Fairness and the Assumptions of Economics

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The traditional assumption that fairness is irrelevant to economic analysis is questioned. Even profit-maximizing firms will have an incentive to act in a manner that is perceived as fair if the individuals with whom they deal are willing to resist unfair transactions and punish unfair firms at some cost to themselves. Three experiments demonstrated that willingness to enforce fairness is common. Community standards for actions affecting customers, tenants, and employees were studied in telephone surveys. The rules of fairness, some of which are not obvious, help explain some anomalous market phenomena.

The advantages and disadvantages of expanding the standard economic model by more realistic behavioral assumptions have received much attention. The issue raised in this article is whether it is useful to complicate—or perhaps to enrich—the model of the profit-seeking firm by considering the preferences that people have for being treated fairly and for treating others fairly.

The absence of considerations of fairness and loyalty from standard economic theory is one of the most striking contrasts between this body of theory and other social sciences—and also between economic theory and lay intuitions about human behavior. Actions in many domains commonly conform to standards of decency that are more restrictive than the legal ones: the institutions of tipping and lost-and-found offices rest on expectations of such actions. Nevertheless, the standard microeconomic model of the profit-maximizing firm assigns essentially no role to

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generosity and social conscience or even to good will or indignation. The economic agent is assumed to be law-abiding but not "fair"—if fairness implies that some legal opportunities for gain are not exploited. This nonfairness assumption expresses a resistance to explanations of economic actions in moral terms that has deep roots in the history of the discipline. The central insight that gave rise to modern economics is that the common good is well served by the free actions of self-interested agents in a market.

Like the assumption of rationality, the assumption of nonfairness could take several forms, which may be ordered from "pure as-if" to "true believer." The as-if position is methodological rather than substantive. It assigns the entire burden of proof to anyone who would complicate the basic model and accepts as grounds for its revision only improved predictions of economic variables, not direct tests of its assumptions. A moderate true-believer position would be that the economic arena, like a boxing ring or a poker game, is an environment in which many of the rules that govern other human interactions are suspended. In the extreme true-believer position any appearance of concern for values of fairness or for the welfare of strangers is interpreted in terms of self-interest and strategic behavior.

Although not logically required for the pursuit of standard economic analyses, true belief in nonfairness appears to be common among economists. It is often viewed as an embarrassment to the basic theory that people vote, do not always free ride, and commonly allocate resources equitably to others and to themselves when they are free to do otherwise. There is a clear preference for treating apparent indications of fairness (or of irrationality) as isolated phenomena of little economic significance.

In opposition to the dominant trend several economists have invoked a notion of fairness in their interpretations of regulation (Zajac 1978, in press) and of the market phenomena of price and wage stickiness (Hirschman 1970; Arrow 1973; Akerlof 1979, 1982; Solow 1980). Arthur Okun (1981) offered a notably detailed account of the demands of customers and employees for fair treatment and of the role of perceived unfairness in triggering a search for alternative suppliers. Okun made a strong case that many customer markets resemble labor markets more than they do pure auction models. Like labor markets, customer markets sometimes fail to clear, an observation that Okun explained by the hostility of customers to price increases that are not justified by increased costs.

The opposition to price rationing as a response to a shortage is easily documented. An example is provided by the following question, which was put to 191 adult residents of the Vancouver metropolitan region as part of a telephone survey.

> A football team normally sells some tickets on the day of their games. Recently, interest in the next game has increased greatly, and tickets are in great demand. The team owners can distribute the tickets in one of three ways. (1) By auction: the tickets are sold to the highest bidders. (2) By lottery: the tickets are sold to the people whose names are drawn. (3) By queue: the tickets are sold on a first-come first-served basis. Rank these three in terms of which you feel is the most fair and which is the least fair—the auction, the lottery, and the queue.

The results for this question are given in table 1.

In terms of economic efficiency, the three procedures are ranked from the auction, which would allocate the good to the customers willing to pay the most for it, down to the wasteful method of queueing. The inverse ordering obtains when the allocation procedures are ranked by their fairness.

In what ways could community standards of fairness deter firms from exploiting excess demand? A radical possibility, which corresponds to lay beliefs (Kahneman, Knetsch, and Thaler, in press), is that there is a significant incidence of cases in which firms, like individuals, are motivated by concerns of fairness. The characteristic of these cases is that the firm behaves "fairly" in the absence of inducements such as the promise of future custom or the threat of regulation. An important example that appears to satisfy this criterion was documented by Olmstead and Rhode (1985) in their analysis of the behavior of a dominant supplier during the West Coast oil famine of 1920.

A less radical position is that actions that the public will perceive as unfair are deterred by the resistance of potential transactors. This resistance will be most effective if it is backed up by a willingness on the part of customers and employees to pay some cost to avoid unfair transactions and unfair firms. There are indications that such a willingness may exist.

The following pair of questions, reported in Thaler (1985), was administered to two groups of participants in an executive education program. One group received the version including the passages in brackets, while the other received the passages in parentheses.

> You are lying on the beach on a hot day. All you have to drink is ice water. For the past hour you have been thinking about how much you would enjoy a nice cold bottle of your favorite brand of beer. A companion gets up to go make a phone call and offers to bring back a beer from the only nearby place where beer is sold, [a fancy resort hotel] (a run-down grocery store). He says that the beer might be expensive and so asks how much you would be willing to pay for the beer. He says he will buy the beer if it costs as much or less than the price you state, but if it costs more than the price you state he will

TABLE 1 Ranking of Allocation Methods

Allocation Method	Most Fair (%)	Least Fair (%)
Auction	4	75
Lottery	28	18
Queue	68	7

not buy it. You trust your friend, and there is no chance of bargaining with the [bartender] (store owner). What price do you state?

The median response for the fancy-hotel version was \$2.65, while the median response for the grocery-store version was \$1.50. Evidently, people are willing to pay different amounts for a beer to be consumed on the beach, depending on where it was purchased. Put another way, people would refuse to buy a beer from the grocery store at a price less than their reservation price rather than pay what they consider to be an excessive amount. Note that, because different prices are considered appropriate for the grocery and for the hotel, the two establishments face different demands for a physically identical good to be consumed under identical circumstances.

These introductory considerations lead to several questions. How prevalent is "fair" behavior in the absence of enforcement? Does resistance to unfair treatment occur in real as well as in hypothetical problems? Do people only resist unfair transactions in which they are directly involved, or are they willing to incur costs to punish unfair actors? What are the specific rules of fairness that apply to firms in their transactions? Could the inclusion of considerations of fairness improve the understanding of significant economic facts? We will now review three studies that dealt with these questions.

The first study includes three experiments that are concerned with the enforcement of fairness. The second study uses a survey of public opinion to investigate whether the public considers cost-plus markup the rule of fair pricing. The third study, which is only summarized here (Kahneman et al., in press), consists of an extensive survey of rules of fairness that the public would apply to retailers, employers, and landlords.

Study 1: Resisting Unfairness

The behavior that we label resistance to unfairness was recently observed in experiments by Guth, Schmittberger, and Schwarz (1982) and by Binmore, Shaked, and Sutton (1985). The first of these experiments introduced the following ultimatum game. One player, A (allocator), is asked to propose a division of a sum of money, X, between himself or herself and an anonymous player, R (recipient). Player R

may either accept A's proposal or reject it, in which case both players receive nothing. The game-theoretic solution to this problem is that A should offer R a token payment and that R should accept any positive offer. The results were not consistent with this presumption. Most allocators offered more than a token payment, and many offered an equal split. Also, some positive offers were declined by recipients, indicating a resistance to unfair allocations and a willingness to pay to avoid them. Guth et al. were not able to report much about this behavior because most offers in their experiment were obviously fair and occasions for resistance correspondingly rare. Experiment 1 was designed to elicit a response to unfair proposals from all participants.

The experiment was conducted in a psychology class and in a commerce (business administration) class at the University of British Columbia. Each participant was given a sheet that included instructions and a response form. An example of the instructions for the first part of the experiment is given below.

> In this experiment you are matched at random with a student in the class—call him or her X. You will not get to know who X is. A sum of $10 has been provisionally allocated to the two of you. Because our budget does not permit us to pay everybody, 20 pairs of students will be chosen in a random draw and will be paid according to their responses. In responding to this questionnaire you should assume that you will be among those who are paid. X will propose a division of the $10 between the two of you, by selecting one of the options listed below. You must decide now which options are acceptable to you and which, if any, are unacceptable. If the option actually proposed by X is one that you marked acceptable, the $10 will be paid out accordingly. If the option that X proposes is unacceptable to you, neither of you gets anything. To make sure you understand the rules, please answer the following two questions before continuing. (1) If X allocates you $3.00 and you marked that value acceptable, you get $_____, and X gets $_____. (2) If X allocates you $3.00 and you marked that value unacceptable, you get $_____, and X gets $_____.

The possible allocations ranged from $9.50 to X and $0.50 to the recipient to an even split of $5.00 each, in steps of $0.50. The participants were instructed to designate each offer as acceptable or unacceptable. Half the students in the psychology class were informed that they would be paired with an unknown undergraduate student in a commerce class. All the participants in the commerce class were informed that they would be paired with a psychology student.

After completing the first task the participants turned to the next page, which instructed them to allocate $10.00 to themselves or to "a student, Z (*not* the one whom we called X)." The rules were the same as they were for the first part. The answers to the second question were

used to determine the payoffs as indicated. The verbal instructions to the subjects promised that all payoffs would be in sealed envelopes to protect their privacy. The main results are shown in table 2.

Contrary to the game-theoretic prediction but in accordance with other experimental observations the actual allocations were quite generous (Selten 1978; Guth et al. 1982; Hoffman and Spitzer 1982; but see also Binmore et al. 1985; Hoffman and Spitzer 1985).

Of greater interest here is the observation that a substantial proportion of participants were willing to reject positive offers. The results do not indicate whether these individuals were motivated by a reluctance to participate in an unfair transaction, or by a wish to punish an unfair allocator, or perhaps by both. In either case the resistance to unfairness exhibited in this experiment is of the type that might deter a profit-maximizing agent or firm from seeking to exploit some profit opportunities. A widespread readiness to resist unfair transactions or to punish unfair actors even at some cost could present a significant threat to firms in competitive environments.

Experiment 2 was designed to obtain an indication of the prevalence of unenforced fairness in anonymous transactions and to establish whether people are willing to incur a cost to reward fairness and to punish unfairness when the fair or unfair actions were directed at someone else. Subjects in this experiment were students in an undergraduate psychology class at Cornell University. In the first part of the experiment subjects were instructed to divide $20 with an anonymous student in the same class, with no possibility of rejection by the recipient. The allocation was made by choosing between two possibilities: $18 to self and $2.00 to the other, or $10 to each. The participants were informed that eight pairs (selected at random from 161 students) would actually be paid according to their responses. Precautions were taken to ensure the privacy of payoffs.

The second part of the experiment, introduced after the first was completed, is explained in the following instructions.

> This part of the experiment will be limited to those members of the class who were not selected to be paid in the first part. You will be matched at random with two other students, and you will get to share some money with one or both of them. If the two people made different decisions in the first stage (e.g., one of them took $10 and one took $18), then you must make a decision about how to allocate the money. Call the person who took $10 and gave the other one $10 student E (for even). Call the person who took $18 and gave the other one $2.00 student U (for uneven). Your choices are as follows: you may allocate $5.00 to yourself, $5.00 to student E, and nothing to student U; or you may allocate $6.00 to yourself, nothing to student E, and $6.00 to student U. If both the students with whom you are grouped made the same decision, then you will receive

TABLE 2 Experiment 1 Results

	Class		
	Psychology/ Psychology	Psychology/ Commerce	Commerce/ Psychology
Mean amount offered ($)	4.76	4.47	4.21
Equal split offers (%)	81	78	63
Mean of minimum acceptable ($)	2.59	2.24	2.00
Demands > $1.50 (%)	58	59	51
Participants (*N*)	43	37	35

NOTE.—Data presented are by subsample; the results do not include 22 subjects whose answers to the test questions indicated a misunderstanding of the instructions.

$6.00, and each of them will receive $3.00. For this stage 15 groups of students will actually be paid.

The results of the first part of the experiment show that fair allocations are observed even under conditions of complete anonymity and with no possibility of retaliation. Of the 161 students, 122 (76%) divided the $20 evenly. This is stronger evidence for the prevalence of fairness to strangers than was obtained in experiment 1. A fair allocation in an ultimatum game could be explained by the allocator's fear, often justified, that the recipient might reject a small positive offer.

The second stage of the experiment was designed to see whether the subjects would pay $1.00 to punish an unfair allocator and simultaneously reward a fair one. A clear majority (74%) made that choice, indicating a preference to divide $10 evenly with a fair allocator rather than divide $12 with an unfair allocator. Not surprisingly, there was a substantial correlation between the choices made in the two stages. Of 122 subjects who took $10 in the first stage, 107 (88%) preferred to share with student E in the second stage. In contrast, of the 39 subjects who took $18, only 12 (31%) shared with student E.

A class in the Cornell School of Industrial and Labor Relations was used for experiment 3, in which only the second part of experiment 2 was administered. The subjects were told (truthfully) that they would be matched with members of another class that had participated in part 1 of the experiment but had not been selected to be paid. Unlike the previous experiments, all the participants in experiment 3 were paid in accordance with their expressed preferences. These procedural differences did not affect the willingness to pay for justice: 26 of the 32 subjects (81%) preferred to share $10 with a fair allocator rather than share $12 with an unfair one.

Two hypotheses that were mentioned in the introduction could explain why firms might sometimes fail to exploit legal but "unfair" profit opportunities. The radical hypothesis is that the owners and managers of firms have a preference for acting fairly. The alternative hypothesis

is that transactors may be willing to punish an offending firm by withholding their current and future business. The results of these experiments provide clear evidence for the willingness to punish invoked in the second hypothesis. The prevalence of unenforced fairness in experiment 2 and in others reported in the literature lends some credence to the more radical possibility as well.

Study 2: Cost Plus Is Not the Rule of Fair Pricing

The second study was motivated by a hypothesis that turned out to be wrong: that the community standard for fair pricing is that the prices of goods should be determined by adding a markup to unit costs. The hypothesis had some initial support in the observation of cost-plus pricing as a routine procedure in firms (Cyert and March 1963). Okun (1981, p. 153) noted that "many supplying firms present themselves to their customers as procurement agencies operating under a brokerage arrangement" in which "the broker receives a specified fraction of the total value of the transaction."

The critical test for the fairness hypothesis of cost-plus pricing arises when the supplier's costs decrease. Consider the simple example of a monopolist who sells a fixed supply of a particular kind of table for \$150 each and now realizes a \$20 reduction in costs for each table. By a cost-plus rule with constant profit per unit the supplier should lower the price of each table by \$20. By brokerage rules with proportional markup the price should be reduced by more than \$20. To test whether cost plus is the rule of fair pricing this basic scenario of a supplier facing decreased costs was presented to respondents in a telephone survey.

Additional hypotheses considered possible qualifications to a general cost-plus rule of pricing, which would link the notion of fair profit to the nature of the value added by the firm or to the source of the opportunity for increased profit. Specifically, the predictions were (1) that the cost-plus rule might apply strictly only to middlemen, not to producers, and (2) that the cost-plus rule might apply only to savings due to reduced input costs but not to savings achieved by increasing efficiency. The instructive result of the study was that all these hypotheses were either completely or partially contradicted by the data.

The surveys were included in telephone interviews with adult residents in the Toronto metropolitan area. One of eight different versions of the basic questionnaire was presented to each respondent. One of these versions is presented below in full.

> My first questions are about the behavior of people in business. Suppose a factory produces a particular table, which it sells to wholesalers. The factory has been selling all the tables it can pro-

duce for \$150 each. Suppose that the factory has now found a supplier who charges \$20 less for the materials needed to make each table. Does fairness require the factory to change its price from \$150? [Respondents who answered "yes" were now asked, "What is a fair price that it could charge the wholesalers?"] [All respondents were then asked the following question.] Imagine instead that the factory saved \$20 on each table not by getting less expensive supplies but by inventing a more efficient way of making the tables. Does fairness require the factory to change its price from \$150 in this case? [Continued as above.]

Different groups of respondents were asked these questions about four kinds of firms: a factory, as in the example above; "a carpenter works alone in his workshop to make tables, which he sells directly to individual customers"; "a wholesaler is the only one that distributes a particular kind of table"; and "a furniture store is the only one that sells a particular kind of table." Four other versions were generated by asking the same two questions in the opposite order. A total of 975 responses were obtained, divided about equally among the eight versions. Table 3 shows the main results for the first question asked in each version.

The main hypothesis of this study is unequivocally rejected. Even in the cases that are the most favorable to a cost-plus pricing rule (a wholesaler or retailer facing reduced input costs) only about one-third of the respondents applied that rule in designating a fair price. Half the respondents stated that fairness does not require the firm to pass on any part of its savings. The standards of fairness that respondents applied were far more favorable to firms than was suggested by the cost-plus rule.

The other two hypotheses concerning the determinants of fair pricing fared no better. Although the carpenter working alone was favored significantly more than other firms, this effect appears due to the size of the firm rather than to its role as producer. The results for the furniture factory lend no support to the general hypothesis that a producer can fairly retain a larger share of an incremental profit than can a middleman.

Finally, the prediction concerning the source of the profit increment also finds no support in table 3. The notion of a brokerage agreement suggested that it might be fair for a supplier to retain a profit increment that it obtains by increasing efficiency, although a similar increment due to decreased input costs should be passed on to customers. Contrary to this hypothesis, the proportion allowing the firm to maintain its price appeared to be slightly higher in the case of cheaper supplies than in the case of increased efficiency.

The results reported so far were all derived from comparisons between the responses to the first of the two questions that each respon-

TABLE 3 Results of Cost-plus Questions

Source of Savings	Seller			
	Store	Wholesaler	Carpenter	Factory
Cheaper supply:				
Cost-plus responses ($130 or less) (%)	34	31	19	20
No-price-change-required responses (%)	47	51	63	48
Means of fair prices ($)	141.11	142.32	144.12	142.97
Increased efficiency:				
Cost-plus responses ($130 or less) (%)	31	23	13	40
No-price-change-required responses (%)	39	46	60	35
Means of fair prices ($)	141.73	142.19	145.54	140.15

dent answered. The effect of the source of the profit increment could also be tested in a second way because each respondent was asked to evaluate the two possibilities in immediate succession. The conclusion of this within-individual analysis is rather different from the conclusion reached by comparing the responses of different samples. Most respondents (67%) stated the same fair price for an efficiency gain and for a reduction of input costs. Among those who distinguished between the two cases, however, a majority (62% overall) stated a lower fair price in the case of a cost reduction than in the case of an efficiency gain. This result confirms the original hypothesis and is highly reliable ($p < .001$ by chi square test for correlated proportions).

The difference between these results and those of table 3 could reflect the higher statistical power of within-individual comparisons. It may also reflect a more interesting distinction between levels of strength for factors or rules of fairness. We define a weak factor (or rule) as one that affects evaluations of contrasting cases only when these cases are judged in relation to each other, as is likely to happen with successive questions. The effects of stronger factors can be demonstrated without the benefit of such implicit comparisons. No comparison is required, for example, to evoke different evaluations of a hardware store that raises the price of snow shovels in a blizzard and of one that does not.

A determinant or rule of fairness can be both weak and clear. For an example from another domain consider two prizes: (1) a week in Paris and (2) a week in Paris and $1.00 in cash. Separate evaluations of the attractiveness of these prizes would surely be indistinguishable, although everyone will prefer the second to the first in a direct choice.

In these terms, the distinction between cost reduction and efficiency gains was shown by the within-respondent comparisons to have some

validity as a rule of fairness. The rule was not clear, however, as the agreement between respondents was far from perfect. The between-respondent design showed it to have little or no strength. The proposed cost-plus rule failed a test of strength because respondents did not generally apply it to set a fair price in a particular case considered in isolation. It remains possible that respondents might follow a cost-plus rule if asked to consider together the appropriate price response to increases and to reductions of costs. The rule is at best weak, then, but it could still be valid and even clear. A rule that is weak by the present definition can be of much theoretical interest. When the task is to predict which actions of firms will be generally rejected as unfair, however, it is reasonable to start with the strongest rather than with the clearest rules.

The present analysis suggests a caution to theorists not to rely on the clarity of their own intuitions to estimate the strength of fairness rules. Any systematic speculation about rules of fairness inevitably involves explicit comparisons of contrasting cases. Intuitions derived from such comparisons may prove a poor guide to the relative importance of different factors in a between-respondent design. The methodological conclusions of this discussion are (1) that theoretical speculation about rules of fairness is not a substitute for observation of community standards and (2) that between-respondent comparisons are necessary to measure the strength of rules rather than their clarity. These considerations led us to adopt a between-respondent design in subsequent surveys of rules of fairness.

Study 3: Rules of Fairness

The failure of the cost-plus hypothesis in study 2 prompted a more extensive study of community standards of fairness for firms, which is described in detail elsewhere (Kahneman et al., in press). Telephone surveys were conducted in the Vancouver and Toronto metropolitan areas, using a broader range of examples and a different question format than those used in study 2. Most questions required the respondents to evaluate the fairness of an action in which a firm sets a price, rent, or wage that affects the outcomes of a transactor (customer, tenant, or employee) and deviates from a relevant precedent (the reference transaction). The following examples illustrate the method.

> A landlord owns and rents out a single small house to a tenant who is living on a fixed income. A higher rent would mean the tenant would have to move. Other small rental houses are available. The landlord's costs have increased substantially over the past year, and the landlord raises the rent to cover the cost increases when the tenant's lease is due for renewal.

A small photocopying shop has one employee who has worked in the shop for 6 months and earns $9.00 per hour. Business continues to be satisfactory, but a factory in the area has closed, and unemployment has increased. Other small shops have now hired reliable workers at $7.00 per hour to perform jobs similar to those done by the photocopy-shop employee. The owner of the photocopying shop reduces the employee's wage to $7.00.

The results of these examples are shown in table 4.

The examples illustrate two of the general rules that were found to govern fairness judgments in the surveys. (1) It is unfair for a firm to exploit an increase in its market power to alter the terms of the reference transaction at the direct expense of a customer, tenant, or employee. (2) It is acceptable for a firm to maintain its profit at the reference level by raising prices or rents or by cutting wages as necessary.

The rule against adjusting prices to changed market conditions implies that it is unfair for a firm to exploit excess supply of labor to cut the wages of its employees. In the context of consumer markets and rental housing the same rule implies that an increase in demand unaccompanied by an increase in costs is not an acceptable reason to raise prices or rents. The opposition to exploitation of market power also entails strong rejection of excessive monopoly gains (see also Zajac in press) and of price discrimination. The introduction of auctions as an instrument of rationing is also opposed: most respondents think, for example, that if a single Cabbage Patch doll is discovered in a storeroom, it would be quite unfair for the store to auction it to the highest bidder. The spirit of this rule is well expressed in Okun's sardonic remark (1981, p. 153): "No price announcement has ever explained to customers that the supplier has moved to a new position to capture a larger share of the surplus in the relation as a result of a stronger market."

An interpretation of the hostility of respondents to exploitations of excess demand is that transactors (customers, tenants, and employees) are considered to have an entitlement to the terms of the reference transaction, which cannot be violated arbitrarily by firms to increase their profits (Bazerman 1985; Zajac, in press). The other side of the coin is that the public considers the firm entitled to its reference profit. In a conflict between the transactor's claim to the reference price (or wage) and the firm's claim to its reference profit, it is acceptable for the firm to impose its claim rather than compromise. As illustrated by the tenant example, respondents agreed that a firm may protect its profit by passing on a cost increase in its entirety, even when doing so causes considerable loss or inconvenience.

There is a notable asymmetry between the rules of fairness that apply when circumstances increase or decrease the profits of a firm. The rules of fairness evidently permit firms to pass on the entire

TABLE 4 Responses to Illustrative Survey Questions

Landlord Example	%	Photocopying Shop Example	%
Completely fair	39	Completely fair	4
Acceptable	36	Acceptable	13
Somewhat unfair	18	Somewhat unfair	34
Very unfair	7	Very unfair	49

amount of a cost increase, but, as was shown in study 2 and further confirmed in study 3, firms are allowed to retain most of the benefits of a cost reduction.

Fairness and Framing

The concepts that economists use in their analyses of transactions are not always apt for a descriptive treatment of individual choice or of fairness judgments. A descriptive treatment must sometimes ignore distinctions that are normatively essential or introduce distinctions that are normatively irrelevant. In particular, a descriptive analysis requires that the outcomes of participants in a transaction should be defined as changes relative to a reference state rather than in absolute and objective terms (Kahneman and Tversky 1979). The determination of the reference level in a choice is subject to framing effects, which can yield inconsistent preferences for the same objective consequences (Tversky and Kahneman, in this issue). Similarly, judgments of fairness cannot be understood without considering the factors that determine the selection of a reference transaction.

Reference transactions are often tied to a particular good. For example, most respondents believe that it is unfair for a store to mark up the jars of peanut butter in its stock when wholesale prices rise, apparently because they associate the cost to the individual jar. The reference transaction may also reflect the history of relations between the firm and a particular individual: different rules apply to a current employee or tenant and to their potential replacements.

The notion of a reference state defines the gains and losses of participants in a way that violates the logic of economic analysis. Consider, for example, the contrasting rules that govern what a firm may fairly do when its reference profit is threatened or when its market power increases. In an economic analysis a firm that does not exploit its market power incurs an opportunity cost, which is considered equivalent to a decreased profit. This is the case, for example, when an employer pays an employee more than the replacement wage. Community standards of fairness—at least as indicated by the Canadian respondents surveyed—require employers and landlords to absorb such opportunity costs, just as they require hardware stores to maintain their price for snow shovels after a spring blizzard. On the other hand, fairness rules

allow firms complete recovery of actual cost increases without any requirement to share the pain. A theory that assumes the equivalence of opportunity costs and out-of-pocket losses cannot do justice to these strong intuitions.

A number of economic phenomena can be predicted on the assumption that the rules of fairness have some influence on the behavior of firms (Kahneman et al., in press). The rules of fairness tend to induce stickiness in wages and asymmetric price rigidities. They also favor a much greater use of temporary discounts than of temporary surcharges in price adjustments. Where costs for a category of goods are similar, opposition to price rationing may lead to sellouts for the most desirable items (e.g., the main game on the football calendar or the Christmas week in a ski resort). There is some evidence for all these predictions, which represent anomalies in the standard model.

Discussion

The most striking aspect of the basic microeconomic model, and the one that distinguishes it most sharply from other social sciences, is its conceptual parsimony. The behavior of economic agents is attributed to a well-defined objective—for firms it is the maximization of profits—that is pursued with complete rationality within legal and budgetary constraints. The idea that maximizing agents, all endowed with complete information, interact in a Walrasian auction is used to obtain predictions of market outcomes from a minimal set of assumptions about individual participants. The model of the agents is so simple that their decisions become predictable from an objective description of the environment.

There is a similarity in the programs of economics and classical stimulus-response behaviorism: both approaches seek to predict behavior from a specification of its circumstances. The environment considered in elementary microeconomics is quite simple. It can be completely described in terms of specific opportunities to maximize the objective function, and it is assumed that all such opportunities are exploited.

There are two ways of enriching this basic model. They differ in their cost and in the resistance that they may arouse among many economists. An uncontroversial move is to adopt a more complex view of the environment and of the interactions among transacting agents. Many subtleties become evident when the assumption of perfect information is dropped, allowing ignorance and risk, and when the costs of searching and transacting are considered. Much current research in economics is in this vein.

A more controversial move is to complicate the model of the agent. This can be done by allowing market behavior to be affected by added

motives besides buying cheap and selling dear or by abandoning the standard assumption of rational expectations. There are at least two good reasons to resist such moves. First, adding complexity to the model of the agent generally makes it more difficult to derive unequivocal predictions of behavior from a specification of the environment. Second, there is a threat of a slippery slope. It appears all too easy to lengthen the lists of noneconomic motives or cognitive errors that might affect economic behavior.

In spite of these cautions it is sometimes useful to enrich the model of economic agents by explicitly introducing a behavioral factor that is ignored in the standard theory. Such an effort is ultimately tested by whether it helps to resolve recognized anomalies and to identify new ones. Parsimony requires that a new behavioral assumption should be introduced only if it specifies conditions under which observations deviate significantly from the basic model and only if it predicts the direction of these deviations.

Norms of fairness may satisfy this test of usefulness if, as some evidence suggests, they have a significant effect on market phenomena. A conservative revision of the standard theory will retain the model of the profit-maximizing firm and alter only the model of the transactors with which the firm must deal by endowing them with explicit rules for the judgment of fairness and with a willingness to reject unfair transactions and to discriminate against unfair firms. These characteristics of transactors affect the environment in which profit-maximizing firms operate and alter the behavior of these firms in predictable ways. A more radical revision of the standard model would incorporate a preference for fairness in the objective function of at least some firms.

The contribution of the present study has been to identify some of the criteria that people use in their fairness judgments and to demonstrate the willingness of people to enforce fairness at some cost to themselves. A realistic description of transactors should include the following traits. (1) They care about being treated fairly and treating others fairly. (2) They are willing to resist unfair firms even at a positive cost. (3) They have systematic implicit rules that specify which actions of firms are considered unfair. Further, fairness rules are not describable by the standard economic model or by a simple cost-plus rule of thumb. Instead, judgments of fairness are influenced by framing and other factors considered irrelevant in most economic treatments. By incorporating these traits into an enriched model of customers, tenants, and employees, better predictions about the behavior of the firms with which they deal may be obtained.

Perhaps the most important lesson learned from these studies is that the rules of fairness cannot be inferred either from conventional economic principles or from intuition and introspection. In the words of

Sherlock Holmes in "The Adventure of the Copper Beeches": "Data! Data! Data! I cannot make bricks without clay."

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