

COMMENTS ON THE RELEVANCE OF
PSYCHOLOGY TO ECONOMIC THEORY AND
RESEARCH¹

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Recent developments in economic theory have emphasized the dependence of economics on assumptions regarding the motivations of economic behavior. Economists naturally turn to psychology in their quest for valid and fruitful assumptions, and they have learned with some disappointment that there are no ready-made answers. The motivations of economic behavior remain a challenge to both disciplines.²

Neoclassical economic theory was able to describe a determinate economic system and to infer many of its properties by making very simple assumptions about the behavior of the individual decision-making units of the system. The main assumption was *rationality*, in the sense that each individual chooses, among the range of alternative actions open to him, the one whose consequences he prefers to all the rest.³ This requires that the individual have a consistent and transitive ordering of the objects of choice, in the following sense: If *A* and *B* are such objects, then either *A* is preferred to *B*, *B* to *A*, or there is indifference

¹ *Editor's note:* Dr. Tobin originally met our invitation with the counterproposal that he write a supplement to George Katona's paper, "The Relationship between Psychology and Economics." What resulted, however, was this compact but self-contained article on the relations of psychology to economics. The editor is happy to acknowledge the limitation upon his characteristic thesis that analytic *reach* is a condition to analytic bite, pointed up by this brief but highly illuminating paper.

² Herbert A. Simon [29] and S. P. Hayes [17] provide extended discussion of some of these problems. See also the articles of Katona and Simon in this volume.

³ For a careful presentation of the economic theory of choice see [18, 26].

between A and B . Moreover, if A is preferred to B , and B is preferred (or indifferent) to C , then A is preferred to C .⁴

The assumption of rationality in this sense is of considerably greater generality than is conveyed by the caricatures of "economic man" that too often represent economic theory in the eyes of other social scientists and, indeed, of some economists themselves. No restriction is placed on the dimensions of objects of choice that are relevant to their ordering. Within the framework of the theory, workers may rank alternative job opportunities according to quite different criteria from wages alone. Businessmen may reckon profits as only one among a number of outcomes on which they decide among alternative courses of action. Rationality does imply that, other things being equal, a larger sum of money will be preferred to a smaller. But if other things are not equal, rationality means nothing more than subjective consistency in the ordering of alternatives. Thus it is a mistake to identify rationality with the motivation of materialistic self-interest.

One assumption that economists make about this preference field is often the basis for misunderstanding. This assumption concerns the phenomenon suggested by the phrase "diminishing marginal utility," although this phrase is an inaccurate description. "Diminishing marginal utility" suggests that the more an individual has of some object, the less his satisfaction will be increased by giving him an additional unit of the same thing. So stated, the proposition seems to contradict psychological findings concerning the relationship of aspiration to achievement. Basing his position on these findings, as well as on survey evidence regarding levels of aspiration for accumulation of durable goods and savings, Katona criticizes the "saturation" implications of economists' utility theory. Actually, however, the theory is noncommittal on the question whether marginal utility diminishes or increases as successive additions of the same goods are made. The theory does assume that it is generally possible to keep an individual at the same utility or satisfaction level when depriving him of a unit of commodity A provided he is compensated by adding an appropriate quantity of commodity B . The theory further assumes that the smaller the amount of A left to the individual—and correspondingly the larger the amount of B —the more compensation in the form of B will be required for loss of another unit of A . This can be interpreted to say that, whatever the absolute marginal utilities may be,

⁴ Recently economists have recognized what psychologists have long maintained—individuals do not always make the same choice when faced with the same alternatives. To avoid the neoclassical conclusion that indifference must be assumed to explain inconsistencies, a theory of *probabilistic choice* has evolved. For a definition of rationality assuming probabilistic choice, e.g., if A is preferred to B , then the probability of choosing A rather than B is greater than one-half [see 5, 8, 10, 11, 21].

the marginal utility of *B* declines *relative to that of A* as the quantity of *B* increases relative to the quantity of *A*. Economists have always been impressed by the boundlessness of human wants and have denied the possibility of universal saturation.⁵ They do assume, however, the need for maintaining some kind of balance between objectives. Individuals may aspire to even higher levels of consumption of all kinds, as well as to even higher levels of savings and leisure. Since means are limited, these goals conflict; one can be approached only at the expense of another. Although an individual cannot be absolutely saturated with any desirable object, he can become relatively saturated. If he is relatively saturated with liquid assets, for example, he would be glad to have more, but he would prefer to have more durable consumer's goods.

Economics has sought to be neutral with respect to the sources of preferences, but it has purchased this neutrality at the cost of substantive content. Results that are determinate when business decisions are assumed to depend only on maximizing profits, for example, become indeterminate in fact (though still determinate in principle) when less measurable objectives of business policy are admitted [25, 28a]. In the field of consumer behavior, the formation of preferences from experience, observation, and advertising is at least as important a phenomenon as purchasing based on given preferences.⁶ But economics looks to psychology to explain the formation of preferences.

General as they are, the usual formulations of the preference fields of economic units have implicitly involved some questionable propositions. First, a consumer's rankings of alternative "market baskets" of goods and services have traditionally been taken to depend only on the amounts of various commodities *he* consumes, not on the amounts other consumers are simultaneously consuming. This disregard of social interdependence in consumption contradicts everyday observation as well as the presumptions of sociology and social psychology. In recent years, there have been a number of attempts to correct the traditional individualistic bias of economics [4, 12, 19, 20].

Second, as a legacy of Benthamite utilitarianism, economic theory has tended to formulate work as a source of disutility and thus to assume that it is preferred to leisure solely because of the income it brings. The discovery of "human relations" in industry, a subject on which there has been considerable convergence between psychology and labor economics, has taught economists that the satisfactions of life occur on the job as well as after hours.

⁵ This is why economists, in general, have been less impressed than the general public with such books as John Kenneth Galbraith's *The Affluent Society* [15].

⁶ A discussion of some factors which appear to influence consumer behavior may be found in [12, 23, 14a].

Third, the preference field of economic theory is an attribute of a single mind. Yet the basic economic decision-making units are really groups rather than individuals—households, corporations, governments, and trade unions.⁷ So far, we lack any satisfactory theory of the manner in which the effective preference fields of groups are formed. Indeed, as a logical matter, it is not possible in general to derive an ordering of alternatives for the group from conflicting rankings by group members [3].

Rationality requires that the outcomes of alternative courses of action be known with certainty to the decision maker. Given such certainty, it is clearly irrational to choose any outcome other than the most preferred. But if outcomes are uncertain, there is no obvious definition of rational choice. A number of decision criteria for situations of uncertainty have been suggested [2, 22]. Among them is the “minimax” strategy: For every possible action, assume the worst outcome, then choose the action whose worst outcome is least bad. This was first suggested as the correct strategy in playing a zero-sum game where your strategy is known to your opponent, who is trying to do his best against you [31]. Even in a game situation, it is a highly conservative strategy, and the person who follows it may find himself sacrificing the chance of large gains merely in order to avoid the possibility of small losses [14]. In situations where the environment is neutral, it is even more clear that it is excessively conservative. Consequently, there is considerable doubt that the minimax criterion should be recommended to decision makers, and, of course, even greater doubt that it describes actual behavior.

An alternative decision criterion is maximization of expected (in the probability sense) utility. This requires that the decision maker rank not only outcomes but differences in utilities of outcomes. Not only can he say that he prefers *A* to *B*; he can say whether the degree of preference of *A* over *B* is greater or less than that of *C* over *D*. This implies that values (on a scale unique up to a linear transformation) can be attached to the outcomes themselves. The criterion also assumes that the decision maker attaches probabilities of occurrence to the various outcomes. Since economic decisions generally occur in nonrecurrent situations for which objective probabilities cannot be calculated, these probabilities must be subjective estimates.⁸ This decision rule avoids the overconservative implications of the minimax strategy. But in the nature of the case, there can be no proof that it is more nearly optimal than other principles of decision. As to its descriptive realism, economics and psychology have

⁷ A decision procedure for a firm with a team of decision makers who possess a single objective for the firm is described by Jacob Marschak [24].

⁸ Methods for obtaining these subjective probabilities are described in Leonard J. Savage [27].

found another area of convergence in experimental measurement of utility and subjective probability. Experiments have been designed to test whether subjects' choices can be regarded as maximization of expected utility [9, 13, 13a]. These experiments involve procedures similar to the scaling of sensations and attitudes, which has a long tradition in psychology [7]. A major difference, however, is this: Since economists regard utility and subjective probability as personal to each subject, they cannot follow the psychologists' technique of treating the responses of different subjects as replications of observations from the same population of choices. This greatly complicates experimental testing of the expected utility hypothesis; at the moment, we have little idea of the size or characteristics of the population groups whose behavior can be represented as maximization of expected utility.

Even if these groups turn out to be significant in the economy, further questions remain: How are subjective estimates of utility and probability formulated? Is it useful to break the decision process into these components, or is it better looked upon as a unit? Lately economists have learned how difficult and costly it is to be rational—or, in the case of uncertainty, to apply any of the suggested criteria of “quasi rationality.” Indeed the development of management science and operations research since World War II has opened a fertile field for economists, statisticians, and mathematicians, increasing the efficiency of business decisions [6]. If the economic model did not fit the world, one is tempted to wonder whether the world is being made over to fit the model. But in the last analysis, rationality cannot apply to situations of uncertainty. It may be that, instead of seeking a quasi rationality which can be applied to these situations, we should, as descriptive scientists rather than advisers, look more directly for the manners in which individuals and groups simplify and structure complicated situations in which they must make decisions whose outcomes they cannot control or predict.⁹

Psychologists and economists have barely begun to exploit the possibilities of fruitful collaboration in empirical research on economic behavior. The pioneering work at the Survey Research Center, led by George Katona, has shown that the social sciences have in the sample survey a powerful tool applicable to research on economic behavior as well as on public opinion. Considerable further development of the tool is necessary to utilize its full research potential. Two lines that such development might take may be mentioned.

1. Surveys of economic behavior can be designed specifically for research on the strategic relationships between variables, rather than for the primary purpose of making estimates of population frequencies and averages. Research-oriented surveys would place less emphasis on representative

⁹G. L. S. Shackle [28] attempts an approach of this kind [see also 1, 16].

sampling of the population, and more focus on observations strategic for measuring the relationships under study. Surveys would take on experimental design, in which some variables are deliberately held constant and others made to differ as much as possible. Successive reinterviews of identical respondents would be used to obtain information on reactions to change in circumstances over time.

2. Psychological characteristics of respondents can be measured in order to seek their relationship to economic behavior. Katona's work has concentrated on measuring a particular category of psychological variables, mainly respondents' optimism or pessimism about the economic future. These attitudes of optimism or pessimism are relevant to the short-term outlook for consumer spending. They cannot help very much in the making of longer-run economic predictions. For that task, it would be valuable to explore the relationship of economic behavior—e.g., spending and saving—to more fundamental and permanent dimensions of personality. Without measurement of such dimensions, there are some unresolvable ambiguities of interpretation of the results of economic surveys. For example, Katona cites findings that people with substantial liquid assets tend to add more, not less, to their total assets than people whose existing stocks are low. It is a matter of some economic importance whether this finding reflects (1) the fact that persons of a thrifty disposition have saved more in the past and continue to save more than persons of a different personality, or (2) a tendency for a given individual to save more in liquid form, the greater his initial holdings of liquid assets. If the finding reflects the former, then it still may be true that for persons of given personality, high liquidity promotes spending rather than saving [30]. But if, as Katona believes, it reflects the latter, then it would be foolish to worry about possible inflationary effects of high liquidity. Thus the relationship of economic behavior to personality attributes is not only a subject of interest in itself; it is also essential for correct interpretation of observed relations among economic magnitudes.

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