both theoretical and experimental, has focused on risky or uncertain alternatives composed entirely of gains or entirely of losses. Although a number of proposals have been made, such as Birnbaum's (1992); Birnbaum, Coffey, Mellers, & Weiss, 1992; Birnbaum & Navarrete, submitted) configural weight theory, Chew's (1993) weighted utility, Chew, Epstein, and Segal's (1991) quadratic utility, Loomes' (1988; see his references for earlier papers with R. Sugden) disappointment and regret theories, and the various Fishburn models summarized in Fishburn (1988), the clearly dominant contender from 1982 until the present has been rank-dependent utility. Its history, from the perspective of one of its originators, is nicely summarized in Quiggin (1993). Any many of the experiments run in the past 10 years have been attempts to decide whether the properties underlying rank dependence hold descriptively. Among these studies are: Birnbaum and Chavez (submitted), Birnbaum and McIntosh (1996), Birnbaum and Navarrete (submitted), Brothers (1990), Camerer (1989, 1992), Cho and Fisher (submitted), Cho and Luce (1995), Cho, Luce and von Winterfeldt (1994), Chung, von Winterfeldt, and Luce (1994), Fennema and Wakker (1997), Harless and Camerer (1994), Humphrey (1995), Ranyard (1997), Starmer and Sugden (1993), von Winterfeldt, Chung, Luce, and Cho (1997), Wakker, Erev, and Weber (1994), and Weber and Kirsner (1996). One does find some theory concerned with mixed gambles (=uncertain alternatives) of gains and losses, but not many empirical phenomena involving mixed gambles have been described, and only a very few experiments about them have been run, e.g., Chechile and Cooke (1997), Payne, Laughhunn, and Crum (1980, 1981), and bits of some papers whose main focus is rank dependence. This is surprising considering that many important choices involve mixtures of gains and losses. Perhaps the most serious argument for reconsidering the mixed case very carefully are the several theories that suppose alternatives are always recast as gains and losses relative to a reference level and that, therefore, all choices actually concern the mixed case (Lopes, 1996, who gives references to a number of earlier papers; Luce, Mellers, & Chang, 1993). But even in these models, the postulates about the utility of the resulting mixed cases tend to be classical. My goal here is to discuss why I think this lack of attention is inappropriate and to make clear that it is far from obvious what the utility expression should be for binary mixed gambles. I describe four "principled" arguments that lead to quite different predictions about mixed gambles, and the results of one experiment that appears to reject at lest two of them (including the form postulated in both the old and new prospect theory, Tversky and Kahneman, 1992). Although there are various ways to arrive at some of these forms, I know of only one way to encompass all four; it rests on working with both gambles and the binary operation of getting or having two (or more) gambles or sure consequences, an operation I call joint receipt.