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Book Reviews

Time Preference

CHOICE OVER TIME, George Loewenstein and Jon Elster (eds), New York: Russell Sage, 1992, 423 pp., ISBN 0-87154-558-6

Review by Peter Wakker

This book collects together a number of contributions by leading experts on time preferences and related topics. My own background is in axiomatic models for decision under uncertainty and time preference is a new and recent interest for me. This book gives a broad overview of the relevant issues, and some deep analyses. It was a perfect introduction into the topic for me. At several places the authors express enthusiasm (front flap: 'Many of our most urgent national problems ...', p. xxiii: 'With ever greater insistence, American social scientists are being called upon to explain and offer remedies for a broad range of societal problems ...').

Similar to the field of decision under uncertainty, that is in the stage of 'No to expected utility' without yet a very clear alternative, the field of time preference is in the stage of 'No to constant discounting'. Several chapters do argue for an alternative, i.e. hyperbolic discounting (receiving $\$x$ after time T is worth $U(x)/(k+T)^r$, where k and r are constants and U is a utility function).

Let me now summarize the chapters of the book, drawing upon the excellent summary provided in the preface. In Chapter 1, Loewenstein provides a historical survey of the topic. It describes discussions between Jevons (future consumption gives present utility) and Böhm-Bawerk (future consumption gives only present cognition of future utility), and many other topics. Studying the historical development of a subject is a good way for getting acquainted with it, and I greatly enjoyed this chapter. Chapter 2, by Jon Elster, discusses methods for self-binding and commitment in politics, thus illustrating the broad relevance of time preference.

Chapter 3, by Ainslie and Haslam, argues strongly for hyperbolic discounting instead of constant discounting, with a discussion of ideas of Freud on page 59. Page 63 presents an evolutionary argument for low discounting, and pages 65 onwards provide some formalizations, elaborated in a loose and thus accessible manner. Chapter 4, by Rachlin and Raineri, also argues for hyperbolic discounting and compares it to many similar subjective perceptions. (A nice comparison of Chapters 3 and 4 is given on pp. xii-xiii.) Next, Chapter 5 presents an influential paper by Loewenstein and Prelec, published also in the *Quarterly Journal of Economics*, **107** (1992), pp. 573–97 (the volume and pages were not yet known when the book was printed). They employ a most useful analogy between time preference and preference under uncertainty to develop a time-preference analogy of prospect theory. I did wonder, in their model

$$U(x_1, t_1; \ldots; x_n, t_n) = \sum_i v(x_i)\phi(t_i)$$

if the time points can be arbitrarily close. Finally, I cannot resist mentioning here that the preference condition to reduce the general separable form $\Sigma u(x_i, t_i)$ to the multiplicatively decomposed formula displayed above, is the 'tradeoff consistency condition' of Wakker and Tversky (1993). Chapter 6, by Mischel, Shoda and Rodriguez, provides results on time preferences for young children. An amusing discovery is that children at the age of 4, when trying to delay consumption, will expose the reward, making it only harder to resist the temptation. One year later, children understand that exposing the reward is unwise (pp. 159/160).

Chapter 7 presents Schelling's ideas on self-command ('A New Discipline'; note the pun!), considering it a bargaining game between several 'selves'. One of the many suggestions is that for self-command, clear unambiguous rules are good ('smoke nothing' is better than 'don't smoke too much'). In Chapter 8, Ainslie and Haslam write on the same topic, describing ways for self-control ('personal rules').

Chapter 9, by Elster and Loewenstein, addresses the meta-level effect of utility from memory and anticipation. A discussion is given of the anticipation of experiences (p. 231). It could be interesting here to see how anticipation of pain and worry can induce us to improve our actions. Chapter 10 presents Herrnstein and Prelec's theory on 'melioration'. It means that a person decides between alternative consumptions on the basis of the average past utilities of those

consumptions. That seems a rational procedure if no other information is available on the utility to be expected from consumption. An experiment is presented where subjects are led to choose the most inferior consumption alternative, in accordance with melioration but contrary to rationality. It would be interesting to reconsider this experiment from the perspective that the subjects in it are facing decisions under uncertainty. In Chapter 11, Frank points out that a commitment for self-control can best be based on emotions, because the commitment should be as direct as the temptation to violate self-control. A discussion of nonconstant discounting is given.

It is much easier to obtain empirical violations of a principle (independence, a linear relation, expected utility, constant discounting, etc.), than to prove a principle convincingly. Shefrin and Thaler write nicely on this in Chapter 12: 'We are aware, of course, that criticizing the realism of the assumptions of an economic theory is hardly novel' (p. 288). On the bottom of page 322 the empirical status of economic theory is described well: 'It is typical of the general approach in microeconomics, which is to use a normative-based maximizing model for descriptive purposes'. Similar discussions on empirical meaningfulness are found on page 324. Many economic phenomena (such as the IRA savings system) are explained by mental accounting, and policy implications of the theory are presented. In Chapter 13, by Herrnstein and Prelec, many disciplines are mentioned that speak to addiction, and different interpretations (divided self, rational self-medication, etc.) are given for addiction. A remarkable identity on page 352, 'love (i.e. sex)', caught my eye.

In Chapter 14, Becker, Grossman and Murphy summarize Becker and Murphy's model of rational addiction, and the evidence supporting it, such as decreasing death rates for certain diseases resulting from increased taxes for alcohol or tobacco. The final chapter, 15, by Frank, describes the effects of frames of reference and the intertemporal wage profile. Let me end the summary with a nice description of utility functions: '... The utility function's evolutionary role is to reward people with good feelings when they make progress toward survival and reproduction' (p. 373).

I list the few inaccuracies that I noted after a rather extensive study of the book, mainly to show how minor they are. I only found a moderate number of misprints. The reference systems in the different chapters are not uniform. It is not easy to find out which chapters have appeared as papers in journals. Several papers, by different authors, refer to Strotz (1955) whereas the correct reference is Strotz (1956). I did not discover which authors wrote the preface, but guess the editors themselves were the authors. Given that I read the book quite thoroughly, I think this short list of details is not extensive and I think that the book is a carefully prepared document.

I end with a few general comments. It would be interesting to see if the strong discounting at time point 0 can be explained by (mental) transaction costs, and how much can be explained by response mode effects such as 'scale compatibility' (Tversky, Sattath and Slovic, 1988). A recent reference is Bohm (1994).

Many chapters describe nonconstant discounting as a violation of stationarity, and put this on a same footing as what is known in the decision field as a violation of dynamic consistency (meaning one sticks to one's prior decisions). There have been many discussions of this condition and related topics ('consequentialism') in the decision field (Hammond, 1988; Machina, 1989; McClennen, 1990). Relating these works to the time preference field would be most interesting. Thus the discussion by Ainslie and Haslam on pages 74–75 of violations of stationarity seems to be based on the assumption of consequentialism (optimize the future independently of foregone possibilities in the past), and their discussion on page 179 reminded me of McClennen's (1989) ideas of inner-mental commitment without extraneous reinforcements.

I hope this review shows that, for me, the book was a rich source of ideas, and it was a joy reading it. The quality of the contributions is high which, given the outstanding reputations of the contributors, this is no surprise.

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